



U.S. ENVIRONMENTAL PROTECTION AGENCY  
Office of Pesticide Programs  
Registration Division (H7505C)  
401 "M" St., S.W.  
Washington, D.C. 20460

EPA Reg. Number:

Date of Issuance:

279-3249

JAN - 8 2003

**NOTICE OF PESTICIDE:**  
  X   Registration  
       Reregistration

Term of Issuance:

Conditional until  
November 15, 2003

(under FIFRA, as amended)

Name of Pesticide Product:

Z- Cype 0.8 EC  
Insecticide

Name and Address of Registrant (include ZIP Code):

FMC Corporation  
1735 Market Street  
Philadelphia, PA 19103

**Note:** Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is conditionally registered in accordance with FIFRA sec. 3(c)(7)(B) since you have agreed to the following items:

1. Submit and/or cite all data required for registration/ reregistration of your product under FIFRA sec. 3(c)(5) when the Agency requires all registrants of similar products to submit such data; and submit acceptable responses required for reregistration of your product under FIFRA section 4.
2. The subject registration is conditioned under the same terms and condition for data generation as stipulated in our November 15, 1993 letter for use of these products on cotton and other crops.
3. FMC Corporation agreed that the current synthetic pyrethroid mitigation measures are interim in nature and may be reconsidered or modified after review and evaluation of the Spray Drift Task Force.

Signature of Approving Official:

Date:

4. You understand that this registration will expire on November 15, 2003. You further understand that it is EPA's stated intent to, by November 15, 2003, complete its review of all relevant data and other information that are available to the Agency, and to make FIFRA section 3(c)(5) or other appropriate regulatory decisions for cotton-use synthetic pyrethroids and other crops conditionally registered based on the Agency's review of such data/information and considering statutory and regulatory criteria for such decisions.

5. You will submit product information (pounds or gallons produced) for this product for the fiscal year in which the added uses are conditionally registered, in accordance with FIFRA section 29. The fiscal year begins October 1 and ends September 30. The production information will be submitted to the Agency no later than November 15 following the end of the preceding fiscal year.

The information should be submitted to:

U.S. Environment Protection Agency  
Office of Pesticide Program (7504C)  
Document Processing Desk  
Ariel Rios Building  
1200 Pennsylvania Avenue, NW  
Washington, DC 20460

6. You have agreed to submit the data listed below, conducted in accordance with the 40CFR Part 158 Test Guidelines:

Title of Study	Guideline Reference No.	Date Due*
Aerobic Aquatic Metabolism	162-4	April 30, 2003

7. Make the labeling changes listed below before you release the product for shipment:

a. Add the phase "EPA Registration No. 279-3249".

b. Add an asterisk to Inert Ingredients and add the following statement beneath the ingredient statement: \* Contains Petroleum Distillates.

c. Based on the results of the acute dermal, inhalation, and sensitization studies delete "Harmful if inhaled or absorbed through the skin. Avoid breathing vapors or spray mist. The active ingredient may cause sensitization reaction in some individuals" from the Precautionary Statement. You may also delete the IF Inhaled first aid statement.

d. Add "Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco." to the precautionary section.

e. Is "Z-Cype EW registered"? If not delete from labeling.

f. Under alfalfa add the following restriction "Do not apply to mixed stands with intentionally grown forage grasses."

The alternate brand name Mustang MAX Insecticide is acceptable.

In your May 10, 2001 letter you indicate that this product is to replace Fury 1.5 EC (279-3125). Please indicate your intentions with respect to Fury 1.5 EC.

8. Submit two (2) 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.

A stamped copy of the label is enclosed for your records.

Enclosure

**RESTRICTED USE PESTICIDE**  
Toxic to fish and aquatic organisms  
For retail sale to and use only by certified applicators, or persons under their direct supervision and only for those uses covered by the certified applicator's certification.

# Z-Cype

## 0.8EC Insecticide

EPA Reg. No. 279-GEUO

EPA Est. 279-FL-1

<b>Active Ingredient:</b>	<b>By Wt.</b>
* S-Cyano (3-phenoxyphenyl)methyl (+) cis/trans 3-(2,2-dichloroethenyl)-2,2 dimethylcyclopropane carboxylate**	9.6%
<b>Inert ingredients</b>	<b>90.4%</b>
	<b>100.0%</b>

\*Contains 0.8 pounds active ingredient per gallon.  
\*\*Cis/trans ratio: Max. 55% (±) cis and min. 45% (±) trans  
U.S. Patent No. Pending

### KEEP OUT OF REACH OF CHILDREN

## WARNING

## AVISO

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.)

### FIRST AID

**If Swallowed:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

**If on Skin or Clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

**If in Eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**If Inhaled:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

### Note to Physician

Vomiting should be supervised by a physician or the professional staff because of the possible pulmonary damages by aspiration of the solvent.

For Emergency Assistance Call (800) 331-3148.

See other panels for additional precautionary information.



FMC Corporation  
Agricultural Products Group  
Philadelphia PA 19103  
Z-Cype0.8EC\_draft\_7-30-02

ACCEPTED  
with COMMENTS  
in EPA Letter Dated

JAN - 8 2003

Under the Federal Insecticide, Fungicide, and Rodenticide Act as amended, for the pesticide registered under EPA Reg.

