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533732

NOV 21 1997

Ms. Nancy Hilton
FMC Corporation
Agricultural Products Group
1735 Market Street
Philadelphia, PA 19103

Dear Ms. Hilton:

Subject: Amendment- Delete crops: Alfalfa (grown for forage), Artichokes, Broccoli, Celery, Cherries, Corn (seed crop only), Cucumbers, Eggplant, Grapes, Lettuce, Melons, Peas (seed crop only), Peppers, Potatoes, Pumpkins, Summer and Winter Squash, Safflower, Sugar Beets, Sunflowers, Sweet Corn, and field Tomatoes
Thiodan 2 Pyrenone 0.3-0.03 EC
EPA Registration Number 279-2822
Your submission dated August 11, 1997

The amendment referred to above, submitted in connection with a registration under FIFRA section 3(c)(7)(a), is acceptable provided that you:

1. Submit and/or cite all data or other material required for registration/reregistration of your product under FIFRA section 3(c)(5) or FIFRA section 4 when the Agency requires all registrants of similar products to submit such data.

2. Make the labeling changes listed below before you release the product for shipment bearing the amended labeling:

a) Regarding the Small Grains use retention, the Agency understands that you, together with other members of the Endosulfan Task Force, are now actively engaged in satisfying the overdue data requirement and that you will keep the Agency apprised of progress on the study involving winter wheat. This letter is not to be construed as a final determination by the Agency regarding the acceptability of this use pattern.

b) In the Ingredients Statement, in the footnote ***, change "Solvents" to "Solvent".

c) At the end of the **Note to Physician**, add "This product contains petroleum hydrocarbons (xylene range aromatic solvent). Care should be taken to prevent aspiration because of the possibility of chemical pneumonia or pulmonary edema due to the organic solvent in the formulation.".

d) Replace the current **HAZARDS TO HUMANS AND DOMESTIC ANIMALS** text with the following:

Fatal if swallowed. May be fatal if inhaled or absorbed through skin. Causes moderate eye irritation. Do not breathe vapor or spray mist. Do not get in eyes, on skin, or on clothing. Do not contaminate food or feed. Keep out of reach of domestic animals. Food utensils such as spoons and measuring cups must not be used for food purposes after use in measuring pesticides.

e) In the first paragraph of the Personal Protective Equipment (PPE) entry, replace "category F" with "category G", since there is more than 40% solvent. In the PPE listing, revise "Protective eyewear when mixing or loading," to read just "Protective eyewear;" and for consistency with the rest of the entries, capitalize the "C" of "chemical-resistant apron", and the "R" of "respirator'.

f) Add the heading **Engineering Control Statement** over the paragraph beginning "When handlers use closed systems".

g) In the **Environmental Hazards**, after "...are important resources." add "Do not contaminate water by cleaning of equipment or disposal of equipment washwaters.".

h) For consistency with your other Thiodan products, directly above **"Not For Use Or Storage In Or Around The Home."** add the heading **GENERAL INSTRUCTIONS**. Directly under that heading you may elect to add "This product is not registered for use in California.". Immediately under **"Not For Use or Storage in or Around the Home."** add "Do not use in undiluted form.". In the second sentence of the paragraph beginning "Apply the listed", relocate "Unless otherwise noted," from the middle to the beginning of the second sentence.

i) For **Apricots, Nectarines, and Peaches(21)**, for Peachtree Borer and Lesser Peachtree Borer, should a maximum number of quarts entry appear in the **Rate of Application** as it does for control of these same pests on Plums and Prunes? Such a modified entry would then read "1 1/2 quarts per 100 gallons

or 4 to 5 quarts per acre". Also in the **Rate of Application**, revise "West Coast-" to "Pacific Northwest:".

j) For Apricots, Nectarines, and Peaches(30), in the **Rate of Application**, delete "West Coast- do not use more than 6 quarts per acre". That limitation applies nationwide and already appears in the Notes for this crop.

k) For Barley, Oats, Rye, and Wheat, for Army Cutworm revise the **Rate of Application** to read "1 quart per acre" and replace the current **Method of Application** with "Apply when small larvae are readily found in the field. For aerial application, apply in 2 gallons of crop oil per acre.".

l) For Barley, Oats, Rye, and Wheat, for Cereal Leaf Beetle revise the **Rate of Application** to read "1/2 to 1 quart per acre". For Aphids, revise the **Rate of Application** to read "1 to 1 1/2 quarts per acre". In the Notes for these crops, revise "(i.e., 1 1/3 quarts)" to read "(i.e., 2 quarts)".

