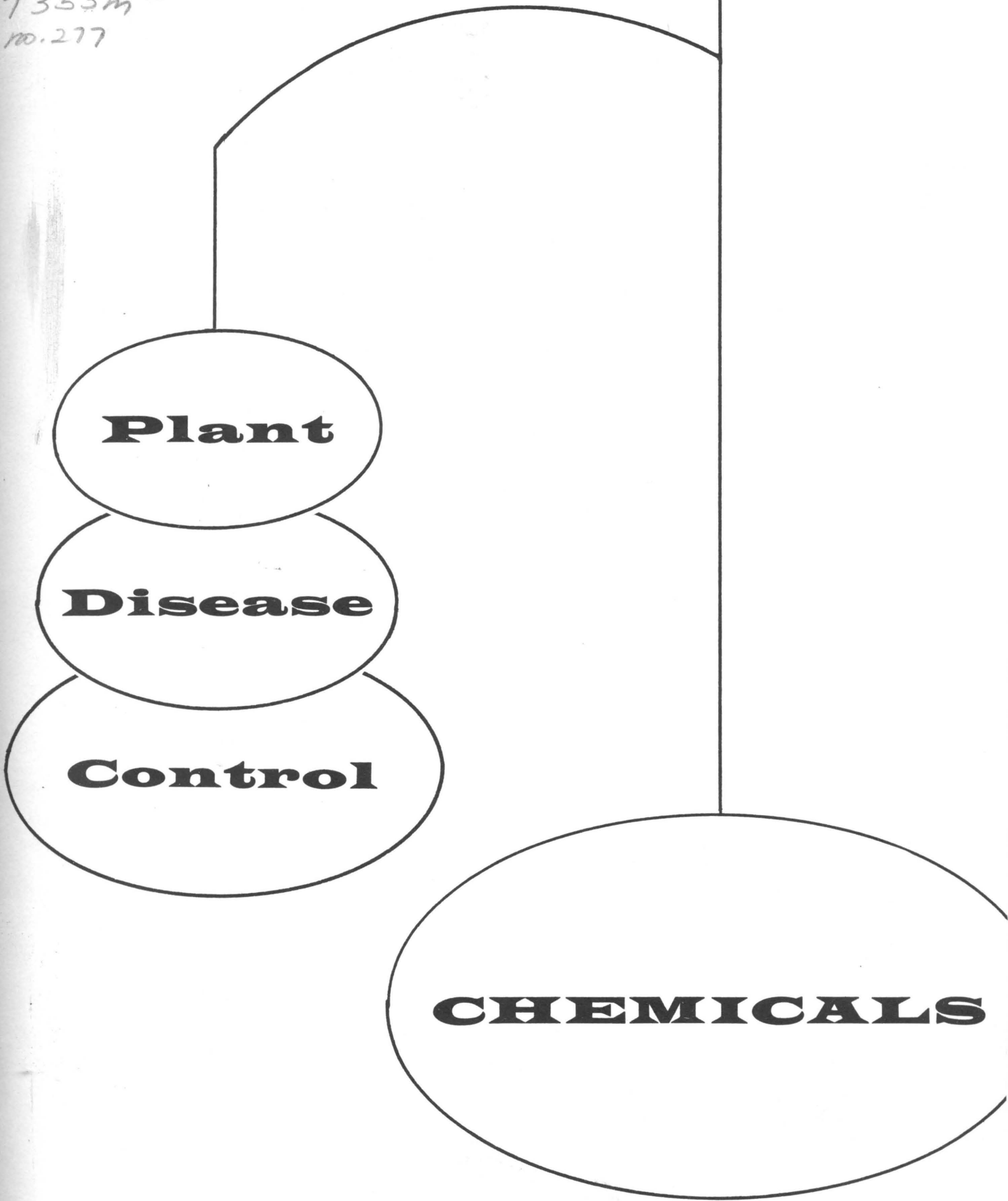


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FOREWORD

THE INFORMATION INCLUDED IN THIS PUBLICATION DOES NOT NECESSARILY CONSTITUTE RECOMMENDATIONS OF THE TEXAS AGRICULTURAL EXTENSION SERVICE.

The information in this publication contains excerpts from literature supplied by chemical manufacturers. All of the data concerning each product could not be listed in this publication. Therefore, careful examination of labels and other current literature from the manufacturer is advised before any products mentioned are used. Likewise, no attempt was made to include all chemicals for plant disease control. The coverage has been restricted to those commonly used or readily available in southwestern areas of the United States. Furthermore, some materials may have been omitted unintentionally.

Many of the products listed are very poisonous; therefore, special attention should be paid to manufacturers' directions. Directions for amounts to use and time of application should be followed carefully. Improper use may kill or severely injure plants or may not give proper disease control.

Materials are listed in alphabetical order and are not repeated in the INDEX. The INDEX (page 34 to 39) provides a listing of crop diseases with reference to products recommended by the manufacturers for their control. Addresses of the various manufacturers mentioned appear on pages 40 and 41.

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PLANT DISEASE CONTROL CHEMICALS

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Trade name: ACME BORDEAUX MIXTURE

Active ingredients: Copper sulfate 50% (metallic copper equivalent 12.75%)
lime 50%

Description: Blue, wettable powder

Uses: For control of various diseases of fruits, vegetables and ornamentals

Manufacturer: Acme Quality Paints, Inc.

Trade name: ACME FRUIT TREE SPRAY

Active ingredients: Methoxychlor Technical 12%, Malathion 6%, Captan 12%.

Uses: For apples and pears - To control scab, black rot, sooty blotch, Brooks spot and certain insects. Apply as follows: 1. when blossom stems separate and before blossoms open. 2. when 75% of the petals have fallen; 3. 10 days later; 4. 10 days to 2 weeks later; 5. At 2-week intervals till 15 days before harvest. For peaches - To control brown rot, scab and certain insects apply as follows: 1. when trees are in bloom; 2. when shucks begin to split; 3. 10 days later; 4. 10 days later; 5. 2 weeks later; When brown rot continues to be a problem, apply WETTABLE DUSTING SULFUR at 10-day intervals up to harvest.

Manufacturer: Acme Quality Paints, Inc.

Trade name: ACME GARDEN FUNGICIDE

Active ingredients: Captan 30%, Karathane 3%

Description: Tan, wettable powder

Uses: For control of most fungus diseases affecting many crops. This combination should be useful especially for gardeners requiring an all-purpose fungicide.

Recommendations: For apple-scab and powdery mildew, use 2 tablespoons per gallon for bloom applications. For rose-black spot and powdery mildew, use 2 tablespoons per gallon of water and apply at weekly intervals during most of growing season. Also use for control of diseases of various ornamental plants.

Manufacturer: Acme Quality Paints, Inc.

Trade name: ACME LIME SULFUR

Active ingredients: Calcium polysulfides 70%, calcium thiosulfate 5%, sulfur 5%

Description: Orange-yellow, wettable powder

Uses: For control of diseases of fruits and ornamentals

Manufacturer: Acme Quality Paints, Inc.

Trade name: ACME RED RIVER POTATO MIX

Active ingredients: Metallic copper 25.7%, metallic arsenic 15.1%, DDT 9.5%

Description: Wettable powder

Uses: For control of disease and certain insects of potatoes

Manufacturer: Acme Quality Paints, Inc.

Trade name: ACME WETTABLE DUSTING SULFUR
Active ingredients: Sulfur 95%
Description: Yellow, wettable powder
Uses: For control of powdery mildew and other diseases of roses and many other plants
Manufacturer: Acme Quality Paints, Inc.

Trade name: ACTI-DIONE
Active ingredients: Cycloheximide 2.26%
Uses: For the following turf diseases: dollar spot, brown patch, melting out and fading out
Manufacturer: Upjohn Co.

Trade name: AEROSOL LARVACIDE
Active ingredients: Chlorpicrin
Uses: As a soil fumigant to control nematodes and certain other pests
Recommendations: For Aerosol Larvacide use 1-1/2 times dosage per 1,000 cu. ft. as recommended for flat Larvacide, but because of greater efficiency of the Aerosol, trials can be recommended down to same dosage as flat Larvacide. (See LARVACIDE.)
Manufacturer: Larvacide Products Inc.

Trade name: AGRI-MYCIN 100
Active ingredients: Streptomycin 15%, oxytetracyclin (terramycin) 1.5%
Description: White, soluble powder
Uses: For control of various bacterial diseases of plants
Recommendations: Apple and pear fire blight - Use 50 p.p.m.; apply when 20-30% of bloom is open and every 3-4 days during blossom period. For pepper and tomato-bacterial spot - Use 200 p.p.m.; apply to seedlings when first true leaves appear and every 5th day until transplanted. For chrysanthemum-verticillium wilt, soak cuttings in 50 p.p.m. for 4 hours before planting. Use 1 tablespoon in 5 gal. water = 50 p.p.m.
9.3oz. in 100 gal. water = 100 p.p.m.
Manufacturer: Chas. Pfizer & Co., Inc.

Trade name: AGRI-MYCIN 500
Active ingredients: Streptomycin, terramycin, basic copper
Uses: For bacterial spot, early blight, late blight, septoria leaf spot, anthracnose, leaf mold and cercospora of tomato.
Manufacturer: Chas. Pfizer & Co., Inc.

Trade name: AUAGREEN
Active ingredients: Malachite green, auramine, and crystal violet
Uses: As a powder for the control of turf or lawn brown patch, and as a dye
Recommendations: Apply to the grass at the rate of 1/2 oz. per 1,000 sq. ft.
Manufacturer: Mallinckrodt Chemical Works

Trade name: BROMOFUME 85
Active ingredients: Ethylene dibromide 83%
Uses: As a soil fumigant to control nematodes and certain other soil pests
Manufacturer: American Potash Chemical Corp.

Trade name: CADMINATE
Active ingredients: Cadmium Succinate 60%
Uses: As a spray to control dollar spot, copper spot, red thread on turf and lawns

Recommendations: One-half ounce once a month protects 1,000 square feet; 1/2 to 1 oz. doses two or three times at 5 to 7-day intervals will quickly cure badly damaged areas

Manufacturer: Mallinckrodt Chemical Works

Trade name: CALO-CLOR

Active ingredients: Mercurous and mercuric chloride mixture, contains 73% metallic mercury equivalent

Uses: As a spray or dry treatment for control of turf diseases

Recommendations: Recommended for control of brown patch and snowmold

Manufacturer: Mallinckrodt Chemical Works

Trade name: CALOCURE

Active ingredients: Mercurous and mercuric chloride mixture, contains 36.5% metallic mercury equivalent

Uses: As a spray or dry treatment for control of turf diseases

Recommendations: Recommended for control of brown patch.

Manufacturer: Mallinckrodt Chemical Works

Trade name: CALOGRFEN

Active ingredients: Mercurous chloride, containing 76.5% metallic mercury equivalent

Uses: As a spray or dry treatment for control of turf diseases

Recommendations: Recommended for control of dollar spot and brown patch. Also used as a seed treatment.

Manufacturer: Mallinckrodt Chemical Works

CAPTAN

A common or "coined" name for the fungicidal chemical N-(trichloromethylthio)-4-cyclohexene-1, 2-dicarboximide

Description: Cream-colored, wettable powder

Uses: An excellent fungicide with low toxicity to animals and humans.

Recommendations: This fungicide is most commonly used in the 50% wettable form at a dosage of 2 lb. per 100 gal. water. This is equivalent to 8 level tbsp. to 5 gal. This material is also used as a dust (about 7-8%) or as a soil drench. Some of the diseases controlled by captan are apple-scab, Brock's fruit spot, sooty blotch and flyspeck; carrot-foilage blights, cherry-brown rot and leaf spot; cucurbits-angular leaf spot, anthracnose and downy mildew; peach-brown rot; potato-early and late blights; rose-black spot; strawberry-fruit rot; tomato-anthracnose, early blight, gray leaf spot, late blight.

Drenches containing captan are used for control of damping-off of seedlings and cuttings. Dipping of corms, tubers and similar parts has resulted in control of storage rots and similar diseases. captan is used widely as a seed protectant.