279-3249

### HOTLINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-331-3148 for emergency medical treatment information.

### PRECAUTIONARY STATEMENTS

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

**Warning**  
May be fatal if swallowed. Harmful if inhaled or absorbed through the skin. Causes moderate eye irritation. Avoid breathing vapors or spray mist. Avoid contact with skin, eyes or clothing. The active ingredient may cause sensitization reaction in some individuals.

#### 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 G on an EPA chemical resistance category selection chart.

**Handlers who may be exposed to the dilute through application or other tasks must wear:** Long-sleeved shirt and long pants, Chemical-resistant gloves, such as Nitrile, Butyl, Neoprene, and/or Barrier Laminate, and Shoes plus socks.

**Handlers who may be exposed to the concentrate through mixing, loading, application or other tasks must wear:** Long-sleeved shirt and long pants, Chemical-resistant gloves, such as Nitrile, Butyl, Neoprene, and/or Barrier Laminate, Shoes plus socks, and Protective eyewear.

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.

#### 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.

### Environmental Hazards

This pesticide is extremely toxic to fish and aquatic invertebrates. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not apply when weather conditions favor drift from treated areas. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment wash waters.

This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.

### 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.

**Resistance.** Some insects are known to develop resistance to products used repeatedly for control. Because the development of resistance cannot be predicted, the use of this product should conform to resistance management strategies established for the use area. Consult your local or state agricultural authorities for details.

If resistance to this product develops in your area, this product, or other products with a similar mode of action, may not provide adequate control. If poor performance cannot be attributed to improper application or extreme weather conditions, a resistant strain of insect may be present. If you experience difficulty with control and resistance is a reasonable cause, immediately consult your local company representative or agricultural advisor for the best alternative method of control for your area.

### 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 12 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, Chemical-resistant gloves, such as Barrier Laminate or Viton, and Shoes plus socks.

## STORAGE AND DISPOSAL

### Pesticide Storage

Store in a cool, dry, well-ventilated place. Do not store below -6.6 C (20 F). If solids are observed warm to above 4.4 C (40 F) and roll or shake containers to redissolve. Do not use near heat, open flame or hot surfaces. Store in original containers only. 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. Keep out of reach of children and animals.

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: Dike surrounding area or absorb with sand, cat litter or commercial clay. Place damaged package in a holding container. Identify contents.

### Pesticide 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 of the nearest EPA Regional Office for guidance.

### Container Disposal

**Metal Containers:** 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.

**Plastic Containers:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

**Returnable/Refillable Sealed Containers:** Do not rinse container. Do not empty remaining formulated product. Do not break seals. Return intact to point of purchase.

## Chemigation Use Directions

Apply this product only through sprinkler including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move irrigation systems. Do not apply this product through any other type of irrigation system. Do not connect any irrigation system (including greenhouse systems) used for pesticide application to a public water system.

Crop injury, lack of effectiveness, or illegal residues in the crop can result from nonuniform distribution of treated water. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers, or other experts. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.

The pesticide injection pipeline must also contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Do not apply when wind speed favors drift beyond the area intended for treatment

Z-Cype EC insecticide should be applied continuously for the duration of the water application. Z-Cype EC should be diluted in sufficient volume to insure accurate application over the area to be treated. Use the appropriate amount of water to carry the product to the target pest. Agitation is not required when a suitable diluent is used.

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## GENERAL INSTRUCTIONS

Use low rate under light to moderate infestation. Higher rates should be used under heavy insect pressure. The rate of application is variable according to insect pressure, timing of spray and field scouting.

### Preventive Use

For cutworm, armyworm, or stalk borer control, Z-Cype EC insecticide may be applied before, during, or after planting. For soil-incorporated applications, use higher rates for improved control.

### Rotational Crops

With the exception of the crops listed below, rotational crops should not be planted within 30 days of last application.

### Tank-Mixture

Z-Cype EC insecticide may be applied in tank mixtures with other products approved for use on Alfalfa, Brassica Vegetables, Bulb Vegetables, Corn, Cotton, Fruiting Vegetables, Head Lettuce, Legume Vegetables, Pecans, Rice, Sorghum, Soybeans, Sugarcane, and Wheat. Observe all restrictions and precautions which appear on the labels of these products. Test for compatibility of products before mixing.

### Spray Drift Precautions

Do not make more than 10 synthetic pyrethroid applications (of one product or combination of products) to a cotton crop in one growing season. Synthetic pyrethroid products include Ambush<sup>®</sup>, Ammo<sup>®</sup>, Asana<sup>®</sup> XL, Baythroid<sup>®</sup>, Capture<sup>®</sup>, Danitol<sup>®</sup>, Fury<sup>®</sup>, Karate<sup>®</sup>, Mustang<sup>®</sup>, and Scout<sup>®</sup> X-TRA.

All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers.

