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DEC 9 1985

Cities Service Company
Industrial Chemicals Division
P.O. Box 105062
Atlanta, GA 30348

Attention: Arthur F. Gohlke

Gentlemen:

Subject: Tenn-Cop 5E Emulsifiable Liquid Copper
Fungicide
EPA Registration No. 1109-37
Your Amendment Application Dated September 9, 1985

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, is acceptable subject to the following comments listed below.

1. At your earliest convenience, a statement should be added on the label indicating the product weight per gallon below the ingredient statement.
2. Align the percent active ingredient with the active ingredient chemical name.

The proposed brand name change has been made on our records. Future correspondence for this product should refer to the new name.

Five (5) copies of the finished labeling must be submitted. A stamped copy of the label is enclosed for your records.

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CONCURRENCES

OL								
ME								
DATE								

Please be advised that additional labeling requirements for chemigation may be forthcoming from the Agency and you will have to comply at that time.

Sincerely yours,

Henry M. Jacoby
Product Manager (21)
Fungicide-Herbicide Branch
Registration Division (TS-767)

Enclosure

EPA Reg. No. 1109-37
Form No. 9-37 A85

EPA Est. No. 1109-TN-1

TENN-COP 5E
EMULSIFIABLE LIQUID COPPER
FUNGICIDE

ACTIVE INGREDIENT58%
Copper salts of fatty and rosin acids
(Copper equivalent as metallic 5.14%)
INERT INGREDIENTS42%

**KEEP OUT OF REACH
OF CHILDREN
WARNING**

See Precautionary Statements on side panel.



TENNESSEE CHEMICAL COMPANY
COPPERHILL, TENNESSEE 37317

NET CONTENTS _____ GALLON

99-37-5

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DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with labeling.

**PRECAUTIONARY STATEMENTS
HAZARD TO HUMANS AND DOMESTIC ANIMALS**

WARNING:

Harmful if swallowed. Contains a petroleum solvent.

STATEMENT OF PRACTICAL TREATMENT:

If swallowed, do not induce vomiting. Call a physician immediately. If in eyes, wash with water and see a physician. If on skin, wash with soap and water. Get medical attention if irritation persists. If on clothing, remove and wash clothing before product dries and is laundered.

ENVIRONMENTAL HAZARDS:

This product is toxic to fish. Do not contaminate any body of water by direct application of equipment or disposal of wastes or containers.

PHYSICAL OR CHEMICAL HAZARDS:

Do not spray into or near fire or open flames.

STORAGE AND DISPOSAL

Storage: Store in a secure place, away from fire or open flame. Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. Keep container closed and resealed after use. Product is not damaged by freezing, but preferably store at temperatures above 32°F. If spilled, use absorbent material and dispose in a approved landfill.

Pesticide Disposal: Do not contaminate water, food, or feed by storage or disposal. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinseate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities, or plastic containers by incineration, or if allowed by state and local authorities, by burning. If burned stay out of smoke.

See detailed instructions and directions for use of product in attached booklet.

EPA Reg. No. 1109-37
Form No. 9-37 A251

EPA Est. No. 1109-TN-1

TENN-COP 5E

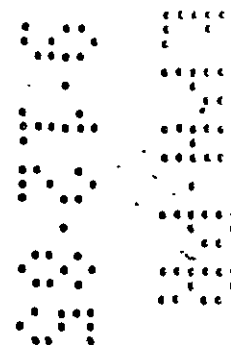
EMULSIFIABLE LIQUID COPPER
FUNGICIDE

ACTIVE INGREDIENT	58%
Copper salts of fatty and rosin acids (Copper equivalent as metallic 5.14%)	
INERT INGREDIENTS	42%



**TENNESSEE CHEMICAL
COMPANY**

COPPERHILL, TENNESSEE 37317



Keep Out of Reach of Children

WARNING

Precautionary Statements
Hazards to humans and domestic animals

WARNING:

Harmful if swallowed. Contains a petroleum solvent.

STATEMENT OF PRACTICAL TREATMENT:

If swallowed do not induce vomiting. Call a physician immediately. If in eyes, wash eyes with water and see a physician. If on skin, wash with soap and water. Get medical attention if irritation persists. If on clothing remove and wash clothing before product dries and reuse.