Compatibility: Captan can be mixed safely with DDT, lead arsenate, DE, DDD, Parathion, tetraethylpyrophosphate, chlordane, Toxaphene, Aramite, malathion, Systox, sulfurs, etc. It should not be mixed with strongly alkaline materials such as lime or lime sulfur. It should not be mixed with oil or applied within 10 days of an oil emulsion spray.

Commercial products containing captan as the main active ingredient are: Orthocide 50 Wettable, Captan 50-W, Stauffer Captan 75-W, Orthocide 75, Acme Garden Fungicide, Orthocide Garden Fungicide and Captan 7.5 Dust. A number of products contain Captan in combination with other fungicides or with insecticides.

Trade name: CAPTAN 50-W

Active ingredient: Captan 50%

Description: Cream-colored, wettable powder

Uses: A general purpose fungicide for control of diseases of fruit crops, vegetables and ornamentals. Also used for potato seed-piece treatment.

Recommendations: (See Captan.)

Manufacturer: Stauffer Chemical Co.

Trade name: CAPTAN 75

Active ingredient: Captan 75%

Use: Seed treatment

Manufacturer: Stauffer Chemical Co.

Trade name: CARBAMATE

Active ingredient: Ferric dimethyl dithiocarbamate 76.0%

Recommendations: For the control of scab, rust, black rot and bitter rot on apples. (See ferbam.)

Manufacturer: Niagara Chemical Div.

Trade name: CHIPMAN BASIC COPPER FUNGICIDE

Active ingredients: Metallic copper equivalent 53%

Description: Soluble powder of neutral and chemically stable copper sulfate

Uses: For control of many diseases of vegetables and fruits. Applied as a dust or spray.

Recommendations: As a spray on cucumbers and melons - 2 lb. per 100 gal.

As a spray on vegetables use 4 lb. per 100 gal. Dust on potatoes and tomatoes $6\frac{1}{2}$ or 7% copper dust. Dust on cucumbers and melons 5% to 6%.

Repeat at 7 to 10-day intervals.

Compatibility: Generally safe to combine with insecticides

Manufacturer: Chipman Chemical Co., Inc.

Trade name: CHIPMAN COPPER HYDRO BORDO

Active ingredients: Metallic copper equivalent, 13%

Description: Soluble powder

Uses: A general purpose spray for diseases of vegetables and fruit crops

Recommendations: Grape black rot - use 12-16 lb. per 100 gal. water.

Blights of potato and tomato - use 10-20 lb. per 100 gal. water. For small amounts use 1 tablespoonful per gal. for each 2 lb. per 100 gal.

Compatibility: Safe to mix with sulfur, pyrethrum, rotenone, nicotine and arsenicals.

Manufacturer: Chipman Chemical Co., Inc.

Trade name: CHIPMAN FUNGICIDE DUST

Active ingredients: Metallic copper equivalent, 14%

Description: A neutral copper dust

Uses: For control of fungus diseases of broccoli, beans, cucumbers, melons, squash, etc.

Recommendations: 20-60 lb. per acre.

Manufacturer: Chipman Chemical Co., Inc.

Trade name: CHIPMAN WETTABLE SULFUR

Active ingredients: Sulfur 98.50%

Uses: As a spray or dust to control: Apples-scab; peaches, apricots, cherries, pears and plums-brown rot, leaf spot, red spider, scab; grapes, strawberries-powdery mildew, red spider; beans and peas-powdery mildew; roses, perennials and shrubs-black spot, powdery mildew, rust, brown canker and like fungus diseases.

Recommendations: For apples - use 4 to 8 lb. per 100 gal. water on petal fall and subsequent sprays. For all others listed above use 4 to 6 lb. per 100 gal. of water.

Manufacturer: Chipman Chemical Company, Inc.

Trade name: C.O.C.S.

Active ingredients: Copper oxychloride sulfate, 55% metallic copper equivalent

Description: Insoluble copper compound with the copper in the form of basic sulfates and chlorides

Recommendations: For cucumbers and melons-downy mildew and other diseases use 2 lb. per 100 gal.; potato and tomato foliage blights and other diseases, use 3-4 lb. per 100 gal.; sour cherry leaf spot and brown rot, use $1\frac{1}{2}$ lb. lime per 100 gal.

Compatibility: Safe with sulfur, lead arsenate, calcium arsenate, rotenone, nicotine, etc.

Manufacturer: Niagara Chemical Div.

Trade name: C.O.C.S. BHC 1 DUST

Active ingredients: Copper expressed as metallic 5.00%, gamma isomer of benzene hexachloride 1.00%, other isomers of benzene hexachloride 5.55%

Uses: As a dust for the control of downy mildew on onions and early and late blights on tomatoes.

Recommendations: On onions, make first application when needed for downy mildew control, at the rate of 21 to 31 pounds per acre, depending upon the size of the plants, Repeat as required to maintain effective control. On tomatoes, make the first application when needed for blight control, at the rate of 20 to 35 lb. per acre, depending upon the size of the plants. Repeat as often as necessary to maintain effective control. Do not apply on tomatoes after blossoms fall.

Manufacturer: Niagara Chemical Div.

Trade name: C.O.C.S. 6 DDD 10 DUST

Active ingredients: Copper expressed as metallic 6.00%, DDD 10.00%

Uses: As a dust on tomatoes for the combined control of early and late blights, septoria leaf-spot and certain insects

Recommendations: Apply soon after the plants become established in the field and repeat at 7 to 10-day intervals as needed throughout the season. The usual rate of application is from 15 to 41 lb. per acre depending upon the size of the plants. For the control of tomato late blight on maturing plants use approximately 51 lb. per acre.

Manufacturer: Niagara Chemical Div.

Trade name: C.O.C.S. 6 TOXAKIL 20 DUST

Active ingredients: Copper expressed as metallic 6.00%, Toxaphene 20.00%

Uses: As a dust for the control of early and late blights on tomatoes, and the control of leaf and stem blights, bacterial spot on peppers and certain insects.

Recommendations: Begin applying when the first fruit are set and continue at 7 to 10-day intervals as required. Under severe conditions more frequent and thorough applications may be required. Do not apply within 30 days of harvest.

Manufacturer: Niagara Chemical Div.

Trade name: C.O.C.S. 7 CHLOR KIL 5 DUST

Active ingredients: Copper expressed as metallic 7.00%, chlordane 5.00%

Uses: As a dust for the control of downy mildew and certain insects on cantaloupe

Recommendations: Apply at 7 to 10-day intervals at the rate of 20 to 30 lb. per acre, beginning when insects appear or disease threatens. Do not apply within 30 days of harvest.

Manufacturer: Niagara Chemical Div.

Trade name: C.O.C.S. DUST NO. 7

Active ingredients: Copper Oxychloride Sulphate 12.50%

Uses: As a dust on citrus and vegetable crop diseases that are controlled with a copper fungicide dust.

Recommendations: Make the first application before the disease appears and repeat applications at weekly intervals as long as necessary. When dusting, cover all parts of the plant with a thin film of dust.

Manufacturer: Niagara Chemical Div.

Trade name: C.O.C.S. 7 PHOS KIL 2 DUST

Active ingredients: Copper expressed as metallic equivalent, 7%

Uses: A dust on cantaloupe for downy mildew and certain insects

Recommendations: Apply at 7 to 10-day intervals at the rate of 20 to 30 lb. per acre beginning when disease threatens. Make no applications later than 21 days before harvest.

Manufacturer: Niagara Chemical Div.

Trade name: COP-O-ZINC

Active ingredients: 48% copper, 4% zinc

Uses: A spray or dust for vegetables, large or small fruits

Recommendations: Use 1½ to 5 lb. per 100 gal. of water, depending on crop and 7 to 13½ lb. of actual chemical per acre as a dust, depending on crop.

Manufacturer: Tennessee Corp.

Trade name: COPFER-A COMPOUND

Active ingredients: Tetra copper calcium oxychloride (metallic copper equivalent, 45%)

Description: Blue powder readily dispersible in water

Uses: For control of various fungus diseases of fruits, vegetables and walnuts (Primarily used as a spray but can be used as a dust.)

Compatibility: Safe to mix with most insecticides except nicotine; do not use lime as a diluent, for dusts.

Manufacturer: DuPont

Trade name: CORCMATE

Active ingredients: 76% Ferbam

Description: Wettable powder

Uses: For control of scab, cedar rust, black rot, Brooks' spot, apple blotch and bitter rot on apples; brown rot and leaf spot on cherries; and leaf curl on peaches (See ferbam.)

Manufacturer: Corona Chemical Div.

Trade name: CORONA COPPERCARB NO. 20

Active ingredients: Metallic copper equivalent, 20.0%

Uses: For treating wheat and sorghum seed for smut before seeding

Recommendations: Use three ounces Corona Coppercarb No. 20 per bushel of sorghum and 2 to 3 ounces per bushel of wheat.

Manufacturer: Corona Chemical Div.

Trade name: CORONA MICRONIZED DUSTING SULFUR
Active ingredients: 90% sulfur (4 to 5 microns)
Description: Wettable powder
Uses: For control of scab and powdery mildew on apples and brown rot on peaches
Recommendations: Use 1 to 2½ lb. per tree according to size
Manufacturer: Corona Chemical Div.

Trade name: CORONA MICRONIZED WETTABLE SULFUR
Active ingredients: 95% sulfur
Uses: For control of apple scab, powdery mildew and peach brown rot and scab
Recommendations: For peach brown rot and scab use 3 to 4 lb. in 100 gals. water at shuck fall, 2 weeks and 4 weeks after and in any additional applications.
Manufacturer: Corona Chemical Div.

Trade name: CORONA MONOCALCIUM ARSEFINITE
Active ingredients: Monocalcium meta-arsenite - not less than 80%
Uses: As a spray for control of peach canker, and brown rot
Recommendations: Check manufacturers label
Manufacturer: Corona Chemical Div.

Trade name: CORONA PHYGON-XL MICRONIZED
Active ingredients: 50% Dichlone (4 to 5 microns)
Description: Wettable powder
Uses: For control of scab on apples; brown rot, blossom blight and leaf curl on peaches and tomato blights. See dichlone.
Recommendations: Use 1/4 to 1 lb. per 100 gal. depending on crop and local recommendations.
Manufacturer: Corona Chemical Div.

Trade name: CORO-SDD
Active ingredients: Sodium Dimethyldithiocarbamate 40%
Uses: As a liquid fungicide. On apples for scab and cedar apple rust control, use 1½ pt. of Coro-SDD plus 1/2 lb. of ferric sulfate in pre-pink, pink, calyx, and first cover depending on the intensity of the scab infection. In the late cover sprays use 3/4 pt. of Coro-SDD plus 1/4 lb. of ferric sulfate. On grapes for black rot control, use 2 pt. of Coro-SDD plus 3/4 lb. of ferric sulfate just before bloom, immediately after bloom, and 2 weeks after bloom. On raspberries for control of anthracnose, use 1-1/2 pt. of Coro-SDD plus 1/2 lb. of ferric sulfate 7 to 10 days before blossoms open, just before bloom, and as soon as petals have fallen.
Manufacturer: Corona Chemical Div.

Trade name: CRAG BRAND MYLONE 85 W
Active ingredients: 3,5-Dimethyltetrahydro-1,3,5,2H thiadiazine-2-thione 85%
Uses: As a soil fumigant to control nematodes and certain other pests
Recommendations: See manufacturers label
Manufacturer: Carbide and Carbon Chemicals Co.

Trade name: CRAG GLYODIN SOLUTION
Active ingredients: Glyodin 92-heptadecyl glyoxalidine acetate 34%.
Uses: As a spray, a protective fungicide for the control of scab, sooty blotch, Brooks' spot, bitter rot, black rot and fly speck of apples.

Leaf spot of cherries, brown rot of peaches and certain fungus diseases of ornamentals in dilute or concentrate sprays.

Recommendations: See manufacturers label

Manufacturer: Carbide and Carbon Chemicals Co.