**OBSERVE THE FOLLOWING PRECAUTIONS WHEN SPRAYING IN THE VICINITY OF AQUATIC AREAS SUCH AS LAKES; RESERVOIRS; RIVERS; PERMANENT STREAMS, MARSHES OR NATURAL PONDS; ESTUARIES AND COMMERCIAL FISH FARM PONDS.**

Do not apply by ground equipment within 25 feet, or by air within 150 feet of lakes; reservoirs, rivers, permanent streams, marshes or natural ponds, estuaries, and commercial fish farm ponds. Increase the buffer zone to 450 feet when ultra low volume (ULV) application is made. For aerial applications, the spray boom should be mounted on the aircraft so as to minimize drift caused by wingtip or rotor vortices. The minimum practical boom length should be used and must not exceed 75% of wing span or rotor diameter.

Use the largest droplet size consistent with good pest control. Formation of very small droplets may be minimized by appropriate nozzle selection, by orienting nozzles away from the air stream as much as possible, and by avoiding excessive spray boom pressure.

Spray should be released at the lowest height consistent with pest control and flight safety. Applications more than 10 feet above the crop canopy should be avoided.

Make aerial or ground applications when the wind velocity favors on target product deposition (approximately 3 to 10 mph). Do not apply when wind velocity exceeds 15 mph. Avoid applications when wind gusts approach 15 mph.

Risk of exposure to sensitive aquatic areas can be reduced by avoiding applications when wind direction is toward the aquatic area.

Do not cultivate within 10' of the aquatic area so as to allow growth of a vegetative filter strip.

Low humidity and high temperatures increase the evaporation rate of spray droplets and therefore the likelihood of increased spray drift to aquatic areas. Avoid spraying during conditions of low humidity and/or high temperature.

Do not make aerial or ground applications during temperature inversions. Inversions are characterized by stable air and increasing temperatures with height above the ground. Mist or fog may indicate the presence of an inversion in humid areas. The applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface.

### Maximum Usage When Applying Both Zeta-Cypermethrin and Cypermethrin Products to the Same Crop Within the Same Season.

Do not apply more than the maximum seasonal total for either product when used alone, and do not apply more than the combined maximum seasonal total for both products as outlined in the table below.

Crop	Maximum Seasonal Total for Either Product Used Alone (pounds active ingredient/acre)		Maximum Seasonal Total When Applying Both Products to the Same Crop (pounds active ingredient/acre)
	Zeta-cypermethrin*	Cypermethrin (Ammo)	Zeta-cypermethrin* plus Cypermethrin (Ammo)
Cotton	0.15	0.6	0.6
Head and Stem Brassica	0.15	0.6	0.6
Leafy Brassica Greens	0.15	0.4	0.4
Head Lettuce	0.15	0.6	0.6
Bulb Vegetables	0.125	0.5	0.5
Pecans	0.15	0.6	0.6

\*Z-Cype EW, Z-Cype EC, Fury, or Mustang

### Maximum Seasonal Usage and PHI (Pre-Harvest Interval) for Z-Cype EC Labeled Crops

Crop	Maximum Seasonal Total/Acre for Mustang		PHI (days)
	Lbs AI	Fl oz	
Alfalfa	0.025/cutting	4.0	3 (cutting or grazing)
	0.075/season	12.0	7 (harvesting seed)
Brassica Vegetables	0.15	24.0	1
Bulb Vegetables	0.125	20.0	7
Corn, sweet	0.15	24.0	3
Corn, field, seed, pop	0.10	16.0	30 (grain & fodder (stover)) 60 (forage (silage))
Cotton	0.15	24.0	14
Fruiting Vegetables	0.15	24.0	1
Legume Vegetables	0.15	24.0	1 (succulent shelled or edible-podded) 21 (dried shelled)
Lettuce, head	0.15	24.0	5
Pecans	0.15	24.0	21
Rice	0.10	16.0	14
Sorghum	0.125	20.0	14 (grain & fodder (stover)) 45 (forage (silage))
	0.15	24.0	21
Soybeans	0.10	16.0	50
Wheat	0.125	20.0	14

The REI (Restricted Entry Interval) is 12 hours for all labeled crops.

Refer to the crop specific use directions for detailed information on application timing and any use restrictions

**Alfalfa; Alfalfa grown for seed** (Includes lucerne, sainfoin, holy clover, esparcet, birdsfoot trefoil and varieties and/or hybrids of these)

Insects Controlled	Rate of Application	Method of Application
Alfalfa Caterpillar Alfalfa Looper Alfalfa Weevil Cutworms Egyptian Alfalfa Weevil (larvae & adult) Flea Beetles Green Cloverworm Hornworms Meadow Spittlebug Potato Leafhopper Three Cornered Alfalfa Hopper Velvetbean Caterpillar Webworms Blue Alfalfa Aphid* Green Peach Aphid* Pea Aphid* Spotted Alfalfa Aphid*	2.24 to 4.0 ounces (0.014 to 0.025 pound active) per acre	Apply as insects appear in sufficient volume of water to ensure thorough coverage of foliage.  Use higher recommended dosage for increased pest pressure or for increased residual pest control.  Apply in a minimum of 2 gallons of finished spray per acre by aerial equipment or 10 gallons per acre by ground equipment. ULV oil spray application is prohibited. Higher volumes of finished spray may improve insect control under high temperatures, when foliage is dense and/or when insect pressure is high.
Armyworms Grasshoppers Plant Bugs (including Lygus spp. & Stink Bugs)	2.8 to 4.0 ounces (0.0175 to 0.025 pound active) per acre	Follow appropriate spray drift precautions on this label.
Do not make applications less than 7 days apart.  A maximum of 0.025 pounds active ingredient/acre may be applied per cutting and a maximum of 0.075 pounds active ingredient per acre per season.  Applications may be made up to 3 days of cutting or grazing or up to 7 days of harvesting seed.  *Aphid control may be variable depending on species present and host-plant relationships.		