m) For Blueberries, revise the **Rate of Application** to read "3 quarts per acre in 300 gallons of water".

n) Correct the crop name to read "Brussels Sprouts".

o) For Carrots, in the **Method of Application** revise "Make applications" to "Make application", since only one application is permitted per year.

p) For Cherry, Peach, Plum Nursery Stock Dip, the full set of personal protective clothing is also required for this use. In the Notes, replace "Wear rubber gloves during the dipping operation." with "Full Personal Protective Equipment (PPE) requirements for applicators also apply to this dipping operation.".

q) The Agency questions whether the **Rate of Application** entry for Citrus (Non-Bearing Trees and Nursery Stock) is correct. AgrEvo has recently verified that the correct rate for both Federal and California endosulfan 3EC for this same use is 2/3 quarts (1/2 lb. a.i.) per 100 gallons of water. The label for the subject product calls for 1/2 quart of product per 100 gallons of water (equivalent to 1/4 lb. a.i per 100 gallons). Should this instead be 1 quart of product in 100 gallons (1/2 lb. a.i.) to match the rate appearing on the 3EC labels? Does your residue data for Citrus support an equal amount of active ingredient regardless of the formulation used?

r) For Collards, in the **Method of Application** revise "Make

applications" to "Make application", since only one application is permitted per year.

s) For Cotton, unite the directions block, i.e., a single line should separate the **Insects Controlled** and **Rate of Application** columns.

t) For Kale, in the **Method of Application** revise "Make applications" to "Make application", since only one application is permitted per year.

u) For Macadamia Nuts, should the Notes include a maximum number of applications per year?

v) For Mustard Greens, in the **Method of Application** revise "Make applications" to "Make application", since only one application is permitted per year.

w) For Pears, revise the **Method of Application** for Pear Leaf Blister Mites to read "Apply to trees as a post harvest or dormant treatment.".

x) For the crops Plums and Prunes, combine Peachtree Borer and Lesser Peachtree Borer as a single block entry (as you have for Apricots, Nectarines, and Peaches) with a revised **Method of Application** reading "Best control is obtained with a single application post-harvest during the first week of September. Spray all bark areas from ground level to lower scaffold limbs.". The combined pests entry will have a **Rate of Application** of "1 1/2 quarts per 100 gallons or 4 to 5 quarts per acre." plus the reduced rate which is currently indicated as "West Coast-". However, revise "West Coast-" to "Pacific Northwest:".

y) For Spinach, in the **Method of Application** revise "Make applications" to "Make application", since only one application is permitted per year.

z) For Strawberries, based on your Thiodan Cottonseed Oil Insecticide product (the old linear version California label), it appears that the **Rate of Application** entry for the subject product should be expanded to the following: "1 quart per 100 gallons or 2 quarts per acre (Apply in a minimum of 150 gallons of water per acre.)". Please check with your agricultural experts and revise the label accordingly. If such a revision is <u>not</u> appropriate, please promptly notify the Agency in writing citing the reason(s). Also, for Cyclamen Mites revise the **Rate of Application** to read "4 quarts per acre in 400 gallons of water".

aa) For Strawberries - Northwest Use Only, the full set of personal protective clothing is also required for this use. In the Notes, replace "Wear rubber gloves during the dipping operation." with "Full Personal Protective Equipment (PPE) requirements for applicators also apply to this dipping operation.".

bb) For Tomatoes, in the Notes delete "In greenhouse applications wear a mask or respirator approved by MSA and OSHA for protection against endosulfan." [under WPS full PPE is also required in greenhouses]. Also, for Whitefly, revise the **Rate of Application** entry to read "1 quart per 100 or 200 gallons of water per acre". Since you have deleted field tomatoes, should the directions for all uses on tomatoes on this label be expressed in something else besides acres, considering that what remains is greenhouse use only?

cc) For Walnuts, should the **Rate of Application** entry be expanded? Based on your Thiodan Cottonseed Oil Insecticide product (the old linear version California label), it appears that the **Rate of Application** entry for the subject product should be expanded to the following: "3 to 4 quarts per acre (Apply in a minimum of 150 gallons of water per acre.)". However, the directions on this label for other fruit and nut trees generally include a number of quarts per 100 gallons entry along with the maximum amount of quarts per acre. Based on this, it may be that the **Rate of Application** should be even further expanded to read "1 quart per 100 gallons or 3 to 4 quarts per acre (Apply in a minimum of 150 gallons of water per acre.)". Please check with your agricultural experts and revise this label accordingly. If <u>neither</u> such revision is appropriate, please promptly notify the Agency in writing citing the reason(s).