Trade name: CROWN WETTABLE SULFUR

Active ingredients: Sulfur - not less than 95%

Uses: For the control of brown rot on peaches in any locality, and for all fruits in warm climates

Manufacturer: Stauffer Chemical Co.

Trade name: CUPROCID 6%

Active ingredients: Yellow Cuprous Oxide 6.0%

Uses: As a dust to control downy mildew and black spot of cabbage, broccoli and cauliflower, early blight, late blight, gray leaf spot of tomatoes; early blight and late blight of potatoes, downy mildew of cantaloupes, cucumbers, squash and watermelons; leaf blight of carrots, downy mildew of lettuce, leaf blight of onions

Recommendations: Apply at the rate of 25 to 35 lb. per acre at 5 to 7 days when first signs of disease are reported. Continue applications at regular intervals until disease is under control.

Manufacturer: Port Fertilizer & Chemical Co.

Trade name: D-D

Active ingredients: 1:3-dichloropropene and 1:3-dichloropropane

Description: Black volatile liquid

Uses: A soil fumigant for control of nematodes and certain soil-borne insects

Recommendations: For broadcast treatment, apply 6-8 in. deep in rows 12 in. apart. Normal rate is 20 gal. per acre. Row treatment - apply D-D at 6-8 in. depth. If rows are 30 in. apart and only one strip is treated, about 12 gal. per acre should be used. If two strips are treated (12 in. apart) in the row use 16 gal. per acre. If rows are 72 in. apart and only 1 strip is treated, 4 gal. will be required for an acre. To treat small areas - make furrows 12 in. apart and 6-8 in. deep and apply 1 pt. per 150-175 ft. of furrow. Cover furrow as soon as 100 ft are treated. Do not apply if soil temperature is below 40°F or over 80°F.

Manufacturer: Shell Chemical Corp.

DICHLONE

Common or "coined" name for the fungicidal chemical 2, 3-dichloro-1, 4-naphthoquinone

Description: Yellow, wettable powder, with low toxicity to higher plants and animals

Uses: As a spray for control of various fungus diseases such as cedar rust, black rot and bitter rot of apple; brown rot of stone fruits; petal blight of azalea and black spot of roses. It is widely used as a seed treatment of various seeds. It is also useful as a drench for control of damping-off and similar diseases caused by soil-borne fungi. This material also shows promise for control of blue-green algae in ponds and lakes.

Recommendations: The 50% wettable form is usually used at the rate of 1/4 to 1/2 lb. in 100 gal. water. Dust formulations usually consist of from 1-4% active material and are applied at about 30-40 lb. per acre.

Compatibility: Safe to mix with most insecticides such as DDT, methoxychlor, chlordane, lindane, aldrin, dieldrin, parathion, toxaphene, lead arsenate, etc. Also safe with ferbam, sulfur, thiram, zineb, copper, glyoxalidines and captan.

Should not be mixed with oils or dinitro compounds. There is some question as to compatibility with Bordeaux mixture, lime sulfur, organic mercuries, quaternary ammonium compounds, calcium arsenate and nicotine.

The main commercial products based on dichlone are: PHYGON-XL, PHYGON-XL-N, PHYGON DUST, PHYGON SEED PROTECTANT, PHYGON NAUGETS, PHYGON-SULFUR DUST, PHYGON WETTABLE POWDER, PHYGON-XL-DDT, CORONA PHYGON-XL and NIAGARA PHYGON.

Trade name: DITHANE D-14

Active ingredients: Disodium ethylene bisdithiocarbamate 19%

Uses: For control of various diseases of many crops. Always mixed for spraying with either zinc sulfate, ferric sulfate or manganese sulfate.

When mixed with zinc sulfate, zineb is produced. When mixed with manganese sulfate, maneb is produced and with ferric sulfate, ferric ethylene bisdithiocarbamate is produced.

Recommendations: See zineb and maneb. The ferric compound is used on apples.

Compatibility: Dithane D-14 is safe to mix with most insecticides, Aramite, oils, dinitro compounds, coppers, sulfurs, etc.

Manufacturer: Rohm and Haas Co.

Trade name: DITHANE M-22

Active ingredients: Manganese ethylene bisdithiocarbamate 70% (metallic manganese equivalent, 14.5%)

Description: Wettable powder

Uses: As a spray or dust for control of various diseases of vegetables and certain other plants. See maneb.

Recommendations: Use $1\frac{1}{2}$ - 2 lb. per 100 gal.

Manufacturer: Rohm and Haas Co.

Trade name: DITHANE Z-78

Active ingredients: Zinc ethylene bisdithiocarbamate 65%

Uses: As a spray for control of diseases of many plants. (See zineb.)

Recommendations: $1\frac{1}{2}$ to 2 lb. per 100 gal. of water or 1 level tbsp. per gal.

Manufacturer: Rohm & Haas Co.

Trade name: DITHANE DUST

Active ingredients: 6% Dithane Z-78 or 3.9% zineb

Uses: See Zineb.

Manufacturer: Thompson-Hayward Chemical Co.

Trade name: DITHANE 7% DUST

Active ingredients: Zinc ethylene bisdithiocarbamate (zineb) 4.55%

Uses: On onions, to aid in the control of purple blotch.

Recommendations: Apply to bulb or set onions only at the rate of 25 to 30 lb. per acre. In areas where purple blotch is known to occur, make applications before disease appears and repeat every 5 to 6 days until onions are mature.

Manufacturer: Chipman Chemical Co., Inc.

Trade name: DORLONE
Active ingredients: Mixed Dichloropropenes 75.2%, Ethylene Dibromide 18.7%.
Uses: As a soil fumigant
Recommendations: Dorlone is intended for preplanting applications in soil to control nematodes, such as rootknot, stilet, meadow or lesion and certain other parasitic nematodes. For best control, annual treatment is usually required.
Manufacturer: The Dow Chemical Co.

Trade name: DOWFUME MC-2
Active ingredients: Methyl bromide 98%, chloropicrin 2%
Description: A colorless, highly volatile, poisonous liquid, toxic to living plants and other life
Uses: For fumigation of seedbeds, local areas, potting soil, etc. (See methyl bromide.)
Recommendations: For control of nematodes, insects and weed seeds use 1 lb. per 100 sq. ft. and aerate 48 hr. before planting. For control of fungi and for treatment of manure, compost and potting soil use 2 lb. per 100 sq. ft. and aerate 72 hr. or longer before planting. Proper treatment will kill underground parts of Johnson-grass and most other weeds. It is necessary to inject MC-2 under a plastic cover which is sealed over the area to be treated.
Manufacturer: The Dow Chemical Co.

Trade name: DOWFUME W-85
Active ingredients: Ethylene Dibromide 83%
Description: Colorless to pale yellow, volatile liquid
Uses: A soil fumigant for field scale use in control of root-knot nematodes and many other nematodes, wireworms, and other soil borne organisms
Recommendations: For overall application so as to cover entire piece of land use $4\frac{1}{2}$ gal. per acre. For nursery crops and seed beds use 6 gal. per acre. For row treatment use a minimum of 1-1/3 gal. per acre depending on row width. Best results are obtained when the soil has a high moisture content, is free of clods, lumps of organic matter, etc., and is at a temperature of 50°F. or higher. Apply material at a depth of 6-8 in. and seal in fumigant by dragging or rolling. If temperature is above 50°F. planting operations can begin in 10-14 days.
Manufacturer: The Dow Chemical Co.

Trade name: DuPONT FERMATE
Active ingredients: Ferbam
Uses: Many rose and flower diseases; grape black rot
Recommendations: (See ferbam.)
Manufacturer: DuPont

Trade name: DU PONT FLORAL DUST
Active ingredients: Methoxychlor, ferbam, sulfur and rotenone
Uses: Controls septoria leafspot of chrysanthemums and many other flower diseases as well as certain insects
Manufacturer: DuPont

Trade name: DU PONT FRUIT TREE SPRAY
Active ingredients: Methoxychlor, ferbam, sulfur
Uses: For control of diseases of apples, peaches, cherries, plums, quince and strawberry and certain insects
Manufacturer: DuPont

Trade name: DU PONT FUNGICIDE-A

Active ingredients: Zineb

Uses: Many diseases of vegetables, flowers, ornamentals. (See zineb.)

Manufacturer: DuPont

Trade name: DU PONT ROSE INSECTICIDE AND FUNGICIDE

Active ingredients: Methoxychlor, lindane, ferbam, sulfur and miticide

Uses: Controls many rose pests. Used as dust or spray.

Manufacturer: DuPont

Trade name: DU PONT ROSE SPRAY-DUSTER

Active ingredients: Methoxychlor, lindane, rotenone, zineb and a mildewcide

Uses: An aerosol for control of blackspot, powdery mildew and certain insects

Manufacturer: DuPont

Trade name: DUPONT TOMATO DUST

Active ingredients: Methoxychlor and fixed copper

Uses: As spray or dust for control of early and late blight, septoria leaf spot and certain insects

Recommendations: Apply every 7 to 10 days and after heavy rains; 2 lb. in 10 gal. of water.

Manufacturer: DuPont

Trade name: DUPONT VEGETABLE GARDEN DUST

Active ingredients: Methoxychlor, zineb and rotenone

Uses: Many diseases of vegetables and certain chewing and sucking insects. Controls early and late blight of tomatoes and potatoes.

Manufacturer: DuPont

Trade name: ELECTRIC DUSTING SULFUR

Active ingredients: Sulfur 99.5%

Description: Yellow powder

Uses: For airplane application to control various fungus diseases

Manufacturer: Stauffer Chemical Co.

Trade name: ELGETOL

Active ingredient: Sodium dinitro ortho cresolate 34%

Description: Amber liquid

Uses: As a dormant spray for control of certain diseases and insects

Recommendations: For asparagus rust, use 1 gal. in 100 gal. of water and apply in the late fall or early spring at the rate of 300 to 400 gal. per acre. For peach leaf curl, use $1\frac{1}{2}$ qt. per 100 gal. as a dormant spray. For peony leaf blotch and stem spot, spray soil around dormant plants in the spring with a 1% solution at the rate of 1 gal. per each 200 sq. ft. For raspberry anthracnose, use 2 qt. per 100 gal. and apply just before buds open at the rate of 150 gal. per acre.

NOTE: ELGETOL may be used as a general disinfecting solution for tree cankers, mushroom houses, etc., at the rate of one part in 100 parts of water.

Manufacturer: Standard Agriculture Chemicals, Inc.

Trade name: ELGETOL 30

Active ingredients: Sodium dinitro ortho cresylate 30%

Uses: As a dormant spray for fruit trees and ornamentals containing no oils

Manufacturer: Standard Agriculture Chemicals, Inc.

Trade name: ELGFTOL 318

Active ingredients: Dinitro-sec-Butylphenol Triethanolamine salt 36%

Uses: As a dormant insecticide and fungicide

Manufacturer: Standard Agriculture Chemicals, Inc.

Trade name: END-O-PEST (Rose Dust)

Active ingredients: Captan, Karathane and insecticides

Uses: As a dust for certain insects and black spot, powdery mildew, Botrytis blossom blight and many other foliage diseases that occasionally attack roses

Manufacturer: Swift & Co.

Trade name: END-O-PEST (Tree Spray)

Active ingredients: 2 (p. tert butyl phenoxy) isopropyl, 2 chloroethyl sulphite (2) Dichloro diphenyl dichloroethane 5.0%, methoxychlor technical 10.0%, ferbam 10.0%, sulfur 93% passing No. 325 U.S.S. sieve 30.0%.

Uses: For most insects and diseases that appear on: Apples - scab, cedar-apple rusts, black rot (fruit and leaf spots) Brooks spot, apple blotch, bitter rot, sooty blotch, flyspeck and certain insects and mites, peaches - brown rot, scab, leaf curl and certain insects; cherry, plum, brambles - these plantings contain many of the insects and diseases that appear on apple and peach trees. In addition to the above listings, End-o-Pest Tree Spray will effectively control certain other insects and anthracnose on raspberries.