**Head and Stem Brassica Vegetables (1 day phi) including: Broccoli; Chinese Broccoli (gai lan, white flowering broccoli); Brussels Sprouts; Cauliflower; Cavalo broccolo; Kohlrabi; Cabbage; Chinese Cabbage (napa); Leafy Brassica Greens including: Broccoli Raab (rapini); Chinese cabbage (bok choy); Chinese Mustard Cabbage (gai choy); Collards; Kale; Mizuna; Mustard Greens; Mustard Spinach; Rape Greens**

Insects Controlled	Rate of Application	Method of Application
Com Earworm Cucumber Beetles Cutworm Diamondback Moth Flea Beetles Imported Cabbageworm Leafhoppers Saltmarsh Caterpillar Southern Cabbageworm Tobacco Budworm	2.24 to 4.0 ounces (0.014 to 0.025 pound active) per acre	Apply in water as necessary for insect control using a minimum of 15 gallons of finished spray per acre with ground equipment and 5 gallons per acre by air.  Lower rates of Z-Cyte EC should be used under light to moderate insect pressure. Higher rates should be used to control heavy to extremely heavy insect populations.
Alfalfa Looper Armyworms Cabbage Looper Cabbage Webworm Crickets Grasshoppers Ground Beetles Leafminers (adults) Lygus Bugs Onion Thrips Stinkbugs Wireworm (adults) Aphids* Whiteflies*	3.2 to 4.0 ounces (0.02 to 0.025 pound active) per acre	In areas where arid climatic conditions persist, such as California and Arizona, higher than minimum recommended rates may be required.  Follow appropriate spray drift precautions on this label.
Do not make applications less than 7 days apart.  A maximum of 0.15 pounds active ingredient may be applied per acre per season.  *Aids in control		

**Bulb Vegetables (Allium spp.) (7 day phi) including: Garlic; Garlic, Great-Headed (elephant); Green Eschalots; Japanese Bunching Onions; Leeks; Onion, Dry Bulb and Green; Onion, Welsh; Shallots, Dry Bulb and Green; Spring Onion or Scallions**

Insects Controlled	Rate of Application	Method of Application
Onion Thrips	2.8 to 4.0 ounces (0.0175 to 0.025 pound active) per acre	Apply in a minimum of 20 gallons per acre with ground equipment or in a minimum of 3 gallons per acre by aircraft. Begin applications when pests appear and repeat as necessary to maintain control.
Amyworms Cutworms Leafminers Onion Maggot Adults Stink Bugs Aphids*	2.24 to 4.0 ounces (0.014 to 0.025 pound active) per acre	To control Onion Thrips: Use higher rates as population increases and avoid rescue situations. Use of a crop oil concentrate at 16 fluid ounces per acre is recommended.  Follow appropriate spray drift precautions on this label.
Do not make applications less than 7 days apart. Do not apply more than 0.125 pound active ingredient per acre per season. Do not graze livestock in treated areas or cut treated crops for feed. *Aids in control		

**Corn, Sweet (3 day phi)**

Insects Controlled	Rate of Application	Method of Application
Chinch Bug Com Rootworm (Adult) Com Silkyfly Cutworms Flea Beetle Leafhoppers Japanese Beetle (Adult) Sap Beetle (adults) Tarnished Plant Bug	2.24 to 4.0 ounces (0.014 to 0.025 pound active) per acre	Apply with ground or air equipment using sufficient water and application methods to insure thorough coverage of foliage. Apply in water using a minimum of 20 gallons of finished spray per acre with ground equipment and a minimum of 2 gallons per acre by air.
Armyworms Com Borers Com Earworm Grasshoppers Aphids*	2.8 to 4.0 ounces (0.0175 to 0.025 pound active) per acre	Follow appropriate spray drift precautions on this label.
Apply at minimum 3 to 5 day intervals or as needed for control. A maximum of 0.15 pounds active ingredient per acre per season may be applied. *Aids in control		

**Corn (Field), Field Corn Grown for Seed, Popcorn (At Plant Use)**

Insects Controlled	Rate of Application	Method of Application
Cutworms	0.16 fluid ounces per 1,000 linear feet of row (0.001 pound active) per 1,000 linear feet of row	Apply as an in-furrow, band or T-band treatment using a minimum 4" band. Use table below to determine the Mustang needs for each acre.  Do not apply more than 0.10 pound active ingredient per acre per season including at-plant plus foliar applications of Z-Cyte EC.  Do not apply within 30 days of harvest for grain and fodder (stover) and 60 days for forage (silage).
Row Spacings (inches)		40      30      20
Z-Cyte EC (pounds ai per acre)		0.012    0.018    0.024
Z-Cyte EC (formulated ounces per acre)		1.92     2.88     3.84