dd) For **COMMERCIALLY GROWN ORNAMENTALS**, in the Notes for Ornamentals (Greenhouse and Out-of-Doors), delete "In greenhouse application, wear a mask or respirator approved by MSA and OSHA for protection against endosulfan." [under WPS full PPE is also required in greenhouses].

ee) For **COMMERCIALLY GROWN ORNAMENTALS**, in the Notes for Douglas Fir, add "Food utensils such as teaspoons must not be used for food purposes after use in measuring pesticides.".

ff) The Agency notes that you have only included the teaspoons per gallon rate for Douglas Fir but not for any of the other uses. Is this intentional? If not, you may add appropriate converted rates (2 teaspoons per gallon when the rate is 1 quart per 100 gallons and 4 teaspoons per gallon when the rate is 2 quarts per 100 gallons). For each crop that you

elect to add the teaspoons per gallon rate, you must then add "Food utensils such as teaspoons must not be used for food purposes after use in measuring pesticides." to the Notes for that crop.

3. Submit three (3) copies of your final printed labeling before you release the product for shipment.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6(e). Your release for shipment of the product constitutes acceptance of these conditions.

Sincerely,

George T. LaRocca
Product Manager 13
Insecticide/Rodenticide Branch
Registration Division (7505C)

Code 3042

Net Contents

# Thiodan® 2 Pyrenone®
# 0.3-0.03 EC
## Insecticide
**For Agricultural or Commercial Use Only**

**EPA Reg. No. 279-2822** **EPA Est., 279-**

| **Active Ingredients:** | **By Wt.** |
|---|---|
| *Endosulfan (Hexachlorohexahydromethano-2,4,3-benzodioxathiepin oxide) | 23.86% |
| **Technical Piperonyl Butoxide | 3.57% |
| Pyrethrins | 0.36% |
| ***Inert Ingredients: | 72.21% |
| | 100.00% |

*Thiodan
**Consists of 3.14% (butylcarbityl) (6-propylpiperonyl) ether and 0.43% of related compounds.
***Contains Xylene Range Aromatic Solvents.
Contains 2 pounds endosulfan, 0.03 pound pyrethrins, and 0.3 pound piperonyl butoxide (Butacide®) per gallon.

KEEP OUT OF REACH OF CHILDREN

## DANGER-POISON
## PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

## STATEMENT OF PRACTICAL TREATMENT

**If swallowed:** Call a physician or Poison Control Center immediately. If possible, vomiting should be induced under medical supervision. Drink one or two glasses of water and induce vomiting by touching back of throat with a finger or by giving one (1) ounce of syrup of ipecac, if available. If person is unconscious or convulsing, do not give anything by mouth and do not induce vomiting.
**If inhaled:** Remove victim to fresh air. Apply artificial respiration if indicated. Get medical attention.
**If on skin:** Remove contaminated clothing and wash skin with soap and water. Get medical attention.
**If in eyes:** Flush eyes with plenty of water. Call a physician immediately.

**Note to Physician:** Endosulfan is a central nervous system stimulant absorbable by mouth, inhalation, or through contact with the skin. It may cause convulsions. There is no specific antidote. Diazepam I.V. is the drug of choice. Barbituric acid derivatives such as Phenobarbital may be used additionally. A neuromuscular blocking agent may be used if convulsions persist. This type of drug may be used only if complete control of respiration can be maintained. Epinephrine derivatives are absolutely contraindicated.

**For Emergency Assistance Call (800) 331-3148**
**See Other Panels for Additional Precautionary Information.**

FMC®

ACCEPTED
with COMMENTS
In EPA Letter Dated
NOV 21 1997
Under the Federal Insecticide, Fungicide, and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 279-2822

FMC Corporation
Agricultural Products Group
Philadelphia PA 19103

8/97

## PRECAUTIONARY STATEMENTS
## Hazards to Humans (and Domestic Animals)

Danger
Fatal if swallowed. May be fatal if inhaled or absorbed through skin. Causes moderate eye irritation. Do not breathe vapor or spray mist. Do not get in eyes, on skin, or on clothing.

**Personal Protective Equipment:**

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category F on an EPA chemical resistance category selection chart.