Manufacturer: Swift & Co.

Trade name: END-O-PEST (Garden Dust)

Active ingredients: Rotenone 1.00%, other cube resins 1.50%, Pyrethrins .10%, metallic zinc (Zinc ethylene bisdithiocarbamate) 3.25%, sulfur (not less than 93% passing no. 325 U.S.S. sieve) 10.00%

Uses: As a dust for certain insects and fungus diseases, such as downy mildew on fruits and vegetables, anthracnose, black spot on roses and early and late blights on tomatoes and potatoes

Manufacturer: Swift & Co.

FERBAM

Common or "coined" name for the fungicidal chemical ferric dimethyldithiocarbamate.

Description: Black, wettable powder with low toxicity to plants and animals

Uses: A general fungicide giving control of many diseases of various plants. Especially effective in control of rust diseases. Used as a spray or dust.

Recommendations: Usually used at the rate of $1\frac{1}{2}$ -2 lb. per 100 gal. water ($4\frac{1}{2}$ level tsp. per gal.). Dust preparations usually consist of 10-15% ferbam. When mixed with seedbed soil at the rate of 6-12 oz. per 100 sq. ft. this material will give control of damping-off and other diseases carried in the soil. Some of the diseases controlled by ferbam are: Apple - cedar rust, scab, black rot, etc. Azalea - petal blight; cabbage - downy mildew; camellia - petal blight; carnation - alternaria blight and rust; cherry - leaf spots; cyclamen - botrytis blight; geranium - leaf spots; grape - black rot; pear - scab, leaf blight, raspberry - anthracnose, spur blight; snapdragon - rust; tulip - botrytis blight.

NOTE: A dark residue usually is deposited by sprays containing ferbam. There have been reports of injury to seedlings from ferbam dust or drench.

Compatibility: Safe to mix with arsenicals, DDT, DDD, methoxychlor, nicotine, organic phosphorous compounds, pyrethrum, summer oils and most other insecticides. Combinations with wettable sulfur or sulfur paste are especially effective in controlling plant diseases. Mixtures with copper or lime sulfur are not recommended. Some trade products having ferbam as the main active ingredient are FERBAM 76, FERMATE, CARBAMATE and FLORAL DUST.

Trade name: FERMATE

Active ingredients: Ferric dimethyldithiocarbamate 76%

Description: Black, wettable powder for use as a spray or dust

Uses: A general purpose spray for control of various fungus diseases of fruits, vegetables and ornamentals. (See ferbam.)

Recommendations: As a spray use $1\frac{1}{2}$ - 3 lb. per 100 gal. of water and for dusting use from 5-15%.

Compatibility: Safe to mix with most insecticides and summer oil sprays.

Manufacturer: DuPont

Trade name: FERBAM 76

Active ingredients: Ferbam 76%

Uses: As a spray or dust to control: Pears - scab, sooty blotch, leaf blight and fruit spot; peaches - brown rot, leaf curl; apples - cedar rust; grapes - black rot; tomatoes - leaf mold; cabbage - downy mildew; lettuce - damping off; ornamentals - rust, black spot of roses, septoria leaf spot of chrysanthemums, snapdragon rust, alternaria blight and rust of carnations, botrytis blight of cyclamen, tulip fire of tulips, and bacterial leaf spot of geraniums.

Recommendations: Spray may be washed into the spray tank through a deep screen or made into a thin paste by adding water and pouring into the spray tank while filling. Dust - may be mixed with any suitable diluent such as talc or pyrophyllite.

Manufacturer: Chipman-Chemical Co., Inc.

Trade name: FLORAL DUST

Active ingredients: Methoxychlor technical 5.00%, Ferbam (Ferric Dimethyldithiocarbamate) in FERMATE Fungicide 7.60%, Malathion 4.00%.

Uses: Controls diseases of: Carnations - leaf spot, alternaria and septoria blights, rust; chrysanthemums - septoria leaf spot, rust, powdery mildew; cyclamen - botrytis rot, leaf spot; dahlias - leaf spot, botrytis blight, powdery mildew; geraniums - bacterial leaf spot; roses - black spot, powdery mildew, rust; snapdragons - rust, leaf spot anthracnose; tulips - botrytis blight (tulip fire); asters, columbine, hollyhock, iris - leaf spots, rust; delphiniums, hydrangea, phlox, verbena - leaf spots, rust, powdery mildew; lilacs, sweet peas, zinnias - leaf spots, powdery mildew and certain insects on the above listed plants.

Manufacturer: Safe-Way Farm Products Co.

Trade name: FUMI-SOIL

Uses: As a soil fumigant

Recommendations: Bury Fumi-Soil capsules, 4 to 5 in. deep and 15 in. apart in your seedbed 2 weeks before planting. For control of nematodes and certain other pests.

Manufacturer: Sherman Laboratories

Trade name: GALLOTOX

Active ingredient: Phenyl Mercuric Ammonium Acetate 7% (Equivalent 4% Mercury)

Uses: Liquid seed disinfectant for wheat, barley, oats, flax and cotton
Manufacturer: Gallowhur Chemical Corp.

Trade name: GALLOTOX 51

Active ingredients: Phenylmercury Acetate 5%, Ethylmercury Acetate 1%

Uses: Seed disinfectant

Manufacturer: Gallowhur Chemical Corp.

Trade name: GARDEN DOWFUME

Active ingredients: Ethylene Dibromide 41%

Description: Colorless, volatile liquid

Uses: A soil fumigant for application to garden plots or fields for control of most nematodes and certain other soil pests

Recommendations: Use 15 gal. per acre for overall treatment of ordinary fields. Use 20 gal. for nursery crops and seedbeds. When row treatment is desired use at least 6 gal. per acre. Apply to warm soil (50°F. or over) that is high in moisture and free of clods and large root masses. Drag surface immediately after treatment. If temperature remains above 50°F. planting operations can begin in 10-14 days.

Manufacturer: The Dow Chemical Co.

Trade name: GREENLIGHT (Rose Dust)

Active ingredients: Malathion 4%, dichloro diphenyl trichloroethane (DDT) 5%, Captan 5%, Sulfur (Fineness 93% through 325 mesh) 40%

Uses: For control of certain insects and such diseases as black spot, powdery mildew, leaf spot and rust on roses

Manufacturer: Klauss and White

Trade name: GREENLIGHT (azalea, camellia, gardenia dust or spray)

Active ingredients: Dichloro diphenyl trichloroethane (DDT) 5%, malathion 5%, dichlone 4% sulfur (fineness 93% thru 325 mesh) 40%

Uses: Controls several insects and mites and also azalea flower or petal blight. Also controls such diseases as leaf spot, black spot, rust, powdery mildew on roses, chrysanthemums, geraniums, hollyhocks, hydrangeas, marigolds, and crape myrtle.

Manufacturer: Klauss & White

Trade name: GREEN LIGHT (rose, flower and ornamental spray)

Active ingredients: Captan 36%, dinitro (1-methyl hepty) Phenyl crotonate 3.6% as other nitro phenols and derivatives, chiefly dinitro (1-methyl hepty) phenyl .4%

Uses: For roses - to control black spot or powdery mildew, mix 1-1/3 tbsp. in 1 gal. of water, or entire package in 12 gal. water and spray roses thoroughly as soon as diseases first appear. Shake or stir mixture thoroughly before and during spraying operation. Direct spray so that underside and top side of leaves and stems are covered thoroughly. Apply only when temperature is below 90°F. Repeat at 7 to 10-day intervals until disease is controlled.

For flowers - chrysanthemum, calendula, delphinium, daisy, African violet, snapdragon, aster, larkspur, begonia, belladonna, dahlia - for powdery mildew and certain leaf spot disease - treat infested plants with same mixture and in same manner as recommended above for roses.

For ornamental shrubs: Such as euonymus and ornamental hydrangea infested with powdery mildew, use 2 tbsp. in 1 gal. of water or entire package in 8 gal. of water. Apply when mildew first appears and repeat at 7 to 10-day intervals as necessary.

For cuttings and seedbeds: Damping-off disease on azalea cuttings and similar shrubs: dip cuttings in 3 tbsp. per 1 gal. of water before

planting. For seedbeds such as tomatoes and flower seed, drench at rate of 12 gal. (entire 5 oz. package in 12 gal. of water) per 1,000 sq. ft. Apply as soon as seed germinates and repeat at weekly intervals if application at rate of 12 gal. (entire 5 oz. package in 12 gal. of water) per 1,000 sq. feet. Apply as soon as seed germinates and repeat at weekly intervals if needed.

For St. Augustine grass (brown patch). As soon as disease appears, treat infested areas with 3 tbsp. of Green Light Fungicide Spray in 1 gal. of water or entire package in 6 gal. water. Use enough of the mixture to get the grass roots wet with it or approximately 1 gal. per 100 sq. ft. Repeat in 7 to 10 days as needed. This fungicide spray may be used with an insecticide such as Malathion Emulsifiable Concentrate.

Manufacturer: Klauss & White

Trade name: KARATHANE

Active ingredients: Dinitro (1-methyl heptyl) phenyl crotonate 0.9%, other nitro phenols and derivatives, chiefly dinitro (1-methyl heptyl) phenol 0.1%

Uses: As a dust for control of powdery mildew on cantaloupe, cucumber and squash. Also used for control of powdery mildew on ornamentals.

Recommendations: Apply at the rate of 20 to 50 lb. per acre depending on size of plants. Apply when air is calm. May be applied before and during harvest season.

Manufacturer: Rohm & Haas Co.

Trade name: KARATHANE 1%

Active ingredients: Phenyl Crotonate .90%, Phenol .10%

Uses: As a dust to control powdery mildew on cantaloupes, cucumbers, watermelon and squash. Also powdery mildew on ornamentals and flowers.

Recommendations: Apply at the rate of 25 to 35 lb. per acre at 5 to 7 day intervals. First application should be made early in the growing season and continued until the disease is under control.

Manufacturer: Port Fertilizer & Chemical Co.

Trade name: KARATHANE WD

Active ingredients: Dinitro (1-methyl heptyl) phenyl crotonate 22.5%, and other nitro phenols 2.5%

Description: Brown wettable powder

Uses: As a spray or dust primarily for control of powdery mildew on apples, cantaloupes, cucumbers, squash, watermelons, roses and other ornamentals

Recommendations: For apples - on Jonathan and Rome - use 3/4 to 1 lb. per 100 gal.; on other varieties use 1/2 to 3/4 lb. Apply in pre-pink, pink, calyx and cover sprays and in post harvest sprays, if necessary. Avoid calyx sprays of Golden Delicious. As a dust use 3/4 to 1%. For cantaloupes, cucumbers, squash and watermelons - use 6 oz. per 100 gal. plus spreader. Use No. 2 1/2 nozzle and 100-300 lb. pressure. Begin when mildew first appears and repeat at 5-7 day intervals. Do not apply when temperature is over 90°F. For roses and other ornamentals, use 2 level tsp. in 3 gal. water plus a spreader. As a dust use 1/2 to 1%. Apply at 7-10 day intervals. Do not use when temperature is over 90°F.

Compatibility: Safe to mix with zineb, DDT, rotenone, Aramite, Rhothane, Methoxychlor. Do not use with oils or liquid lime sulfur.

Manufacturer: Rohm and Haas Co.

Trade name: KOP-KARB

Active ingredients: Copper carbonate, expressed as metallic copper 20%

Uses: Controls stinking smut or bunt in seed wheat. Used as a seed treatment.

Manufacturer: Thompson-Hayward Chemical Co.

Trade name: KROMAD

Active ingredients: Cadmium Sebacate 5%, Potassium Chromate 5%, Malachite Green 1%, Auramine 0.5%

Uses: As a dust or spray to prevent and control certain turf or lawn diseases such as brown patch, dollar spot, copper spot, red thread (pink patch), and leaf blights, such as incited by Helminthosporium and Curvularia

Recommendations: Under normal weather conditions for the prevention of disease, Kromad is effective when applied every 5 to 7 days at 2 oz. per 1,000 sq. ft. During weather favorable for disease, such as high temperatures and humidity, the dosage and frequency of application may be increased as necessary for control.