**Corn (Field), Field Corn Grown for Seed, Popcorn**

Insects Controlled	Rate of Application	Method of Application
Cutworms	1.28 to 2.8 ounces (0.008 to 0.0175 pound active) per acre	Make applications when insect populations reach economic thresholds. Refer to local Cooperative Extension Pest Management Guidelines and/or scouting results. Apply by air or by ground equipment using sufficient water to obtain full coverage of foliage (minimum of 2 gallons per acre by air and 10 gallons per acre by ground).
Bean Leaf Beetle Cereal Leaf Beetle Corn Rootworm Beetle European Corn Borer Flea Beetle Grasshoppers Hop Vine Borer Hornworms Japanese Beetle (adult) Sap Beetle (adult) Southern Corn Leaf Beetle Southwestern Corn Borer Stalk Borer Stink Bug Spp. Tobacco Budworm Webworms Aphids*	2.72 to 4.0 ounces (0.017 to 0.025 pound active) per acre	Do not apply more than 0.10 pound active ingredient per acre per season including At-Planting plus foliar applications of Z-Cype EC Insecticide.  Do not apply within 30 days of harvest for grain and fodder (stover) and 60 days for forage (silage).  For chinch bug control, scout corn fields and make applications when bugs migrate from small grains or wild grasses to small corn. Direct spray to the base of plant. Repeat applications at 3 to 5 day intervals if needed. Mustang may only suppress heavy infestations and/or subsequent migrations.
Amyworms (including Fall Armyworms) Chinch Bug	3.2 to 4.0 ounces (0.02 to 0.025 pound active) per acre	Follow appropriate spray drift precautions on this label.
Corn Earworm <sup>1</sup> Western Bean Cutworm <sup>1</sup> Green Cloverworm Meadow Spittlebug	1.76 to 4.0 ounces (0.011 to 0.025 pound active) per acre	

\*Control may be variable depending on species present and host-plant relationships.  
<sup>1</sup> For control before the larva bores into the plant stalk or ear.

**Cotton (14 day phl)**

Insects Controlled	Rate of Application	Method of Application
<i>Preemergent Use:</i> Cutworms	1.28 to 1.92 ounces (0.008 to 0.012 pound active) per acre	Use Z-Cype EC in the time period from 14 days prior to planting up to emergence of the crop. Apply as a broadcast spray by ground or air, banded (including T-band) or in-furrow spray using sufficient spray volume to achieve adequate coverage. Reduced volumes of water may be used with specialized equipment. Use a minimum of 1 gallon of water per acre by air. Use the higher rates of Mustang when incorporating into the soil.
<i>Foliar Use:</i> Cutworms Tobacco Thrips Soybean (banded) Thrips	1.28 to 1.92 ounces (0.008 to 0.012 pound active) per acre	Z-Cype EC may be applied in water or refined vegetable oil. When water is used, apply a minimum of one gallon of finished spray per acre by air or five gallons of finished spray with ground equipment. When applying in water by air, one quart of emulsified oil may be substituted for one quart of water in the finished spray. When using oil, use a minimum of one quart per acre in the finished spray. Control of lepidopteran eggs may be achieved with proper timing of applications. Z-Cype EC may be injected into overhead sprinkler irrigation water provided 1) an anti-backflow check valve is present between the injection port and the water source, 2) a check valve is present in the line to prevent irrigation water from entering the chemical supply tank and 3) the irrigation injection system has interlocking on-off switches.
<i>Foliar Use:</i> Boll Weevil Cabbage Looper Cotton Bollworm Cotton Fleahopper Cotton Leaf Perforator European Corn Borer Fall Armyworm Pink Bollworm Saltmarsh Caterpillar Stink Bugs Tarnished Plant Bug Other Plant Bugs Tobacco Budworm Yellow Striped Armyworm	2.64 to 3.6 ounces (0.0165 to 0.0225 pound active) per acre	For boll weevil control, apply Z-Cype EC at a 3 to 4 day interval until pest numbers are reduced to acceptable levels. Follow appropriate spray drift precautions on this label.
<i>Foliar use:</i> Lygus Bugs Beet Armyworm* Cotton Aphid** Whiteflies**	2.8 to 4.0 ounces (0.0175 to 0.025 pound active) per acre	For control of grasshoppers, applications should be made based on careful field scouting. Treatment decisions should be made based on evidence of feeding damage and presence of grasshoppers in cotton. Loss of cotyledon leaves in seedling cotton should be considered more important than leaf loss in older cotton. Applications should be made on a broadcast basis since grasshopper are highly mobile. Adjust rates based on populations of grasshopper found in fields. Applications should be made on a three to five day schedule until grasshopper populations are under control or until foliage loss subsides. Increase application rates as grasshopper size and population density increases.
<i>Foliar use:</i> Grasshoppers	3.0 to 4.0 ounces (0.01875 to 0.025 pound active) per acre	

A maximum of 0.15 active pound ingredient may be applied per acre per season.  
Do not graze or feed cotton for forage.

\*For control of beet armyworms only in the high plains of Texas, Arizona, and California.  
\*\*Aids in control.



**Fruiting Vegetables (except Cucurbits) (1 day phi) including:**  
 Eggplant; groundcherry (*Physalis* spp.); pepino (Melon pear); pepper (includes bell pepper, chill pepper, cooking pepper, pimento, sweet pepper); tomatillo; tomato.