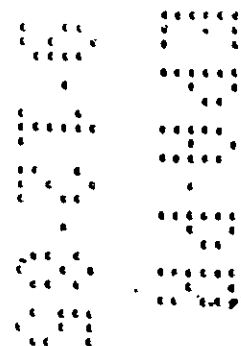
Do not apply this product in such a manner as to directly or through drift expose workers or other persons. The area being treated must be vacated by unprotected persons.

ENVIRONMENTAL HAZARDS:

This product is toxic to fish. Do not contaminate any body of water by direct application, cleaning of equipment or disposal of wastes or containers.

PHYSICAL OR CHEMICAL HAZARDS:

Do not spray into or near fire or open flames.



It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Re-Entry Statement

Do not enter treated area without protective clothing until sprays have dried. Because certain states may require more restrictive re-entry intervals for various crops treated with this product, consult your State Department of Agriculture for further information.

Written or oral warnings must be given to workers who are expected to be in a treated area or in an area about to be treated with this product. The oral warning should be that workers shall not be in field during spraying and not return until sprays have dried on plants. If worker must be in field during this time, workers must wear goggles for eye protection and protective clothing including a hat or similar head covering, long sleeve shirt, long legged trousers, or a coverall type garment, all of closely woven fabric covering the body, arms, and legs, shoes and socks. If accidentally exposed, if in eyes flush eyes with plenty of water for at least 15 minutes, if on body remove by washing and wash clothes before reuse. When oral warnings are given, warnings shall be given in a language customarily understood by workers. Oral warnings must be given if there is reason to believe that written warnings cannot be understood by workers. Written warnings must include the following information: Warning. Area treated with TENN-COP 5E on (date of application). Do not enter without appropriate protective clothing until spray in treated area has dried on plants.

STORAGE AND DISPOSAL

Storage: Store in a secure place, away from fire or open flame. Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. Keep container closed and reseal after use. Product is not damaged by freezing, but preferably store at temperatures above 32° F. If spilled, use absorbent material and dispose in approved landfill.

Pesticide Disposal: Do not contaminate water, food, or feed by storage or disposal. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities, or plastic containers by incineration, or if allowed by state and local authorities, by burning. If burned stay out of smoke.

Read and follow all applicable directions and precautions on this label or label of other products before mixing with TENN-COP 5E.

TENN-COP 5E can be applied up to day of harvest. When tank-mixed with other products, do not apply that product closer to harvest than is permitted or stated on their label.

Pour TENN-COP 5E into spray tank at least 1/2 filled with water with adequate agitation. When mixed with other products proven or known to be compatible, wettable powders should be added first, followed in order by flowables, and then emulsifiable concentrates including TENN-COP.

Special Use Directions for Sprinkler Applications of TENN-COP

To apply TENN-COP 5E and/or tank-mixes through a sprinkler irrigation system on crops so labeled, apply the recommended rate to each sprinkled acre. Any sprinkler irrigation system must give thorough, complete and uniform coverage for best disease control. Numerous commercial pressure injection metering devices are available to inject pesticides into sprinkler systems. Follow their instructions for calibration and use to apply the recommended rate of TENN-COP 5E per acre. TENN-COP 5E may be diluted with sufficient water for proper metering using good agitation in injection tank, if required.

Apply TENN-COP 5E or labeled tank-mixes only through sprinkler systems having 1) interlocking controls between the metering device and the water pump to ensure simultaneous shut-off and 2) anti-siphon check valves and safety devices to prevent back-siphoning of the pesticide into the water source. Inject the product and tank-mixes into the main line ahead of a right angle turn to ensure adequate mixing.

Solid-set - calibration and use:

Measure the acreage covered by the sprinklers in each set. Operate the solid-set irrigation system and injection equipment at normal pressures. Add the required amount of TENN-COP 5E for this acreage to the injection tank with dilution water as required so that flow-rate of the injection equipment will inject contents of injection tank over a 10 to 20 minute period. Preferably inject TENN-COP in the last 30 minutes of the solid-set irrigation set. Continue irrigation after pesticide addition giving sufficient time to completely flush all sprinkler lines.