Manufacturer: Mallinckrodt Chemical Works

Trade name: KRENITE-26

Active ingredients: Sodium salt of dinitro ortho cresol 19%

Uses: As a spray to control peach leaf curl, raspberry anthracnose and spur blight, apple scab, cherry leaf spot and asparagus rust

Recommendations: Spray peaches when dormant with two quarts in water to make 100 gal. water. Spray raspberries in green-tip stage (1/4 in. of green showing) with one gal. in water to make 100 gal. of water. See label for apple, cherry and asparagus.

Manufacturer: DuPont

Trade name: LARVACIDE

Active ingredient: Chlorpicrin

Description: Clear, volatile liquid with tear-gas warning characteristics

Uses: This material is used widely as a soil fumigant in greenhouses, nurseries and other high-value soils. Under proper conditions, it will give control of most soil fungi, nematodes, insects and weed seeds. Under gas-tight covers, results comparable to steam can be expected. It is also used as a fumigant for control of disease organisms, insects and rodents in sweet potato storehouses prior to sweet potato storage.

Recommendations: For soil fumigation the usual dosage is about 12 lb. per 1,000 sq. ft., and for sweet potato storehouses about 1/2 lb. per 1,000 cu. ft.

Precautions: Larvacide is a form of tear gas. While safer than non-warning fumigants, it must be used in accordance with instructions.

Manufacturer: Larvacide Products, Inc.

Trade name: LARVICIDE E.D.B.

Active ingredients: Chlorpicrin 93.5%, Ethylene Dibromide 6.5%

Uses: Soil fumigant to control nematodes and certain other pests

Manufacturer: Larvacide Products, Inc.

Trade name: LINDANE CUCUMBER & MELON DUST

Active ingredients: Gamma isomer of benzene hexachloride from lindane 1.5%, copper, as metallic equivalent, 5.0%

Uses: As a dust for control of downy mildew, anthracnose and leaf spot on melons and cucumbers

Recommendations: Begin applications when true leaves are formed and repeat every 5-7 days until blossoms form. Start applications at the rate of 15 lb.

per acre and increase the amount as the plants grow to a maximum of 30-35 lb. per acre. Continue applications after fruit is on the vine to control melon and pickle worm. Repeat application if it rains within 24 hr. after dusting. A light, thorough covering of the leaves is necessary for protection particularly during cool, damp weather. Late applications of this product may result in some reduction in the quality of melons and squash at harvest. Dust on open blooms may affect pollinating insects.
Manufacturer: Olin Mathieson Chemical Co.

Trade name: MAGNETIC SPRAY WETTABLE SULFUR

Active ingredients: Sulfur - not less than 98.5%

Description: Yellow, wettable powder with particles ranging from 10 to 27 microns

Uses: A general purpose sulfur spray for fruits, vegetables and ornamentals

Recommendations: Brown rot of peach, cherry, pear, plum - 4-6 lb; powdery mildew of various plants - 4-6 lb.

Compatibility: Safe to mix with most fungicides and insecticides

Manufacturer: Stauffer Chemical Co.

Trade name: MAGNETIC "70" SULFUR PASTE

Active ingredients: Sulfur - not less than 68%

Description: Yellow, wettable powder

Uses: Primarily for control of apple scab and peach brown rot

Recommendations: For apple scab, use 6-8 lb. per 100 gal. water in pre-blossom and calyx sprays, and 4-6 lb. in cover sprays. For peach brown rot, use 6-8 lb. in early sprays and 4-6 lb. in later sprays.

Compatibility: Safe to mix with captan and most other organic fungicides, copper, lead arsenate and most insecticides. Do not use within 2 weeks of an oil spray.

Manufacturer: Stauffer Chemical Co.

Trade name: MAGNETIC "95"

Active ingredients: Sulfur - not less than 95%

Uses: General orchard dusting or spraying

Manufacturer: Stauffer Chemical Co.

Trade name: MAGNETIC "90"

Active ingredients: Sulfur - not less than 90%

Uses: General orchard dusting

Manufacturer: Stauffer Chemical Co.

MANEB

Common or "coined" name for the fungicidal chemical manganese ethylenebisdithiocarbamate

Description: Dark yellow, wettable powder with low plant and animal toxicity

Uses: Primarily for control of tomato diseases but it is of much value as a general fungicide. Good results have been obtained in control of many diseases of other vegetables, fruits and ornamentals.

Recommendations: The 70% wettable form is generally used at the rate of 1½-2 lb. per 100 gal., and 125-200 gal. are applied per acre. As a dust, it is diluted to 6-8%. Some of the diseases controlled by maneb are:

Carrot, leaf spot; cucumber, downy mildew, anthracnose; gladiolus, botrytis, curculvaria and stemphylium leaf diseases; grape, black rot; onion, downy mildew; potato, early and late blight; spinach - downy mildew; tomato -

early and late blight, anthracnose and leaf spots.

Compatibility: Maneb can be safely mixed with DDT, methoxychlor, DDD, organic phosphorous compounds, sulfur, calcium arsenate, rotenone, pyrethrium, parathion, toxaphene, dieldrin and most miticides. Commercial products containing mane b as the principal fungicidal ingredient are MANZATE AND DITHANE M-22. See NABAM

Trade name: MANEB 4.2%

Active ingredients: Manganese ethlene bisdithiocarbamate 4.2%

Uses: As a dust - (See MANEB 5.6%.)

Manufacturer: Port Fertilizer & Chemical Co.

Trade name: MANEB 5.6% DUST

Active ingredients: Maneb (Manganese ethylene bisdithiocarbamate) 5.6%

Uses: As a dust on potatoes, eggplant, peppers, celery for early and late blight; for tomatoes, early and late blight, anthracnose, gray leaf spot, septoria leaf spot; for carrots, alternaria leaf blight, cercospora leaf spot; for onions, downy mildew, purple blotch, blast.

Recommendations: Apply at the rate of 20 to 30 lb. per acre when the air is calm. Consult local agricultural experts for timing.

Manufacturer: Olin Mathieson Chemical Co.

Trade name: MANEB 5.6%

Active ingredients: Manganese ethylene bisdithiocarbamate 5.6%

Uses: As a dust to control: Potatoes, early blight and late blight; tomatoes, early blight, late blight, gray leaf spot, anthracnose and septoria leaf spot; carrots, leaf blight; onions, purple blotch, blast and downy mildew; spinach, blue mold and white rust.

Recommendations: Should be applied at the rate of 25 to 35 lb. per acre at 5 to 7-day intervals. Begin application early in the growing season and continue until the disease is under control.

Manufacturer: Port Fertilizer & Chemical Co.

Trade name: MANZATE

Active ingredients: Manganese ethylene bisdithiocarbamate 70%

Description: Wettable powder for use as a spray or dust

Uses: A general purpose spray giving control of many diseases of vegetables, fruits and ornamentals. See mane b.

Recommendations: As a spray use $1\frac{1}{2}$ to 2 lb. per 100 gal. of water. As a dust use 6 to 8% diluted with neutral diluent such as pyrophyllite, attaclay, phosphodust, etc.

Compatibility: Safe to mix with most commonly used insecticides

Manufacturer: DuPont

Trade name: M-B-C FUMIGANT

Active ingredients: Methyl Bromide 98%, chloropicrin 2%

Uses: Soil fumigant to control nematodes and certain other soil pests

Manufacturer: American Potash & Chemical Corp.

METHYL BROMIDE

Active ingredients: Methyl bromide 97-100%

Description: A colorless, highly volatile material that is liquid below 43°F. but quickly vaporizes at higher temperatures. This material is highly poisonous to all forms of life.

Uses: For soil fumigation to control nematodes, fungi, bacteria, weed seeds, insects and other organisms.
Commercial products containing methyl bromide are: Dow MC-2, Bromex Soil Fumigant 1, Picride and Pestmaster.

Trade name: "MIKE" SULFUR

Active ingredients: Sulfur 95%

Description: A wettable powder having a particle size under 5 microns

Uses: Primarily for control of fruit diseases

Recommendations: Apple scab - preblossom sprays - use 8 lb. plus 3 lb. lime per 100 gal. For bloom and petal fall applications use 5 lb. plus 3 lb. lime and in later sprays use 4 lb. plus 3 lb. lime. Peach brown rot and scab - use 5-6 lb. per 100 gal. Pear scab and brown rot of plums and sweet cherries - use 5-6 lb. plus 3 lb. lime.

Manufacturer: The Dow Chemical Co.

Trade name: MILDEX

Active ingredients: Dinitro capryl phenyl crotonate 25%

Description: Yellow, wettable powder

Uses: For control of powdery mildew and certain red mites

Recommendations: For greenhouse-grown roses and other greenhouse flower crops, use 4 oz. per 100 gal. water. This is equivalent to 2 level tbsp. in 12½ gal. For outdoor use on rose and other flowers, use 6-8 oz. per 100 gal. For cucumbers, use 4-8 oz. per 100 gal. For apples and pears, use ¾ to 1 lb. per 100 gal. For raspberries, use 1 lb. per 100 gal. For nursery stock, use ½ to 1 lb. per 100 gal.

Manufacturer: Larvacide Products, Inc.

Trade name: MILLER NEMAGON E.C. #2

Active ingredients: 1, 2-dibromo-3-chloropropane 67.2%, other halogenated C₃ compounds 3.5%

Uses: For use as a soil fumigant to control root-lesion and root-knot nematodes in the soil

Manufacturer: Miller Chemical & Fertilizer Corp.

NABAM

Common or "coined" name for the fungicidal ingredient disodium ethylene bisdithiocarbamate.

Description: Amber, water-soluble liquid

Uses: Control of various plant diseases

Recommendations: Usually nabam is mixed in the spray tank at the rate of 2 qt. plus one lb. of zinc sulfate (25% zinc) and 100 gal. water. This mixture results in a fungicidal product known as zineb. In some cases it is mixed with manganese sulfate to form maneb. It may also be combined with iron sulfate. As a dip of potato seed pieces, to prevent decay, nabam is used at the rate of 1 qt. in 50 gal. of water. Mixed with zinc sulfate, control of the following diseases has been obtained: Petal blight of azalea and camellia; leaf spot of sour cherry; late blight and early blight of potato and tomato.

Compatibility: Nabam can be safely mixed with Aldrin, Aramite, BHC, chlordane, cryolite, DDD, DDT, Dieldrin, dinitro compounds, lead arsenate, methoxychlor, nicotine, oils, parathion, pyrethrum, rotenone, TDE, TEPP, thiophosphates, toxaphene, zinc arsenate. It can be mixed safely with wettable sulfur, fixed copper, chloranil, dichlone, glyodin and wetting agents.

Nabam should not be mixed with products containing lime, organic mercury or quaternary ammonium compounds.
Products containing nabam as the main fungicidal ingredient are DITHANE D-14 and Parzate Liquid Fungicide.

Trade name: NABAM SOLUTION

Active ingredients: Nabam 22.00%

Uses: As a spray application for the control of certain diseases attacking potatoes, tomatoes, celery, onions, peppers and certain other crops

Recommendations: Apply at the rate of 2 qt. of Niagara Nabam Solution plus $\frac{3}{4}$ to 1 lb. of monohydrated zinc sulfate (36% metallic zinc equivalent) or 1 to $1\frac{1}{2}$ lb. of flake zinc sulfate (25.5% metallic zinc equivalent) per 100 gal. of water.

Manufacturer: Niagara Chemical Div.

Trade name: NATRIPHENE

Active ingredients: Sodium salt of 2 hydroxyl diphenyl 100%

Description: Powder or tablet form

Uses: To control damping-off, stem rot, crown rot and other diseases of various plants

Recommendations: One teaspoon in 2 gal. water as a bulb or seed treatment and to spray trees and shrubs.

Manufacturer: The Natriphene Co.