Insects Controlled	Rate of Application	Method of Application
Armyworm, Southern Armyworm, True Armyworm, Yellow-striped Celery Leaf Tier Colorado Potato Beetle Corn Borer, European Corn Borer, Southwestern Corn Earworm Cucumber Beetle Cutworm spp. Flea Beetle Garden Webworm Green Stink Bug Homworms Leafminer spp. Leafhopper spp. Meadow Spittlebug Pepper Maggot (adults) Pepper Weevil Plant Bug spp. Tobacco Budworm Tomato Fruitworm Tomato Pinworm	2.24 to 4.0 ounces (0.014 to 0.025 pound active) per acre	Apply as required by scouting. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds.  Apply by ground or air equipment using sufficient water to obtain full coverage of foliage (minimum of 10 gallons by ground and 2 gallons by air).  Follow appropriate spray drift precautions on this label.
Aphid spp. 1, 2 Armyworm, Beet 2 Armyworm, Fall Cabbage Looper Grasshoppers Lygus Bugs Brown Stink Bug Tomato Psyllid Thrips spp. 1, 2 Whitefly spp. 1,2	3.2 to 4.0 ounces (0.020 to 0.025 pound active) per acre	
Do not make applications less than 7 days apart. Do not apply more than 0.15 pounds active ingredient per acre per season. 1 Aids in control 2 See resistance statement		

**Legume Vegetables - Succulent and Dried (except Soybeans)**  
 1 day phi for succulent shelled or edible-podded peas or beans  
 21 day phi for dried shelled peas or beans

**Succulent Edible-Podded Peas, Succulent Shelled Peas and Dried Shelled Peas (*Pisum* spp.) including:**

Dwarf Pea; Edible-pod Pea; Snow Pea; Sugar Snap Pea; Pigeon pea; English Pea; Garden Pea; Green Pea; Lentil.

**Succulent Edible-Podded Beans, Succulent Shelled Beans, and Dried Shelled Beans including:**

Runner Bean; Snap Bean; Wax Bean; Asparagus Bean; Chinese Longbean; Moth Bean; Yardlong Bean; Jackbean; Soybean (Immature seed); Swordbean; Lima Bean; Broad Bean (*Fava* Bean); Blackeyed Pea; Southern Pea; Grain Lupin; Sweet Lupin; White Lupin; White Sweet Lupin; Field Bean; Kidney Bean; Navy Bean; Pinto Bean; Tepary Bean; Adzuki Bean; Catjang; Crowder Pea; Moth Bean; Mung Bean; Rice Bean; Urd Bean; Chickpea (*Garbanzo* Bean); Guar; Lablab bean.

Insects Controlled	Rate of Application	Method of Application
Cutworm spp. Painted Lady (Thistle) Caterpillar Saltmarsh Caterpillar Silverspotted Skipper	1.28 to 4.0 ounces (0.008 to 0.025 pound active) per acre	Apply as required by scouting, usually at intervals of 5 or more days. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds.
Alfalfa Caterpillar Armyworm, Southern Armyworm, True Armyworm, Yellow-Striped Bean Leaf Beetle Blister Beetle spp. Colorado Potato Beetle Corn Borer, European Corn Borer, Southwestern Corn Earworm Corn Rootworm Beetle (adult) Cowpea Curculio Cucumber Beetle Flea Beetle Green Cloverworm Ground Beetles Imported Cabbageworm Japanese Beetle Leaf Skeletonizer spp. Leafhopper spp. Leafminer spp. Mexican Bean Beetle Pea Weevil Pea Leaf Weevil Plant Bug spp. Potato Leafhopper Seedcorn Beetle Seedcorn Maggot (adult) Spittlebug Three-Cornered Alfalfa Hopper Tobacco Budworm 2 Velvetbean Caterpillar Webworm spp. Woolly Bear Caterpillar	2.8 to 4.0 ounces (0.0175 to 0.025 pound active) per acre	Apply by ground or air equipment using sufficient water to obtain full coverage of foliage (minimum of 10 gallons by ground and 2 gallons by air).  Follow appropriate spray drift precautions on this label.
Aphid spp. 1,2 Armyworm, Beet 2 Armyworm, Fall Grasshoppers Lesser Cornstalk Borer 1 Looper spp. 2 Stink Bug spp. Thrips spp. 1,2 Whitefly spp. 1,2	3.2 to 4.0 ounces (0.020 to 0.025 pound active) per acre	
Do not make applications less than 5 days apart. Do not apply more than 0.15 pound active ingredient per acre per season. 1 Aids in control 2 See resistance statement under "Directions For Use" section		

**Lettuce, Head (5 day phi)**

Insects Controlled	Rate of Application	Method of Application
Corn Earworm Cucumber Beetles Cutworms Diamondback Moth Flea Beetles Imported Cabbageworm Leafhoppers Saltmarsh Caterpillar Tobacco Budworm	2.24 to 4.0 ounces (0.014 to 0.025 pound active) per acre	Apply in water as necessary for insect control using a minimum of 15 gallons of finished spray per acre with ground equipment and 5 gallons per acre by air.  Lower rates of Z-Cyze EC should be used under light to moderate insect pressure. Higher rates should be used to control heavy to extremely heavy insect populations.
Armyworms Crickets Loopers Lygus Bugs Onion Thrips Stink Bugs	3.2 to 4.0 ounces (0.020 to 0.025 pound active) per acre	In areas where arid climatic conditions persist, such as California and Arizona, higher than minimum recommended rates may be required.  Follow appropriate spray drift precautions on this label.
A maximum of 0.15 pound active ingredient may be applied per acre per season.		