For example: If a solid-set sprinkles an area 1000 feet long and 65 feet wide per set, if TENN-COP 5E is to be applied at 3 pints per acre, and if the injection equipment is set to inject 5 gallons in a 20 minute period, then the following calculations demonstrate the above directions:

1. Acreage covered = $\frac{1000 \text{ ft} \times 65 \text{ ft}}{43,560 \text{ (sq ft/acre)}} = 1.5 \text{ acres/set.}$
2. TENN-COP 5E at 3 pints/acre - 3 pints X 1.5 acres - 4.5 pints/set.
3. Add 4.5 pints TENN-COP 5E to injection tank plus 35.5 pints water to give a 5 gallon dilution and inject on each solid-set.

Center-Pivot (or other continuous moving systems) - calibration and use

Do not use in water drive units in which water spills on plants or soil.

TENN-COP 5E can be applied in up to 2 inches of water per acre per application assuming thorough uniform coverage of the sprinkler.

Determine the acreage to be irrigated in each circle or field to be treated. Determine the time in hours that will be required to cover the proposed treated area to apply the desired water. Add the required TENN-COP 5E to treat entire field to injection tank along with the needed volume of dilution water so that entire quantity of TENN-COP will be applied to the field or acreage to be treated. Using adequate agitation and an injection device or proportional positive displacement metering pump adjust the flow rate per hour to inject the recommended rate of TENN-COP 5E per acre sprinkled.

For example: If TENN-COP 5E is to be applied at 3 pints per acre sprinkled, if sprinkler is applying 600 gallons per minute of irrigation water, and if each acre is to receive one inch of water (27,156 gallons), then the time to sprinkle one acre =

1. $\frac{27,156 \text{ (gals one acre inch of water)}}{600 \text{ (gals per minute pumped)}} = 45\text{-}1/4 \text{ minutes.}$
2. If the proportional injection pump is set and calibrated to inject 2 gallons of water in a 45-1/4 minute period, one would add 3 pints TENN-COP 5E plus 13 pints of diluting water to injection tank for each acre to be treated.
3. If sprinkler is set to cover one acre in a given time, inject the recommended per acre rate of TENN-COP 5E, or tank-mix, as labeled, plus any needed dilution water in that same time needed to cover one acre.

Consult State Agricultural Experiment Stations or State Agricultural Extension Service for additional information as the timing needs may vary with local conditions.

TENN-COP 5E includes compatibility with Bravo® (WP, 6F, 500), Captan, Daconil® 2787, Difolatan® 4 Flowable, Ferbam, Maneb (WP or Flowable), Dithane® M-45 and Manzate® 200, Phaltan®, Sulfur (wetable or flowable), organo phosphates, Thiodan®, Bacillus thuringiensis Berliner, Guthion®, Pydrin®, Diazinon®, Malathion. Do not mix TENN-COP 5E with oil when applied to citrus. Do not mix TENN-COP 5E with chelated or liquid fertilizers. Use product with other fungicides and insecticides with caution. Observe all cautions and limitations on all products used in mixtures.

Fruits and Nuts

Apples - Fireblight - Tank-mix 1-1/2 to 3 pints of TENN-COP 5E with 0.8 to 1.2 lbs of the active ingredient of Dithane M-45, Manzate 200 80W, Polyram, Maneb, or equivalent in other formulations of these products per 100 gallons of water on a dilute spray basis. (Note: The quantity of each formulation must be calculated based on the contained active ingredient.) Spray at silver tip and bud break and repeat on 3 to 5 day intervals as needed up to petal fall. Use the lower rate if disease pressure is light and higher rate when conditions favor heavy disease pressure. **WARNING:** TENN-COP 5E as used in this recommendation may cause severe russetting of Golden Delicious and similar susceptible apple varieties. Mild russetting of other varieties may occur when used on bearing trees. Preferred use is on non-bearing or processing varieties where russetting is not a problem. Treatment after leaves emerge may cause limited defoliation of young leaves.