**Applicators and other handlers must wear:** Coveralls over short-sleeved shirt and short pants; Chemical-resistant gloves, such as Barrier Laminate, or Butyl Rubber, or Nitrile Rubber or Viton; Chemical-resistant footwear plus socks; Protective eyewear when mixing or loading; Chemical-resistant headgear for overhead exposure; and a respirator with either an organic vapor-removing cartridge with a prefilter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G). Add a chemical-resistant apron when cleaning equipment, mixing and loading.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

**User Safety Recommendations:**
Users should:
- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

## Environmental Hazards

This product is toxic to fish, birds, and other wildlife. Birds feeding on treated areas may be killed. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Due to the risk of runoff and drift, do not apply within a distance of 300 feet of lakes, ponds, streams, and estuaries. Shrimp and crab may be killed at application rates recommended on this label. Do not apply where fish, shrimp, crab, and other aquatic life are important resources. This product must not be used in areas where impact on threatened endangered species is likely. Contact your State Fish and Game Agency before applying this product. Apply this product only as specified on this label.

This pesticide is toxic to bees exposed to direct application. Applications should be timed to coincide with periods of minimum bee activity, usually between late evening and early morning.

## Physical/Chemical Hazards

Do not use or store near heat or open flame.

## DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

Do not apply this product through any type of irrigation system.

## AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is: Coveralls over short-sleeved shirt and short pants; Chemical-resistant gloves, such as Barrier Laminate, or Butyl Rubber, or Nitrile Rubber or Viton; Chemical-resistant footwear plus socks; and Chemical-resistant headgear for overhead exposure.

## STORAGE AND DISPOSAL

**Pesticide Storage**
Do not store in or around the home.

Do not store below 20°F, (−7°C).

Do not use or store near heat, open flame or hot surfaces.

Keep out of reach of children and animals. Store in original containers only. Store in a cool, dry place and avoid excess heat. Carefully open containers. After partial use, replace lids and close tightly. Do not put concentrate or dilute material into food or drink containers. Do not contaminate other pesticides, fertilizers, water, food, or feed by storage or disposal.

In case of spill, avoid contact, isolate area and keep out animals and unprotected persons. Confine spills. Call FMC: (800) 331-3148.

To confine spill: If liquid, dike surrounding area or absorb with sand, cat litter or commercial clay. If dry material, cover to prevent dispersal. Place damaged package in a holding container. Identify contents.

**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. Do not cut or weld metal containers.

**Not For Use Or Storage In Or Around The Home.**

Apply the listed amount per acre when insects first appear and repeat as required, unless otherwise noted, to maintain effective control. Use in sufficient water for thorough coverage, unless otherwise noted, of listed crops. Coverage of upper and lower leaf surfaces is essential for good control. For ground application, apply recommended amount of pesticide in a minimum of 10 gallons of water per acre on vegetable or row crops. Observe use limitations. If insect control is required beyond the following use patterns, supplement the control program with other suitable pesticides.

When applying this material by aircraft, mix the recommended amount with sufficient water to provide a minimum of 1 gallon finished spray per acre on vegetable and field crops, unless otherwise noted, and a minimum of 20 gallons of finished spray per acre on fruit and nut trees and on vines. Where more than 2 quarts of this material are recommended, mix with sufficient water to provide a minimum of finished spray equal to twice the amount of Thiodan® 2 Pyrenone® 0.3-0.03 EC insecticide used. Apply with continuous agitation.

Do not plant root crops other than carrots, potatoes, sweet potatoes, and sugar beets as follow-up crops. Observe days interval between last application and harvest indicated by number in ( ) following the crop name.

**Apples (21)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Aphids (including Apple Aphid, Rosy Apple Aphid, Woolly Apple Aphid)<br>Apple Rust Mite<br>Green Fruitworm<br>Tarnished Plant Bug<br>Tentiform Leafminers<br>White Apple Leafhopper (first generation) | 1 quart per 100 gallons or a maximum of 5 quarts per acre | Applications made at pink and/or petal fall provide best control of Tarnished Plant Bug and Green Fruitworm. For best control of first generation White Apple Leafhopper, apply when nymphs first appear on leaves. If necessary, prior to petal fall, use 1½ quarts per 100 gallons to control Apple Aphids and Rosy Apple Aphids. For control of Tentiform Leafminers, make first application as soon as moth flight begins. A second application should be made 10 days later. |

Do not feed pomace from treated apples to livestock.
Do not feed cull fruits to animals or allow livestock to graze in treated orchards.
Do not make more than 2 applications during the fruiting period.
Do not make more than 3 applications per year.
Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year.

**Apricots (21), Nectarines (21), Peaches (21)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Peachtree Borer<br>Lesser Peachtree Borer | 1½ quarts per 100 gallons; *West Coast* – 1 to 1½ quarts per 100 gallons; *Southeastern States* – 3 to 5 quarts per 100 gallons. | Best control is obtained with a single application post-harvest during the first week of September. Spray all bark areas from ground level to lower scaffold limbs. |

Do not feed cull fruits to animals or allow livestock to graze in treated orchards.
Do not make more than 2 applications per year.
Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year.