Trade name: NEMAFUME-N

Active ingredients: 1, 2 dibromo-3-chloropropane 45.4%, related brominated and chlorinated C₃ hydrocarbons 0.9%

Uses: Soil fumigant to control nematodes and certain other pests

Manufacturer: American Potash & Chemical Corp.

Trade name: NEMAGON

Active ingredients: 1,2-dibromo-3-chloropropane

Uses: Soil fumigant for control of nematodes and certain other pests. This material can be applied around the roots of some living plants without causing injury. Check label.

Manufacturer: Shell Chemical Corp.

Trade name: NEMAGON E-2

Active ingredients: 1, 2-dibromo-3-chloropropane 67.2%, other halogenated C₃ compounds 3.5%

Uses: Used as a soil fumigant to control certain soil nematodes and certain other soil pests

Recommendations: See nemagon and label

Manufacturer: Thompson-Hayward Chemical Co.

Trade name: NEMAGON G-17

Active ingredients: 1, 2-dibromo-3-chloropropane 16.4%, other halogenated C₃ compounds 0.9%

Uses: Controls certain soil nematodes and certain other soil pests. A granular formulation used as a soil fumigant.

Manufacturer: Thompson-Hayward Chemical Co.

Trade name: 25% NEMAGON GRANULES

Active ingredients: Nemagon 25.0%

Uses: As a soil fumigant for control of root-lesion and root-knot nematodes in the soil.

Manufacturer: Miller Chemical & Fertilizer Corp.

Trade name: 10% NEMAGON GRANULES

Active ingredients: Nemagon 10.0%

Uses: As a soil fumigant for control of root-lesion and root-knot nematodes in the soil

Manufacturer: Miller Chemical & Fertilizer Corp.

Trade name: 70% NEMAGON (liquid)

Active ingredient: 1, 2-dibromo-3-chloropropane 70.3%, related compounds 1.4%

Uses: As a soil fumigant to control certain nematodes on lawns and turf

Manufacturer: Swift & Co.

Trade name: NIACIDE Z FUNGICIDE

Active ingredients: Zinc dimethyldithiocarbamate 59.80%, zinc benzothiazylmercaptide 5.20%

Uses: As a dust or spray for the control of early blight and late blight on potatoes, and early blight, late blight, septoria leaf spot and anthracnose on tomato

Manufacturer: Niagara Chemical Div.

Trade name: NIAGARA BLUE BAND

Active ingredients: Sulfur 99.50%

Uses: As a dust for the control of brown rot on plum, prune and cherry trees; brown rot and scab on peach trees; scab on apple trees; and leaf spot on peanuts.

Recommendations: Applications of finished materials should be made as needed to afford protection during critical periods and applied during weather conditions favorable for dusting in such a manner as to cover lightly and thoroughly all parts of the trees or plants being dusted.

Manufacturer: Niagara Chemical Div.

Trade name: NIAGARA GREEN BAND

Active ingredients: Sulfur 97.00%

Uses: As a dust on peaches for the control of brown rot and scab, and for the control of leaf spot on peanuts

Recommendations: Applications of finished materials should be made as needed to afford protection during critical periods and applied during weather conditions favorable for dusting in such a manner as to cover lightly and thoroughly all parts of the trees or plants being dusted. Applications of dusting and spraying materials containing sulfur should not be made just prior to or during periods of excessively high summer temperatures.

Manufacturer: Niagara Chemical Div.

Trade name: NIAGARA KOLODUST

Active ingredient: Sulfur 84%

Uses: As a dust to control apple scab, plum and peach brown rot, peach scab and certain mites

Manufacturer: Niagara Chemical Div.

Trade name: NIAGARA KOLOSPRAY

Active ingredient: Sulfur 81.25%

Uses: To control diseases of fruit trees that respond to treatment with uncombined sulfur. May be used on apples, pears and peaches.

Manufacturer: Niagara Chemical Div.

Trade name: ORTHO ZINEB 5.2 DUST

Active ingredients: Zineb 5.2%

Uses: As a fungicide dust (See zineb)

Manufacturer: California Spray-Chemicals Corp.

Trade name: ORTHOCIDE SOIL TREATER X

Active ingredients: Captan and Pentachloronitrobenzene

Uses: A soil fungicide to control certain diseases of cotton

Manufacturer: California Spray-Chemicals Corp.

Trade name: ORTHOCIDE 10 DUST

Active ingredients: Captan 10%

Uses: As a dust for many diseases of cucumbers, lettuce, potatoes, spinach, tomatoes

Manufacturer: California Spray-Chemicals Corp.

Trade name: ORTHOCIDE 7.5 DUST

Active ingredients: Captan 7.5%

Uses: As a dust for many diseases of apricots, beans, peas, cherries, cucurbits, mango, ornamentals, peach, potatoes, spinach, strawberries, tomatoes, turf and lawns

Manufacturer: California Spray-Chemicals Corp.

Trade name: ORTHOCIDE 50 WETTABLE

Active ingredients: Captan 50%

Description: White, wettable powder

Uses: General purpose fungicide for control of diseases of fruit crops, vegetables and ornamentals

Recommendations: See captan

Manufacturer: California Spray-Chemicals Corp.

Trade name: ORTHOCIDE GARDEN FUNGICIDE

Active ingredients: Captan 50%

Description: Cream-colored wettable powder

Uses: General purpose fungicide for control of fungus diseases of ornamentals, fruits and vegetables. See Captan.

Recommendations: 8 tsp. per gal. water for spraying purposes. For turf diseases such as brown patch apply 1 gal. to 100 sq. ft. To prevent damping-off of cuttings dip in 1 gal. of water containing 5-1/3 tbsp. May be used as a bulb dip at the rate of 8 tbsp. per gal. water. May be watered at this rate on seedbeds, etc. to prevent damping-off.

Manufacturer: California Spray-Chemicals Corp.

Trade name: OWL DUSTING SULFUR

Active ingredients: Sulfur 99.5%

Description: Yellow powder with a particle size mainly below 27 microns

Uses: For control of powdery mildew of various crops, brown rot of stone fruits and other diseases. Adapted for use with high-powered dusters or bellows-type hand duster.

Manufacturer: Stauffer Chemical Co.

Trade name: PANOGEN

Active ingredients: Methylmercury dicyandiamide 2.2%

Description: Pink liquid

Uses: Seed treatment for control of smuts, seed decay, seedling blights, etc. of small grains and certain diseases of other crops

Recommendations: 3/4 oz. per bu. of grain seed

Manufacturer: Panogen, Inc.

Trade name: PANORAM 75
Active ingredients: Thiram 75%
Description: Red, wettable powder
Uses: See thiram
Manufacturer: Panogen, Inc.

Trade name: PANORAM D-31
Active ingredients: Thiram 56.2% plus dieldrin 18.8%
Description: Reddish wettable powder
Uses: Seed treatment of various crops for control of disease and certain insects
Recommendations: 1-7/8 to 2½ oz. per 100 lb. seed
Manufacturer: Panogen, Inc.

Trade name: PARZATE
Active ingredient: Zineb 65%
Description: Tan, wettable powder
Uses: As a general fungicide for control of diseases of various vegetable and ornamental plants. See zineb.
Recommendations: 1½-2 lb. per 100 gal. (5 tsp. per gal.) usually a 10% dust is recommended.
Manufacturer: DuPont

Trade name: PARZATE LIQUID
Active ingredients: Nabam 19%
Description: Orange liquid
Uses: A general fungicidal spray
Recommendations: Use 2 qt. plus 1 lb. of 25% zinc sulfate (or ¾ lb. of 36% zinc sulfate) in 100 gal. water. See nabam and zineb. The final preparation contains zineb as the active ingredient and should give control of the diseases mentioned under that material.
Manufacturer: DuPont

Trade name: PERFECTION DUSTING SULFUR
Active ingredients: Sulfur - not less than 93%
Description: Yellow, free-flowing powder
Uses: A general purpose sulfur dust for use with most types of dusters. For control of powdery mildew and other fungus diseases.
Manufacturer: Stauffer Chemical Co.

Trade name: PESTMASTER
Active ingredients: Methyl bromide 99%
Uses: A soil fumigant for control of fungi, nematodes, insects, etc. (See methyl bromide.)
Manufacturer: Michigan Chemical Corp.

Trade name: PHYGON DUST
Active ingredients: Dichlone (1 to 4% depending on crop)
Description: Yellowish powder
Uses: For control of various diseases of fruits and vegetables
Recommendations: Use 3% active dust at 30-40 lb. per acre for control of scab, black rot and rust of apples; brown rot of cherries, peaches, prunes and plums; bean anthracnose. Use 1% dust on tomatoes for control of late blight.
Manufacturer: Naugatuck Chemical Div.

Trade name: PHYGON-NAUGETS

Active ingredients: Dichlone 50%

Description: Tan, wettable pellets

Uses: For slurry method of seed treatment

Recommendations: Use 1 lb. per gal. of water to treat field corn seed; $1\frac{1}{2}$ lb. for popcorn, sweetcorn or alfalfa; and 2 lb. for beets, clover, peas, pepper, spinach and tomato.

Manufacturer: Naugatuck Chemical Div.

Trade name: PHYGON-XL

Active ingredient: Dichlone (dichloronapthoquinone) 50%.

Description: Light yellow, wettable powder

Uses: As a spray for control of various fungus diseases of fruit, vegetables and ornamentals. (See dichlone.)

Recommendations: Apple black rot - $1/4$ lb. per 100 gal. water or $1/2$ level tsp. per gal. of water. Azalea petal blight - $1/4$ - $1/2$ lb. per 100 gal. of water or $1/2$ -1 level tsp. per gal. of water. Bean anthracnose - $3/4$ -1 lb. per 100 gal. of water, or $1\frac{1}{2}$ -2 level tsp. per gal. of water. Rose black spot - $1/4$ lb. per 100 gal. of water or $1/2$ level tsp. per gal. of water. Stone fruit blossom blight - $1/2$ lb. per 100 gal. of water or 1 level tsp. per gal. of water. Tomato blights - $3/4$ lb. per 100 gal. of water or 1- $1/2$ level tsp. per gal. of water.

Manufacturer: Naugatuck Chemical Div.

Trade name: PICFUME

Active ingredients: Chloropicrin

Uses: Soil fumigant for control of a wide range of soil-borne pests such as nematodes, insects, bacteria and fungi which are responsible for damping-off, root rots and wilts as well as for control of weed seeds. Controls verticillium wilt.

Manufacturer: The Dow Chemical Co.

Trade name: PMAS

Active ingredients: Phenyl mercuric acetate 10%

Description: Pale liquid

Uses: For application to turf to control fungus diseases and crabgrass

Recommendations: For control of dollar spot, copper spot, brown patch, pink patch, fairy ring and leaf spots of turf as well as for control of crabgrass. During early spring apply 1 oz. diluted in 5-10 gal. of water to 1,000 sq. ft.; in warm weather use 10 gal. water with 1 oz. of PMAS. For control of snow mold use 2 oz., and on Bermuds greens use 2 oz.

NOTE: Special care should be taken to measure accurately the amount used or grass may be injured. Yellowing of turf may result when applied to ordinary lawn grasses.

Manufacturer: W. A. Cleary Corp.

Trade name: PORT BRAND TREE BANKING PAINT

Active ingredients: Chlordane 5.00%, and copper as metallic equivalent, 5.00%

Uses: As a paint to protect trunks of trees from fungus diseases such as wood rots and certain insects

Manufacturer: Port Fertilizer & Chemical Co.

Trade name: PURASEED

Active ingredients: Phenylmercury formamide 6.25%, Phenyl amino cadmium dilactate 6.25%

Description: Odorless, wettable powder

Recommendations: Used as a seed disinfectant for cereals and certain other crops. Can be applied as a dust or slurry at the rate of 1/2 oz. per bushel for wheat, oats, barley, and sorghum, and for flax at 1 1/2 oz. per bushel. Shows promise on cotton at 2 oz. per 100 lb. of seed and for peas and many vegetables at 4 oz. per 100 lb.

Manufacturer: Gallowhur Chemical Corp.