**Pecans (21 day phi)**

Insects Controlled	Rate of Application	Method of Application
Black Pecan Aphid Hickory Shuckworm Pecan Nut Casebearer Pecan Weevil Yellow Pecan Aphid	2.64 to 4.0 ounces (0.0165 to 0.025 pound active) per acre	Applications at the lower rate should be made when pest populations are low. Rates should be increased as the pest pressure increases.  Apply by ground equipment to the point of drip. Use 100 gallons of dilute spray per acre for smaller trees. For larger trees which require higher gallonage to achieve adequate coverage, apply in 200 to 300 gallons of water. In order to calculate the correct number of gallons of water needed to spray one acre of your trees to the point of drip, you may need to conduct a test. If you do not know how to conduct such a test with your equipment, you should request assistance from your equipment dealer.
Up to 0.15 pound active ingredient per acre season may be applied prior to shuck split. Do not graze livestock in treated orchards or cut treated cover crops for feed.		

**Rice (14 day phi)**

Insects Controlled	Rate of Application	Method of Application
Fall Armyworm Grasshoppers Green Bug Leafhopper Spp. Rice Water Weevil (adult) True Armyworm Yellow-striped Armyworm Oat Birdcherry Aphid*	3.2 to 4.0 ounces (0.020 to 0.025 pound active) per acre	Apply as needed based on pest thresholds determined by scouting practices. Refer to Extension Scouting guidelines for scouting techniques, pest thresholds and treatment timing and treatment intervals. Determine the need for repeat applications, usually at intervals of 7 days, by scouting.  Z-Cyze EC can be safely applied in conjunction with approved rice herbicides.  Apply by air or ground equipment using sufficient water to obtain full coverage of foliage. When applying by air, apply in a minimum of 5 gallons of water per acre. For increased control, crop oil concentrate at 16 fluid ounces per acre may be used.  For control of rice water weevil in dry seeded rice, make a foliar application as indicated by scouting for the presence of adults and/or feeding scars, usually within a time-frame of 0-5 days after permanent flood establishment. Do not exceed 10 days from starting permanent flood until insecticide application unless scouting indicates adult weevils are not present. Adults may also be treated at later stages of rice development to reduce overwintering populations.  For control of rice water weevil in water seeded rice, make the first application after flooding when scouting indicates the presence of adults and/or feeding scars. Application should usually begin when rice has emerged 0.5 inch above the waterline. Under conditions of prolonged migration into the field, start field scouting for rice water weevil adults and/or feeding scars 3-5 days after the initial treatment and, if needed, apply a second application within 7-10 days of the first application. Adults may also be treated at later stages of rice development to reduce overwintering populations.  Green bug is known to have many biotypes. Z-Cyze EC may only provide suppression. If satisfactory control is not achieved with the first application of Z-Cyze EC, a resistant biotype may be present. Use alternate chemistry for control.  Follow appropriate spray drift precautions on this label.
Chinch Bug Rice Stink Bug	2.64 to 4.0 ounces (0.0165 to 0.025 pound active) per acre	
Do not make applications less than 7 days apart. Do not release floodwater within 7 days of an application. A maximum of 0.10 pound active ingredient (1.0 pints) may be applied per acre per season. Do not use treated rice field for the aquaculture of edible fish and crustacea. Do not apply as an ultra-low volume (ULV) spray. *Aids in control		

**Sorghum (Grain) and Millet (14 day phi for grain and stover; 45 day phi for forage):**

Insects Controlled	Rate of Application	Method of Application
Cutworm spp. Sorghum Midge	1.28 to 4.0 ounces (0.008 to 0.025 pound active) per acre	Apply as required by scouting. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds.
Armyworm, Fall Armyworm, Southern Armyworm, True Armyworm, Yellow-Striped Corn Borer, European <sup>3</sup> Corn Borer, Southwestern <sup>3</sup> Corn Earworm Flea Beetle spp. Hornworms Stink Bug spp. Webworm spp.	1.76 to 4.0 ounces (0.011 to 0.025 pound active) per acre	Apply by ground or air equipment using sufficient water to obtain full coverage of foliage (minimum of 10 gallons by ground and 2 gallons by air). The addition of one to two quarts of emulsified oil per acre to the spray solution may improve spray deposition and insect control.  For sorghum midge control, begin applications when 25% of the sorghum heads have emerged and are in tip bloom. Repeat applications at 10-day intervals if needed.
Aphid spp. <sup>1, 2</sup> Armyworm, Beet <sup>2</sup> Chinch Bug False Chinch Bug Grasshopper spp. Lesser Cornstalk Borer <sup>3</sup> Thrips spp. <sup>1, 2</sup> Whitefly spp. <sup>1, 2</sup>	3.2 to 4.0 ounces (0.02 to 0.025 pound active) per acre	For chinch bug control, begin applications when bugs migrate from small grains or grass weeds to small sorghum. Direct spray to the base of plants with sufficient spray volume to penetrate the soil/stem interface, leaf collars, and sheaths.  Follow appropriate spray drift precautions on this label.
<p>Do not make applications less than 10 days apart. Do not apply more than 0.125 pound active ingredient per acre per season. <sup>1</sup> Aids in Control <sup>2</sup> See resistance statement under "Directions For Use" section <sup>3</sup> For control before the larva bores into the plant stalk.</p>		