**Apricots (30), Nectarines (30), Peaches (30)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Aphids (including Black Cherry Aphid, Black Peach Aphid, Green Peach Aphid, Rusty Plum Aphid)<br>Catfacing insects (Stink Bug type)<br>Green Fruitworm<br>Peach Silver Mite<br>Peach Twig Borer | 1 quart per 100 gallons or a maximum of 4 to 5 quarts per acre; *West Coast* – do not use more than 6 quarts per acre. | Make applications when insects appear or feeding is noticed. |

Do not feed cull fruits to animals or allow livestock to graze in treated orchards.
Do not make more than 2 applications per year.
Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year.

see attached

Barley, Oats, Rye, Wheat

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Army Cutworm | ⅔ quart per acre | For aerial application, apply in 2 gallons of diesel fuel oil per acre. |
| Cereal Leaf Beetle (Illinois, Indiana, Michigan and Ohio only) | ⅓ to ⅔ quart per acre | Apply when small larvae are readily found in the field. For aerial application, use a minimum of 1 to 2 gallons of water per acre. |
| Aphids | ⅔ to 1 quart per acre | Make applications when insects appear or feeding is noticed. |
| Do not apply after heads begin to form.<br>Do not feed treated forage to livestock.<br>Do not make more than 2 applications per year.<br>Do not exceed a maximum of 1.0 lb. active ingredient (i.e., 1⅓ quarts) per acre per year. | | |

**Beans, Succulent and Dry (except Lima Beans) (3) and Southern Field Peas (Succulent type, including Black-Eyed Peas, Crowder Peas, and Southern Peas) (3)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Black Bean Aphid<br>Bean Leaf Skeletonizer<br>Cowpea Curculio<br>Cucumber Beetles<br>Flea Beetles<br>Green Stink Bug<br>Leafhoppers<br>Mexican Bean Beetle | 1 to 2 quarts per acre | Make applications when insects appear or feeding is noticed. For control of Cowpea Curculio, make 3 applications at 5-day intervals starting when the pods are ½ inch long. |
| Aphids<br>Armyworms<br>Western Bean Cutworm<br>Whitefly | 2 quarts per acre | |

Do not feed treated threshings or allow livestock to graze in treated fields.
Do not use on Lima Beans that are to be removed from the field for processing.
Do not make more than 3 applications per year.
Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year.

**Blueberries**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Blueberries | 3 quarts per 300 gallons | Apply immediately after harvest and repeat 5 to 8 weeks later. |

Do not apply after buds are well formed.
Do not make more than 2 applications per year.
Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year.

**Brussel Sprouts (14), Cabbage (7), Cauliflower (14)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Cabbage Aphid<br>Cabbage Looper<br>Cross-striped Cabbageworm<br>Diamondback Moth larvae<br>Flea Beetles<br>Harlequin Bug<br>Imported Cabbageworm<br>Leafhoppers<br>Stink Bugs | 1½ to 2 quarts per acre | Make applications when insects appear or feeding is noticed. |
| Armyworms<br>Cutworms<br>Whitefly | 2 quarts per acre | |

Do not make more than 4 applications per year.
Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year.

**Carrots (7)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Green Peach Aphid<br>Leafhoppers | 1 to 2 quarts per acre | Make applications when insects appear or feeding is noticed. |
| Armyworms<br>Flea Beetles<br>Whitefly | 2 quarts per acre | |

Do not use tops for food or feed.
Do not make more than one application per year.
Do not exceed a maximum of 1.0 lb. active ingredient endosulfan (i.e., 2 quarts) per acre per year.

**Cherry, Peach, Plum Nursery Stock Dip**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Peachtree Borer | 4 quarts per 40 gallons | Mix thoroughly. Immerse trees so that the roots and crowns are covered well above the grafting bud scar. |

Wear rubber gloves during the dipping operation.
Plant immediately or dry before returning to storage.

**Citrus (Non-Bearing Trees and Nursery Stock)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Citrus Aphid | ½ quart per 100 gallons or a maximum of 5 quarts per acre | Make applications when insects appear or feeding is noticed. |

Do not apply to bearing trees or trees that will bear fruit within twelve months.
Do not make more than 2 applications per year.
Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year.