Trade name: PURATIZED AGRICULTURAL SPRAY

Active ingredient: Phenylmercury triethanolammonium lactate 7.5%

Description: Clear liquid

Recommendations: For disease control of various trees by applying spray at the rate of 1 pt. per 100 gal. Timing and other information often differ for specific diseases; therefore, consult detailed directions in manufacturers' leaflet. The following diseases are controlled: Marssonia leaf spot of black walnut; anthracnose of sycamore, oak, maple, hickory; phomopsis blight of cedar; leaf spots of rhododendron and mountain laurel; leaf spots of maple, elm, and horse chestnut. Disinfectant Dips: Sweet potatoes, dip "seed" and sprouts briefly in solution of 1 tsp. per 5 gal. of water; potato seed piece decay requires one minute in 1 oz. per 3 gal; narcissus, 10 minute dip in 1-1/3 oz. per gal. immediately after digging; lilies - dip bulbs for 24 hours in 1 fluid oz. per 5 gal.

Compatibility: Safe with lead arsenate, glyodin, sulfur, ferbam, DDT and most insecticides but should not be mixed with lime, oils, bentonite and other clays. Hard or muddy water reduces its efficiency.

Manufacturer: Gallowhur Chemical Corp.

Trade name: PURATURF

Active ingredient: Phenylmercury triethanolammonium lactate 6%

Description: Clear Liquid

Uses: As a drench for control of fungus diseases of lawn grasses and golf greens, and to eliminate crabgrass

Recommendations: For control of dollar spot, brown patch and copper spot - use 1 tsp. per gal. Use 1 1/2 fluid oz. per 10 gal. Use 1/2 pt. per 50 gal. Apply at rate of 10 gal. per 1,000 sq. ft.

Compatibility: Safe to use with DDT or lead arsenate.

Manufacturer: Gallowhur Chemical Corp.

Trade name: PURATURF NO. 10

Active ingredients: Phenylmercury monoethanol ammonium lactate 12.8% (equivalent to 6% metallic mercury)

Uses: Controls turf diseases such as dollar spot, copper spot, pink patch, brown patch, Helminthosporium and Curvularia blight and snow mold

Recommendations: Apply at rate of 1 fluid oz. per 1,000 sq. ft. Dilute in sufficient water to assure adequate coverage with the specific sprayer being used.

Manufacturer: Gallowhur Chemical Corp.

Trade name: PURATURF 177

Active ingredient: Phenyl amino-cadmium dilactate 20%

Description: Odorless, wettable powder

Uses: For control of the major turf diseases except brown patch. Use 1 lb. per 100 gal. of water per 10,000 sq. ft. or apply as a dry mix of 1 1/2 oz. in 8 qt. of screened sand or topdressing per 1,000 sq. ft. For home users, use 1 1/2 oz. or 10 level tsp. in 10 gal. of water per 1,000 sq. ft. at 2-week intervals.

Manufacturer: Gallowhur Chemical Corp.

Trade name: RED BAND

Active ingredients: Sulfur 93.00%

Uses: For the control of brown rot and scab on peaches and on peanuts for the control of leaf spot

Recommendations: Apply finished materials as needed to afford protection during critical periods and during weather conditions favorable for dusting in such manner as to cover lightly and thoroughly all parts of trees or plants.

Manufacturer: Niagara Chemical Div.

Trade name: ROSE DUST

Active ingredients: Copper as metallic equivalent, 3.40%, from tri-basic copper sulfate sulfur (93% through 325-mesh screen) 90.00%

Uses: As a dust to control black spot on roses and powdery mildew on second year bushes

Recommendations: Start applications at the first flush of growth at the rate of 10-20 lb. of rose dust per acre. Repeat applications of dust every 8 to 10 days. If it rains, apply rose dust within 24 hours to protect the foliage.

Manufacturer: Olin Mathieson Chemical Co.

Trade name: SOILFUME 85

Active ingredients: Ethylene dibromide 83.00%

Uses: For use in preplanting applications to the soil for the control of nematodes, etc.

Recommendations: For overall application to control nematodes, wireworms and certain other soil-borne pests, use $4\frac{1}{2}$ gal. per acre.

Manufacturer: Niagara Chemical Div.

Trade name: SPERGON

Active ingredients: Tetrachloro-para-benzoquinone 96%

Description: Yellow powder

Uses: A seed protectant to prevent certain diseases and for the dry method of seed treatment

Recommendations: Use at the rate of 7 oz. per 100 lb. of seed for alfalfa, clover and other small seed legumes; 3 oz. for beans, sweet corn, cowpeas, peas, soybeans and vetch; 6 oz. for cantaloupe, cucumber, pumpkin, squash and watermelon; and 8 oz. for broccoli, brussels sprouts, cabbage, cauliflower, eggplant, kale, okra, radish and turnip.

Compatibility: Safe to mix with legume inoculants

Manufacturer: Naugatuck Chemical Div.

Trade name: SPERGON-DDT

Active ingredients: Tetrachloro-para-benzoquinone 93% plus 3% DDT

Description: Yellow powder

Uses: For dry seed treatment to prevent certain diseases and when seed is to be stored where there is danger of insect damage

Recommendations: See Spergon.

Manufacturer: Naugatuck Chemical Div.

Trade name: SPERGON-DDT-SL

Active ingredients: Tetrachloro-para-benzoquinone 92% plus 3% DDT

Description: Yellow powder

Uses: For slurry seed treatment to prevent certain diseases and when seed is to be stored where there is danger of insect damage

Recommendations: See Spergon-SL

Manufacturer: Naugatuck Chemical Div.

Trade name: SPERGON GLADIOLUS DUST

Active ingredients: Chloranil 50%, DDT 3%

Uses: Apply to bulbs before storing or planting to help control storage rot and certain insects. Bulbs, corms and rhizomes of hyacinth, iris, lily, narcissus and tulip can also be treated.

Recommendations: Place bulbs in paper bag with dust. Shake gently to thoroughly coat the bulbs or place bulbs in a box or basket and dust thoroughly.

Manufacturer: Naugatuck Chemical Div.

Trade name: SPERGON-SL

Active ingredients: Tetrachloro-para-benzoquinone 95%

Description: Yellow powder

Uses: A seed protectant to prevent certain diseases and for the slurry method of seed treatment

Compatibility: Compatible with legume inoculants and therefore especially useful for treatment of alfalfa, clover, peas and other legumes.

See SPERGON.

Recommendations: Use 1-4 lb. per gal. water depending on crop.

Manufacturer: Naugatuck Chemical Div.

Trade name: SPERGON WETTABLE

Active ingredients: Chloranil 48%

Uses: Controls lawn brown patch; downy mildew of cabbage, cantaloupe and cucumber; storage rot of gladiolus and lily bulbs. Used as a dip for seed sweet potatoes and sprouts and as a soil treatment for tomato seedbeds. Also used in a dry or slurry form as a seed protectant for oats.

Manufacturer: Naugatuck Chemical Div.

Trade name: SULFORON

Active ingredients: Sulfur 97%

Uses: For control of certain fruit and ornamental diseases and also powdery mildew

Manufacturer: DuPont

Trade name: SULFORON X

Active ingredients: Sulfur 95%

Description: Wettable powder having a particle size of 3.5-5.5 microns

Uses: For control of certain fruit diseases

Recommendations: As a spray use 5 lb. per 100 gal. for control of apple scab and brown rot of stone fruit

Compatibility: Safe to mix with most insecticides, ferbam and ziram. Do not mix with summer oil sprays.

Manufacturer: DuPont

Trade name: SWAN DUSTING SULFUR

Active ingredient: Sulfur 97.5%

Description: Yellow powder with a particle size generally below 27 microns

Uses: For control of diseases of various crops - also gives control of red spiders and some insects. Not especially adapted to airplane application.

Manufacturer: Stauffer Chemical Co.

Trade name: TELONE

Active ingredients: Chlorinated C₃ hydrocarbons 100% (includes 1, 3-dichloropropene and related chlorinated C₃ hydrocarbons)

Uses: A preplanting soil treatment to control certain soil nematodes

Manufacturer: The Dow Chemical Co.

Trade name: TENNAM

Active ingredients: Manganous dithiocarbamate 70%

Uses: Controls early blight of potatoes and tomatoes. Also late blight affecting potatoes and anthracnose of tomatoes.

Recommendations: Spray 2 to 2½ lb. per 100 gal. of water

Manufacturer: Tennessee Corp.

Trade name: TERRACLOR 2 LB

Active ingredients: Pentachloronitrobenzene 24%

Uses: Emulsifiable concentrate for control of certain soil-borne diseases of cotton, alfalfa, clover, beans, lettuce.

Manufacturer: Olin Mathieson Chemical Co.

Trade name: TERRACLOR 10%

Active ingredients: Pentachloronitrobenzene 10%

Uses: A dust to control certain soil-borne diseases of cotton, crucifers, peanuts, tomatoes, peppers, alfalfa, clover, lettuce, beans, potatoes, ornamentals

Recommendations: See manufacturers leaflet. Formulations are also available with 20%, 40% and 75% pentachloronitrobenzene. The 75% is a wettable powder.

Manufacturer: Olin Mathieson Chemical Co.

Trade name: THE ANTIBIOTIC TURF FUNGICIDE

Active ingredients: Ferrous sulfate

Uses: Control of turf diseases

Recommendations: Mix with recommended amount of water and use as a spray. Check label for amount to be applied.

Manufacturer: Upjohn Co.

THIRAM

A common or "coined" name for the fungicidal compound tetramethylthiuram disulfide.

Description: Pink powder with low toxicity to plants, seed, bulbs, etc. Does not deteriorate with age.

Uses: Widely used as a seed protectant and also as a drench for control of damping-off, etc.; also as a spray for control of turf diseases.

Recommendations: The nonwetttable form when used for seed treatment is usually applied at the rate of 1-4 oz. per 100 lb. of seed. The 2 oz. rate is equivalent to 1/3 tsp. per lb. of seed. Use at 2 oz. on seed of beans, cantaloupe, corn (sweet), cucumber, pea, pumpkin, squash and watermelon. Use at 4 oz. per 100 lb. of seed for beets, broccoli, cabbage, cauliflower, eggplant, kale, kohlrabi, onion, pepper, radish, spinach, swiss chard, tomato and turnip. Thiram is very useful in treatment of seeds of various ornamental plants. In general, a safe amount to use will thoroughly coat the seeds. This is applied by shaking seed in a container of a small amount of thiram. The slurry form of thiram is generally used at the rate of 1-1½ lb. per gal. of water. The wettable (75) form is used as a dip for sweet potato roots and sprouts for control of scurf. The rate is 1 lb. in 5-7½ gal. water. For control of turf diseases it is used at the rate of 1-1½ lb. to 6,000 sq. ft.

Some commercial products containing thiram as the main fungicidal ingredient are: THIRAM 50 DUST, THIRAM NAUGETS, THIRAM-75 W, DELSAN A-D, I & D SEED PROTECTANT, PANORAM 75, TERSAN 75, ARASAN, ARASAN 75 and ARASAN SF-X

Trade name: THIRAM 50 DUST

Active ingredients: Thiram 50%

Uses: A powder for dry form of seed treatment of many vegetables and ornamentals (See Thiram.)

Recommendations: From 1½ to 8 lb. of dust per 100 lb. of seed depending on crop.

Manufacturer: Naugatuck Chemical Div.

Trade name: THIRAM NAUGETS

Active ingredients: Thiram 75%

Uses: A pellet formulation for use in the slurry method of seed treatment of many vegetables and ornamentals (See thiram.)

Recommendations: 1-3 lb. per gal. water depending on crop.

Manufacturer: Naugatuck Chemical Div.

Trade name: THIRAM-75-W

Active ingredients: Thiram 75%

Description: Wettable powder

Uses: See thiram

Manufacturer: Naugatuck Chemical Div.

Trade name: TOMATO DUST

Active ingredients: DDT 5.0%, Malathion 4.0%, Zineb 5.2%, (total zinc as metallic equivalent, 1.2%)

Uses: As a dust for controlling anthracnose, early blight, gray leaf spot, late blight, septoria blight and certain insects and mites. Make no application within 10 days of harvest.