Cherries (Sour) - Bacterial canker (*Pseudomonas syringae*), Brown rot blossom blight, leaf and fruit spots - Mix 3 pints per 100 gallons of water on a dilute basis. For Bacterial canker (Spring applications) make a dormant spray as buds begin to swell, repeat at bud burst stage, and weekly thereafter as needed up to six sprays. Caution: Sprays after leaf emergence may cause some leaf defoliation. In fall spray again at 10 and 80% leaf fall. For Brown rot blossom blight apply full cover spray at popcorn, full bloom, and petal fall stages. During wet weather additional bloom sprays may be necessary. For better leaf and fruit spot control, tank-mix with Difolatan following all label directions and limitations on these products when used in the tank-mix.

Citrus (Florida) - Melanose - Mix 1-1/8 to 1-1/2 gallons TENN-COP 5E in 10 gallons of water and apply to one acre by aircraft. Use 3/4 gallons in 500 gallons of water if applied by dilute ground spray. Apply 1 to 3 weeks after petal fall. Repeat 4 weeks later if necessary. Do not mix TENN-COP 5E with oil when applied on any citrus.

Citrus (including Limes) - Red Alga (Florida) - Mix 1-1/2 gallons in 500 gallons of water when applied as a dilute ground spray. Apply in spring as a preventive spray. Repeat in late summer to control new alga colonies. Do not mix with oil and apply on citrus.

Grapes - Downy mildew - For dilute spray mix 1-1/2 pints per 100 gallons water, or for concentrate sprays mix 3 to 4-1/2 pints TENN-COP 5E in 20 to 250 gallons of water and apply to one acre. For best control begin treatment when new growth reaches 1/2 inch and repeat at 7 to 14 day intervals throughout the growing season. Also aids in control of black rot at low disease levels. If more severe tank-mix a recommended black rot specific fungicide for control. NOTE: Do not mix with lime. Certain Vinifera and French Hybrid varieties may be slightly sensitive to copper sprays resulting in marginal leaf burn. Before spraying these varieties, consult your State Experiment Station or make test sprays.

Peaches and Nectarines - Brown rot blossom blight - Mix 3 pints per 100 gallons water on a dilute basis. Apply at delayed dormant (bud swell) and at pink bud. (Application at this time provides some control of Coryneum blight.) Do not apply after leaves emerge.

Walnuts - Blight - Mix 4 pints per 100 gallons water and apply at 500 gallons per acre on a dilute basis in mature orchards. Make first application when leaflets start to unfold (prior to but not later than 1% pistillate bloom, not catkins) and repeat weekly as needed especially until rainfall stops. When rain threatens, additional application made before or immediately after the rain is important.

Vegetables

Beans (Green Snap) - Bacterial blights - Apply 3 pints per acre applied by ground, aerial, or sprinkler irrigation equipment in sufficient water for good coverage. Generally with aerial spray, use 3 or more gallons of spray mixture per acre. Begin treatment when weather conditions favor disease development and continue at 7 to 10 day intervals to harvest. During wet weather use 7 day intervals. When applying by sprinkler irrigation, also read and follow special use directions elsewhere on this label.

Beets (Red, table) - Cercospora leaf spot - Mix 3 pints in sufficient water for good coverage and apply to one acre. Begin treatment when first symptoms appear and repeat at 7 to 10 day intervals as needed.

Broccoli, Brussel Sprouts, Cauliflower - Downy mildew and Alternaria blight - Use 3/4 pint per acre using a minimum of 25 gallons water per acre. Start application when disease is first expected and repeat at 7 day intervals as needed. Caution: A slight reddening of older leaves may occur occasionally, especially in late fall.

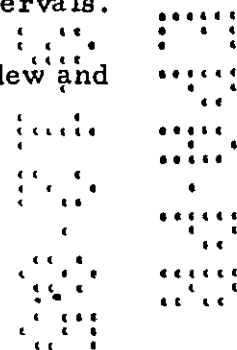
Cabbage - Downy mildew and Alternaria blight (black leaf spot) - Apply 1-1/2 pints per acre in 25 or more gallons of water. Begin treatment when disease is normally expected or when it first appears and repeat at 7 to 10 day intervals as needed.

Carrots - Leaf spot - Mix 3 to 4-1/2 pints in 5 or more gallons of water and apply to one acre. Begin treatment 2 weeks before disease normally appears for best preventive control, or make first application when disease first appears, and repeat at 7 to 10 day intervals as needed.