**Soybeans (21 day phi):**

Insects Controlled	Rate of Application	Method of Application
Cutworm spp. Painted Lady (Thistle) Caterpillar Saltmarsh Caterpillar Silverspotted Skipper	1.28 to 4.0 ounces (0.008 to 0.025 pound active) per acre	Apply as required by scouting. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds.
Alfalfa Caterpillar Armyworm, Southern Armyworm, True Armyworm, Yellow-Striped Bean Leaf Beetle Blister Beetle spp. Colorado Potato Beetle Corn Borer, European Corn Earworm Corn Rootworm Beetle (adult) Cowpea Curculio Cucumber Beetle European Corn Borer Flea Beetle Green Cloverworm Hornworms Imported Cabbageworm Japanese Beetle Leaf Skeletonizer spp. Leafhopper spp. Leafminer spp. Mexican Bean Beetle Pea Weevil Plant Bug spp. Potato Leafhopper Seedcorn Maggot (adult) Soybean Aphid Spittlebug Three-Cornered Alfalfa Hopper Tobacco Budworm <sup>2</sup> Velvetbean Caterpillar Webworm spp. Woolly Bear Caterpillar	2.8 to 4.0 ounces (0.0175 to 0.025 pound active) per acre	Apply with either aerial or ground equipment using sufficient spray volume to obtain full coverage of the plant and foliage. Use a minimum of 2 gallons of finished spray per acre by air or 10 gallons of finished spray per acre by ground. The addition of one to two quarts of emulsified oil per acre to the spray solution may improve spray deposition and insect control.  Follow appropriate spray drift precautions on this label.
Aphid spp. <sup>1, 2</sup> Armyworm, Beet Armyworm, Fall Grasshopper spp. Lesser Cornstalk Borer <sup>1</sup> Looper spp. <sup>2</sup> Stink Bug spp. Thrips spp. <sup>1, 2</sup> Whitefly spp. <sup>1, 2</sup>	3.2 to 4.0 ounces (0.02 to 0.025 pound active) per acre	
<p>Do not make applications less than 7 days apart. Do not graze or harvest treated soybean forage, straw, or hay for livestock feed. Do not apply more than 0.15 pound active ingredient per acre per season. <sup>1</sup> Aids in control <sup>2</sup> See resistance statement under "Directions For Use" section</p>		

**Sugarcane (21 day phi)**

Insects Controlled	Rate of Application	Method of Application
Sugarcane Borer Mexican Rice Borer	3.0 to 4.0 ounces (0.01875 to 0.025 pound active) per acre	Make applications when insect populations reach economic thresholds. Refer to local Cooperative Extension Pest Management Guidelines and/or scouting results.  Apply by air or ground equipment using sufficient water to obtain full coverage of foliage (minimum of 2 gallons per acre by air and 10 gallons per acre by ground).  Follow appropriate spray drift precautions on this label.
Do not make applications less than 21 days apart. Do not apply more than 0.10 pound active ingredient per acre per season.		

**Wheat and Triticale (14 day phi for grain, forage, and hay):**

Insects Controlled	Rate of Application	Method of Application
Cutworm spp., including Army Cutworm Painted Lady (Thistle) Caterpillar	1.28 to 4.0 ounces (0.008 to 0.025 pound active) per acre	Apply as required by scouting. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds.
Armyworm, Southern Armyworm, True Armyworm, Yellow-Striped Cereal Leaf Beetle Flea Beetle spp. Pale Western Cutworm Plant Bug spp. Spittlebug Webworm spp.	1.76 to 4.0 ounces (0.011 to 0.025 pound active) per acre	Apply by ground or air equipment using sufficient water to obtain full coverage of foliage (minimum of 10 gallons by ground and 2 gallons by air).  For chinch bug control, begin applications when bugs migrate from small grains or grass weeds. Apply sufficient spray volume to penetrate the soil/stem interface, leaf collars, and sheaths.
Aphid spp. 1,2 Armyworm, Beet 2 Armyworm, Fall Chinch Bug Grass Sawfly Grasshopper spp. Greenbug 1, 2 Stink Bug spp. Thrips spp. 1,2 Wheat Stem Sawfly (adult) <sup>1</sup> Whitefly spp. 1,2	3.2 to 4.0 ounces (0.02 to 0.025 pound active) per acre	Follow appropriate spray drift precautions on this label.
Do not make applications less than 14 days apart. Do not apply more than 0.125 pound active ingredient per acre per season.  1 Aids in Control 2 See resistance statement under "Directions For Use" section		

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**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.

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