**Collards (21)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Aphids<br>Cabbage Looper<br>Diamondback Moth larvae<br>Fall Armyworm<br>Flea Beetles<br>Harlequin Bug<br>Imported Cabbageworm<br>Leafhoppers | 1½ to 2 quarts per acre | Make applications when insects appear or feeding is noticed. |
| Whitefly | 2 quarts per acre | |

Do not make more than one application per year.
Do not exceed a maximum of 1.0 lb. active ingredient endosulfan (i.e., 2 quarts) per acre per year.

**Cotton**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Aphids | ¾ to 1½ quarts per acre | Make applications when insects appear or feeding is noticed. For control of aphids, thorough coverage is important. |
| Boll Weevil | 1 to 3 quarts per acre | |
| Bollworm<br>Cabbage Looper<br>Cotton Leafperforator<br>Cotton Leafworm<br>Fleahoppers<br>Lygus Bugs<br>Stink Bugs<br>Tobacco Budworm | 2 to 3 quarts per acre | |
| Thrips | 3 quarts per acre | |

Applications may be made using ground or aerial application equipment.
The higher rate should be used under heavy pest pressure.
Do not apply after bolls open.
Do not graze dairy or meat animals in treated fields.
Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year.

**Kale (21)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Cabbage Flea Beetle<br>Harlequin Bug<br>Imported Cabbageworm | 1½ quarts per acre | Make applications when insects appear or feeding is noticed. |

Do not make more than one application per year.
Do not exceed a maximum of 0.75 lb. active ingredient endosulfan (i.e., 1½ quarts) per acre per year.

**Macadamia Nuts (1)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Southern Green Stink Bug | 2 quarts per 100 gallons | Make applications when insects appear or feeding is noticed. |

Do not graze livestock on orchard crops or grasses in treated areas.
Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year.

**Mustard Greens (21)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Aphids<br>Cabbage Looper<br>Diamondback Moth larvae<br>Fall Armyworm<br>Flea Beetles<br>Harlequin Bug<br>Imported Cabbageworm<br>Leafhoppers | 1½ to 2 quarts per acre | Make applications when insects appear or feeding is noticed. |
| Whitefly | 2 quarts per acre | |
| Do not make more than one application per year.<br>Do not exceed a maximum of 1.0 lb. active ingredient endosulfan (i.e., 2 quarts) per acre per year. | | |

**Pears (7)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Green Fruitworm<br>Tarnished Plant Bug | 1 quart per 100 gallons or 4 to 5 quarts per acre | Make applications at white bud or petal fall when insects appear or feeding is noticed. |
| Pear Psylla (second generation) | 1½ quarts per 100 gallons; maximum of 300 gallons per acre | Apply when nymphs are still small and repeat, if necessary, in 7 to 10 days. |
| Pear Rust Mite<br>Consperse Stink Bug (foliar treatment) | 1 quart per 100 gallons or 4 to 5 quarts per acre | Make applications when insects appear or feeding is noticed. Stink Bugs must be wet by spray to obtain control. |
| Consperse Stink Bug (soil treatment) | 1 quart per 100 gallons; 200 to 400 gallons per acre | Apply to orchard floor and around trees prior to bloom. |
| Pear Leaf Blister Mite | ½ to 1 quart per 100 gallons | Apply as post harvest or dormant treatment. |
| Do not feed cull fruits to animals or allow livestock to graze in treated orchards.<br>Do not make more than 2 applications per year.<br>Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year.<br>Note: Aerial application may not result in satisfactory control and should only be employed if impossible to apply by ground. | | |

**Peas, Succulent (5)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Pea Aphid<br>Pea Weevil | 1 to 2 quarts per acre | Make applications when insects appear or feeding is noticed. |
| Use only on peas to be harvested by combine.<br>Do not feed treated vines or threshings to livestock or allow livestock to graze in treated fields.<br>Do not make more than 3 applications per year.<br>Do not exceed a maximum of 2.0 lbs. active ingredient endosulfan (i.e., 4 quarts) per acre per year. | | |

**Pecans**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Black Pecan Aphid<br>Pecan Nut Casebearer<br>Spittlebug | 1½ quarts per 100 gallons | Make applications when insects appear or feeding is noticed. For Casebearer, apply when eggs of first generation appear on the tips of the young nuts. Another application may be required after the second generation of eggs is deposited. For Spittlebug, apply when first leaves are half grown and repeat as required. |
| Pecan Leaf Phylloxera | 1 to 1½ quarts per 100 gallons | Apply when nymphs appear and before they are enclosed in plant tissue. For high populations, use the higher rate. |
| Do not apply after shuck split.<br>Do not graze livestock on orchard crops or grasses in treated areas.<br>Do not make more than 2 applications per year.<br>Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year. | | |