Manufacturer: Safe-Way Farm Products Co.

Trade name: 5-6 TOMATO-POTATO DUST

Active ingredients: Dichloro-Diphenyl-Trichloroethane (DDT) 5%, Copper as metallic equivalent (from tri-basic copper sulphate)

Uses: As a dust for control of early and late blight on tomatoes and potatoes; Anthracnose, septoria leaf spot and nailhead rust on tomatoes.

Recommendations: Tomatoes - apply at rate of 30 lb. per acre when plants are small, increasing gradually to 50 lb. per acre as plants grow. Potatoes - apply at the rate of 30 lb. per acre, increasing to 50 lb. per acre as the plants increase in size. Applications should be started as soon as the plants are 2 to 6 in. high and continued at 7 to 10-day intervals as long as disease or insects threaten. Make no application within 5 days of harvest.

Manufacturer: Olin Mathieson Chemical Co.

Trade name: TREE BANKING PAINT NO. 2

Active ingredients: Chlordane 5.00%, Captan 5.00%

Uses: As a paint to control certain insects and diseases

Recommendations: Mix 2 lb. TREE BANKING PAINT in 1 gal. water and stir until blended into a smooth working paint. Apply to trunks of trees with a brush being sure to cover all wounds, and high enough so that all area to be covered with soil is protected. Banking with soil can be done as soon as paint has thoroughly dried.

Manufacturer: Fort Fertilizer & Chemical Co.

Trade name: TRI-BASIC COPPER SULPHATE

Active ingredients: Copper content 53%

Description: Blue, wettable powder

Uses: A dust or spray for control of fungus diseases of vegetables, fruits and ornamentals

Recommendations: Potatoes and tomatoes - early and late blight - use 4 lb. per 100 gal. of water, or 13.5 lb. in 100 lb. of dust. Grape black rot and downy mildew - use 2 lb. per 100 gal. of water, or 10 lb. in 100 lb. of dust.

Compatibility: Safe to mix with DDT, arsenicals, sulfur, pyrethrum, rotenone, nicotine, etc.

Manufacturer: Tennessee Corp.

Trade name: TRI-BASIC COPPER SULPHATE 10%

Active ingredients: Tri-basic copper sulphate 10.00%

Uses: As a dust to control: Downy mildew and black spot of cabbage, broccoli and cauliflower; early blight, late blight, gray leaf spot of tomatoes; early blight and late blight of potatoes; downy mildew of cantaloupes, cucumbers, squash and watermelons; leaf blight of carrots; downy mildew of lettuce; leaf blight of onions.

Recommendation: Apply at the rate of 25 to 35 lb. per acre at 5 to 7 days when first signs of disease are reported; continue applications at regular intervals until disease is under control.

Manufacturer: Port Fertilizer & Chemical Co.

Trade name: VAPAM 4-S

Active ingredients: Sodium methyl dithiocarbamate (anhydrous) 31%

Uses: Soil fumigant to control nematodes and certain other soil pests

Manufacturer: Stauffer Chemical Co.

Trade name: VEGETABLE DUST NO. 61X

Active ingredients: Copper as metallic equivalent, 7%

Uses: As a dust for tomato diseases such as sore shin or damping off, collar rot and septoria leaf spot - dust plants lightly once a week, soon after emergence of the seedlings from the soil of the hotbed or cold frame. For early and late blight of tomatoes, nailhead rust and septoria leaf spot - apply dust at the rate of 10-12 lb. per acre increasing the amount per application each week as the plants increase in size. Thorough coverage of the leaves is essential to obtain protection, particularly in cool, damp weather when disease spores are active. Apply before rain, if possible, to control the disease spores. Best results will be obtained if dusting is started before disease appears and if applications are made regularly each week or more frequently if weather is cool and damp.

Manufacturer: Olin Mathieson Chemical Co.

Trade name: VEGETABLE DUST NO. 63X

Active ingredients: Copper as metallic equivalent, 7%, Tri-calcium Arsenate 13%

Uses: As a dust for the control of early and late blight on tomatoes, nailhead rust and septoria leaf spot and certain insects

Recommendations: Apply at the rate of 30-50 lb. per acre depending upon the size of the plants.

Manufacturer: Olin Mathieson Chemical Co.

Trade name: VEGETABLE GARDEN DUST

Active ingredients: Methoxychlor 5%, Malathion 4%, Zineb 5.2%

Uses: Control of asparagus, rust; bean, rust, anthracnose; beet, downy mildew, leaf spot; cabbage, cauliflower, broccoli, brussels sprouts, downy mildew, leaf spot; cucumbers, melons, squash, downy mildew, anthracnose; eggplant, peppers, late blight, fruit rots, leaf spots; onions, downy mildew,

purple blotch; potatoes, early blight, late blight; spinach, downy mildew, white rust; tomatoes, early and late blights, anthracnose, septoria leaf spot, gray leaf spots. Also certain insects.

Manufacturer: Safe-Way Farm Products

Trade name: VPM

Active ingredients: Sodium methylthiocarbamate 32.7%

Uses: Soil fumigant to control nematodes and certain other soil pests

Manufacturer: DuPont

Trade name: WETTABLE SULFUR

Active ingredients: Sulfur 90.00%

Uses: As a spray at the rate of 6 to 10 lb. in 100 gal. of water, for the control of rust mites on citrus and brown rot and scab on peaches. Apply as needed to give protection during critical periods when damage from these pests threatens.

Manufacturer: Niagara Chemical Div.

Trade name: ZERLATE

Active ingredients: Zinc ethylenebisdithiocarbamate 76%

Description: White wettable powder for use as a spray or dust

Uses: A general purpose fungicide for control of various diseases of fruits, vegetables and ornamentals. (See Ziram.)

Recommendations: As a spray use $1\frac{1}{2}$ -2 lb. per 100 gal. water and for dusting dilute to 10-20%.

Compatibility: Safe to mix with most insecticides, nicotine products and sulfur.

Manufacturer: DuPont

ZINEB

Common or "coined" name for the fungicidal compound zinc ethylene bisdithiocarbamate

Description: Tan, wettable powder, generally homemade or tank mix zineb is commonly prepared by adding zinc sulfate to nabam. (See nabam.)

Uses: A general-purpose fungicide having low toxicity to plants and animals.

Recommendations: The 65% wettable form of zineb is applied at the rate of $1\frac{1}{2}$ to 2 lb. per 100 gal. water. This is equivalent to 1 level tbsp. per gal. water. In dust form zineb is usually diluted to 8-10% and applied at the rate of 30-50 lb. per acre. Some diseases controlled by zineb are: Azalea and camellia, petal blight; apple, scab, fire blight, black rot, sooty blotch; bean, anthracnose, downy mildew, rust; beet, leaf spot; cabbage and cauliflower, downy mildew, leaf spot; chrysanthemum, leaf spot; cucurbits (cantaloupe, cucumber, squash, watermelon), anthracnose, downy mildew, leaf spot; eggplant - early and late blight; gladiolus, botrytis, curvularia and stemphylium foliage blights; grape, black rot, downy mildew; lettuce, downy mildew; onion, downy mildew; pecan, scab; pepper, leaf spot; potato, early and late blight; rose, black spot; snapdragon, rust; spinach, downy mildew; sweetcorn, helminthosporium leaf blight; tomato, early and late blight.

Compatibility: Zineb is compatible with the following insecticides: Aldrin, Aramite, BHC, Chlordane, cryolite, DDD, DDT, dinitro compounds, lead arsenate, methoxychlor, nicotine, oils, parathion, pyrethrum, rotenone, thiophosphates, TEPP and toxaphene. It is safe to mix with Captan, other dithiocarbamates,

fixed copper, glyoxalidines, chloranil, dichlone, wettable sulfurs and most spreaders. Not compatible with lime, lime sulfur, Bordeaux mixture, calcium arsenate, organic mercury compounds or quaternary ammonium compounds.

Some commercial products with zineb as the main ingredient are: PARZATE and DITHANE Z-78

Trade name: ZINEB DUST

Active ingredient: Zineb 4.55%

Uses: See Zineb.

Manufacturer: Niagara Chemical Div.

Trade name: ZINEB 3.9% DUST

Active ingredients: Zineb 3.9%

Uses: As a dust for control of: Potatoes, eggplant, pepper, early and late blight; tomatoes, early and late blight, anthracnose, gray leaf spot, septoria leaf spot; cucumbers, downy mildew, anthracnose, angular leaf spot; lima and snap beans, downy mildew, anthracnose, rust; roses, black spot.

Recommendations: Apply at the rate of 30 to 45 lb. per acre when the air is calm. Consult local agricultural experts for timing.

Manufacturer: Olin Mathieson Chemical Co.

Trade name: ZINEB 4%

Active ingredients: Zineb 4%

Uses: See Zineb

Manufacturer: Port Fertilizer & Chemical Co.

Trade name: ZINEB 5.2% (Olin - Mathieson)

Active ingredients: Zineb 5.2%

Uses: As a dust for control of vegetable diseases

Recommendations: In general, apply 13 to 20 lb. of this material per acre for young plants and up to 38 lb. for larger plants.

Manufacturer: Olin Mathieson Chemical Co.

Trade name: ZINEB 5.2% (Port Fertilizer)

Active ingredients: Zinc ethylene bisdithiocarbamate 5.2%

Uses: As a dust to control: Cantaloupe, cucumbers, watermelon, and squash, downy mildew; potatoes, early blight and late blight; tomatoes, early blight, late blight, gray leaf spot, anthracnose and septoria leaf spot; carrots, leaf blight; onions, purple blotch, blast, and downy mildew; spinach, blue mold and white rust.

Manufacturer: Port Fertilizer & Chemical Co.

Trade name: ZINEB LINDANE 1 DUST

Active ingredients: Zineb 4.55%, lindane 1.00%

Uses: As a dust for control of downy mildew on cantaloupes, cucumbers, squash and watermelons and certain insects

Recommendations: Apply at weekly intervals at the rate of 20 to 40 lb. per acre, depending upon the size of the plants.

Manufacturer: Niagara Chemical Div.

Trade name: ZINEB PHOS KIL 1 DUST

Active ingredients: Zineb 4.55%, parathion 1.00%

Uses: As a dust for control of certain diseases on tomatoes, potatoes and onions and for certain insects

Recommendations: Check manufacturers label.

Manufacturer: Niagara Chemical Div.

ZIRAM

Common name for the fungicidal chemical zinc dimethyldithiocarbamate.

In the 76% wettable form there is about 16.25% metallic zinc.

Description: White, wettable powder having low toxicity to high plants and animals

Uses: A spray or dust for control of various diseases of vegetables, fruits and ornamentals. Especially effective in control of tomato anthracnose.

Recommendations: Generally used at the rate of $1\frac{1}{2}$ -2 lb. per 100 gal. water or as a 10-20 dust. Some of the diseases controlled by ziram are: Azalea and camellia, petal blight; bean, anthracnose and rust; cantaloupe, downy mildew and leaf spots; chrysanthemum, leaf spots; cucumber, downy mildew and leaf spot; pecan, scab; potato, early blight; snapdragon, leaf spot; squash - downy mildew and leaf spot; tomato, anthracnose and early blight; watermelon, downy mildew and leaf spot.

Compatibility: Safe to mix with DDT, cryolite, arsenic compounds, nicotine, organic phosphorous compounds and most other insecticides. Also safe to combine with sulfur, ferbam, zineb and most other fungicides. Not safe to mix with fixed coppers, Bordeaux, organic mercury, lime sulfur or lime.

A trade product having ziram as the main fungicidal ingredient is ZERLATE.

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Los Angeles 54, Calif.

California Spray-Chemicals Corp.
323 Market Street
Shreveport, La.

Carbide and Carbon Chemicals Co.
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Niagara Chemical Div.
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Thompson-Hayward Chemical Co.
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Upjohn Co.
Chemical Sales
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