Celery - Early blight - Use 3 pints per acre in 25 to 100 gallons of water. If disease pressure is heavy, use 3 pints tank-mixed with recommended rates of maneb, Dithane M-45, Manzate, Bravo, or other recommended compatible fungicide. Begin treatment 2 weeks before blight is expected for best preventive control, or make first application when disease first appears and repeat at 7 to 10 day intervals as needed.

Cucurbits (Cucumbers, cantaloupe, muskmelon, squash, pumpkins and watermelons) - Downy mildew, Powdery mildew, Alternaria blight - Mix 3 pints in sufficient water for good coverage (usually 25 gallons per acre or more by ground) and apply to one acre. Begin treatment 2 weeks before disease normally appears for best preventive control, or when disease first appears, and repeat at 7 to 10 day intervals.

Cucumbers - Angular leaf spot - Same as for powdery mildew and downy mildew of cucurbits.



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Lettuce - Downy mildew - Mix 1-1/2 to 3 pints in 5 gallons or more of water and apply to one acre by aerial spray, or in 25 or more gallons water by ground. Begin when disease first appears or when conditions favor disease development and repeat as needed to suppress disease. (Full season use of the 3 pint rate may result in some yellowing of leaf margins on some varieties.) Bacterial soft rot and bottom rot (Hawaii only) - Mix 3 pints in 100 gallons of water and apply to one acre. Begin treatment before disease is expected or weather conditions favor disease development. Repeat weekly as needed. Use lower rate when disease pressure is low or on copper sensitive varieties of iceberg head lettuce.

Onions - Downy mildew - Aid in control of Neck rot and Bacterial soft rot - Use 3 pints per acre in 3 or more gallons water for good coverage by aerial or ground spray, or 3 pints per acre applied by overhead sprinkler irrigation. Begin when disease first appears or when conditions favor disease development. Repeat as needed to suppress disease. When applied by sprinkler irrigation, read and follow special use directions on this label.

Pepper - Bacterial spot - Use 3 to 4-1/2 pints per acre in 25 to 100 gallons water applied by ground sprayer or in 3 - 10 gallons water applied by aerial spray. Begin treatment 2 weeks before disease normally appears for best preventive control or make first application when disease first appears. Repeat at 7 to 10 day intervals as long as needed.

Potatoes - Late blight - Mix 3 pints in 9 or more gallons of water sufficient for good coverage and apply to one acre by ground or aerial spray. Begin treatment when weather conditions favor late blight development and repeat at 7 day intervals up to day of harvest, or in vine kill spray, or apply 3 pints per acre through sprinkler irrigation equipment. Begin treatment when weather conditions favor late blight development or 2 weeks before late blight is normally expected to occur. Repeat applications at 7 day intervals after first application up to day of harvest or until irrigation is discontinued. When applied by sprinkler irrigation, read and follow special use directions on this label.

Tomatoes - Bacterial spot and speck, Early blight, Septoria leaf spot - Use 3 pints per acre in 25 to 100 gallons water applied by ground spray, or in 5 to 10 gallons water applied by aerial spray, or applied through sprinkler irrigation equipment. (When applied by irrigation, read and follow special use directions listed elsewhere on this label.) Begin treatment when disease threatens or before disease normally appears.

Repeat at 7 to 10 day intervals as long as needed. Control of Bacterial speck and spot may be enhanced by adding maneb, Dithane M-45 or Manzate 200 at recommended rates to the tank-mix. If anthracnose is also a problem add maneb, Dithane M-45, Manzate 200, Difolatan, or Bravo at recommended rates with TENN-COP 5E in the tank-mix. Where anthracnose is not an important problem, bacterial speck and spot, early blight and septoria can be controlled with a tank-mix of TENN-COP 5E at 3 pints and 0.75 to 1.125 pounds of the active ingredient in Bravo wettable powder or flowable formulation mixed with the above water rates and applied to one acre. Apply by overhead irrigation only those fungicides with TENN-COP 5E that are specifically labeled by its manufacturer for irrigation application.