**Pineapple (For Fresh Market Only) (7)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Pineapple Fruit Mite | 3 to 4 quarts per acre | Make applications when insects appear or feeding is noticed. Apply at intervals of 7 to 10 days, if necessary, particularly during the 40 day period of blooming. |
| Do not feed treated forage or pineapple by-products to livestock.<br>Do not make more than 2 applications per year.<br>Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year. | | |

**Plums (7), Prunes (7)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Fruittree Leafroller *(Pacific Northwest Only)* | 1 quart per 100 gallons or 4 to 5 quarts per acre | Apply during pre-pink stage of growth when insects appear or feeding is noticed. |
| Aphids (including Hop Aphid, Leafcurl Plum Aphid, Thistle Aphid)<br>Plum Rust (Nursery) Mite | | For control of aphids, apply when eggs hatch during pre-bloom or petal fall. Summer applications should be made before leaves curl. |
| Peach Twig Borer | 1 quart per 100 gallons or 4 to 5 quarts per acre | Make applications when insects appear or feeding is noticed. Stink Bugs must be wet by spray to obtain control. |
| Lesser Peachtree Borer | 1½ quarts per 100 gallons or 4 to 5 quarts per acre | Apply spray to thoroughly wet the trunk and main branches. |
| Peachtree Borer | 1½ quarts per 100 gallons or 4 to 5 quarts per acre; *West Coast* – 1 to 1½ quarts per 100 gallons or 4 to 5 quarts per acre | Spray thoroughly to cover all bark areas from ground to scaffold limbs. |
| Do not allow livestock to graze on orchard crops or grasses in treated areas.<br>Do not make more than 2 applications per year.<br>Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year. | | |

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Spinach (21)

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Armyworms<br>Crown mite<br>Flea Beetles<br>Green Peach Aphid<br>Leafhoppers | 1½ to 2 quarts per acre | Make applications when insects appear or feeding is noticed. |
| Whitefly | 2 quarts per acre | |
| Do not make more than one application per year.<br>Do not exceed a maximum of 1.0 lb. active ingredient endosulfan (i.e., 2 quarts) per acre per year. | | |

Strawberries (4)

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Meadow Spittlebug<br>Strawberry Aphid<br>Tarnished Plant Bug<br>Whitefly | 2 quarts per acre | Make applications when insects appear or feeding is noticed. Do not reapply within 15 days or more than twice during a 35 day period when fruit is present. |
| Cyclamen Mite | 4 quarts per acre in 400 gallons | Make applications when insects appear or feeding is noticed. Thoroughly wet the foliage, stem and crown of the plant. For multiple applications, do not apply at intervals less than 35 days when fruit is present. |
| Do not make more than 3 applications per year.<br>Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year. | | |

Strawberries – Northwest Use Only

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Garden Symphylan (aids in reducing damage) | 2 quarts per 100 gallons | Mix thoroughly. Dip entire plant. When immersing bundles of plants, make certain any trapped air is forced out to assure through wetting of entire plant. |
| Wear rubber gloves during the dipping operation.<br>Drain and allow plants to dry before setting them out in the field. | | |

Tobacco (5)

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Aphids (including Green Peach Aphid, Tobacco Aphid)<br>Budworm<br>Cabbage Looper<br>Flea Beetles<br>Hornworms | *Seed Bed:* 1 quart per 100 gallons | Make applications when insects appear or feeding is noticed. Apply about 6 gallons of finished spray per 100 square yards. |
| Green June Bug larvae | *Plant Bed:* ½ quart per 100 gallons | Make applications when insects appear or feeding is noticed. Drench at a rate of 1 gallon per square yard. |
| Aphids (including Green Peach Aphid, Tobacco Aphid)<br>Budworm<br>Cabbage Looper<br>Flea Beetles<br>Green June Bug larvae<br>Hornworms | *Field:* 1 to 2 quarts per acre | Make applications when insects appear or feeding is noticed. |
| Stink Bugs | *Field:* 2 to 3 quarts per 100 gallons | |
| Do not make more than 6 applications per year.<br>Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year.<br>Note: When using a knapsack sprayer, apply the recommended amount of this insecticide in 20 to 30 gallons of water per acre using a maximum pressure of 20 psi and holding the spray nozzle 12 to 18 inches above the plants. Some phyto toxicity may occur under conditions of high humidity with temperatures above 85° F. | | |

Tomatoes (Greenhouse) (2)