Field Crops

Corn (Field) - Southern leaf blight (North Central States Only) - Use 3 pints per acre in sufficient water for adequate coverage, usually 3 to 5 gallons per acre by aircraft or 20 to 50 gallons per acre by ground equipment. Begin treatment when first spots appear. Apply at 10 to 20 day intervals after first application until corn is mature.

Colored and Navy Beans - Bacterial blights (Halo, common, and brown spot) - Apply 3 pints per acre in sufficient water for good coverage by aerial, ground, or sprinkler irrigation equipment. Generally use 3 or more gallons spray mixture by aerial spray, or 20 or more gallons per acre by ground spray. For best preventive cover, begin spray 2 weeks before disease normally appears. Follow first spray every 7 to 10 days with 3 to 5 sprays as needed. When applying by sprinkler irrigation, also read and follow special use directions elsewhere on this label.

Peanuts - Cercospora leaf spot and Web blotch - Apply a tank combination of 1-1/2 pints TENN-COP 5E plus 1-1/2 pints Bravo 500 in 5 to 40 gallons of water and apply to one acre. Begin treatment when disease first appears, or for best control begin early, usually 25 to 40 days after emergence, and repeat at 10 to 14 days until harvest. Or mix 3 pints TENN-COP 5E in 5 to 40 gallons of water and apply to one acre. Begin treatment as stated above and repeat at 7 day intervals up to harvest, or tank-mix 3 pints TENN-COP 5E plus 2 pounds of sulfur (wetable or flowable) in 5 to 40 gallons of water, applied to one acre and repeat at 10 day intervals beginning as stated above and continue up to harvest. When above treatments are applied through an overhead sprinkler, be sure that good thorough coverage is achieved with your sprinkler. Also read and follow special use directions elsewhere on this label when applying by sprinkler irrigation.

Sugar Beets - Cercospora leaf spot and Powdery mildew - Mix 3 pints TENN-COP 5E in 5 to 40 gallons water and apply to one acre, or tank-mix 3 pints TENN-COP 5E with 2 pounds of sulfur (wetttable or flowable) in 5 to 40 gallons water, and apply to one acre. Begin when disease first appears, or two weeks before disease is expected and continue to harvest, repeating TENN-COP 5E alone every 7 days or the TENN-COP - sulfur tank-mix every 10 to 14 days depending on disease pressure. When above treatments are applied through an overhead sprinkler, be sure that good thorough coverage is achieved with your sprinkler. Also read and follow special use directions elsewhere on this label when applying by sprinkler irrigation.

Ornamentals

Pine (Austrian and Ponderosa) - Needle blight - Mix 3 pints in 100 gallons of water and spray until needles are thoroughly wet with spray. Apply when new needles are just emerging. Make a second application 3 weeks later.

Roses - Powdery mildew - Mix 3 pints TENN-COP 5E in 100 gallons of water and spray to point of run-off. Begin treatment when new spring growth emerges and repeat weekly as long as needed to control disease. Treatment will also control black spot if disease level is low to moderate. Where black spot and powdery mildew are usually severe, or after midsummer when black spot or powdery mildew infection level increases, a more effective black spot and powdery mildew fungicide should be used alone or in a tank-mix if compatible.

Sycamore - Anthracnose - Mix 3 pints in 100 gallons of water. Make first application just before buds begin to swell and repeat twice at 7 day intervals.

NOTICE TO BUYER - Seller warrants that this product conforms to the chemical description on this label and is reasonably fit for purposes stated on this label only when used in accordance with directions under normal use conditions. This warranty does not extend to use of this product contrary to label directions, or under abnormal use conditions, or under conditions not reasonably foreseeable to seller; buyer assumes all risk of any such use. Seller makes no other warranties, either expressed or implied.

Bravo and Daconil 2787, Reg. TM's of SDS Biotech
Dithane, Reg. TM of Rohm and Haas
Difolatan and Phaltan, Reg. TM's of Chevron Chemical Company
Manzate, Reg. TM of E. I. DuPont de Nemours & Co.
Thiodan and Polyran, Reg. TM's of FMC Corporation
Diazinon, Reg. TM of Ciba-Geigy Corporation
Guthion, Reg. TM of the Parent Company of Farbenfabriken Bayer, GmbH
Pydrin, Reg. TM of Shell Chemical Company