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Aphids<br>Blister Beetles<br>Colorado Potato Beetle<br>Flea Beetles<br>Tomato Hornworm | 1 to 2 quarts per acre | Make applications when insects appear or feeding is noticed. |
| Cabbage Looper<br>Stink Bugs | 1½ to 2 quarts per acre | |
| Tomato Fruitworm<br>Tomato Russet Mite<br>Whitefly<br>Yellowstriped Armyworm | 2 quarts per acre | |
| Whitefly | 1 quart per 100 to 200 gallons of water | |
| In greenhouse applications, wear a mask or respirator approved by MSA and OSHA for protection against endosulfan.<br>Do not make more than 6 applications per year.<br>Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year. | | |

Turnip Greens (21)

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Aphids<br>Cabbage Looper<br>Diamondback Moth larvae<br>Fall Armyworm<br>Flea Beetles<br>Harlequin Bug<br>Imported Cabbageworm<br>Leafhoppers | 1½ quarts per acre | Make applications when insects appear or feeding is noticed. |
| Do not apply to turnips grown for roots.<br>Do not make more than one application per year.<br>Do not exceed a maximum of 0.75 lb. active ingredient endosulfan (i.e., 1½ quarts) per acre per year. | | |

Walnuts

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Walnut Aphid | 3 to 4 quarts per acre | Make applications when insects appear or feeding is noticed. |
| Do not apply after husk split.<br>Do not graze livestock on orchard crops or grasses in treated areas.<br>Do not make more than 2 applications per year.<br>Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year. | | |

## COMMERCIALLY GROWN ORNAMENTALS

### Ornamental Plants

**Leatherleaf Fern (Leather Holly Fern)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Leatherleaf Fern Borer | 1 quart per 100 gallons | Begin treatment when first larval feeding is observed in the mid-vein area at the base of the leaflets. Repeat at intervals of 2 to 3 weeks as necessary. |
| Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year. | | |

**Ornamentals (Greenhouse, and Out-of-Doors)**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Aphids<br>Cyclamen Mite<br>Rose Chafer<br>Whitefly | 1 quart per 100 gallons | Make applications when insects appear or feeding is noticed. |
| On chrysanthemums, best results will be obtained if applied before plants flower.<br>Do not apply to "Bonnafon Deluxe," "Fred Shoesmith," and "White Knight" chrysanthemums as injury may result.<br>Do not use on Birch trees.<br>In greenhouse applications, wear a mask or respirator approved by MSA and OSHA for protection against endosulfan.<br>Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year. | | |

### Ornamental Trees and Shrubs

**Dogwood, Lilac**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Dogwood Borer<br>Lilac Borer | 1 to 2 quarts per 100 gallons | Apply in early June and repeat in 10 to 14 days. Drench all bark areas down to the ground level. |
| Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year. | | |

**Douglas Fir (Grown for Ornamentals) – *Pacific Northwest Only***

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Aphids<br>Cooley Spruce Gall Adelgid<br>Douglas Fir Needle Midge | 1 quart per 100 gallons (2 teaspoons per gallon) | Make applications when insects appear or feeding is noticed. For control of gall adelgid, apply when white cottony tufts appear. For control of needle midge, apply in late April or early May just before buds open. |
| Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year. | | |

**Shade Trees (except Birch), Shrubs**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Aphids | 1 quart per 100 gallons | Make applications when insects appear or feeding is noticed. |
| Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year. | | |

**Taxus**

| Insects Controlled | Rate of Application | Method of Application |
|---|---|---|
| Taxus Bud Mite | 1 quart per 100 gallons | Make 3 to 5 applications beginning in mid-May. Thoroughly spray foliage, twigs, and bark. |
| Black Vine Weevil | 2 quarts per 100 gallons | Spray thoroughly and drench soil under the plants. Apply when the weevils first appear and repeat in 14 days. |
| Do not exceed a maximum of 3.0 lbs. active ingredient endosulfan (i.e., 6 quarts) per acre per year. | | |

## Dealers Should Sell in Original Packages Only.

**Terms of Sale or Use:** On purchase of this product buyer and user agree to the following conditions:

**Warranty:** FMC makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Except as so warranted, the product is sold as is. Buyer and user assume all risk of use and/or handling and/or storage of this material when such use and/or handling and/or storage is contrary to label instructions.

**Directions and Recommendations:** Follow directions carefully. Timing and method of application, weather and crop conditions, mixture with other chemicals not specifically recommended and other influencing factors in the use of this product are beyond the control of the seller and are assumed by the buyer at his own risk.

**Use of Product:** FMC's recommendations for the use of this product are based upon tests believed to be reliable. The use of this product being beyond the control of the manufacturer, no guarantee, expressed or implied, is made as to the effects of such or the results to be obtained if not used in accordance with directions or established safe practice.

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