

PM 03

10182-96

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February 17, 1998

Mr. James Wagner
Zeneca Ag Products
1800 Concord Pike
P.O. Box 15458
Wilmington, DE 19850-5458

Dear Mr. Wagner:

Subject: Amendment - Addition of Alfalfa, Leaf Lettuce and Brassica Subgroup Crops
Karate® Insecticide
EPA Reg. No. 10182-96
Your Letter Dated February 13, 1998

The Agency accepts your application for amended registration which is contingent upon the terms and conditions stipulated in our letter of November 12, 1997 regarding the renewal/extension of the conditional registration of the above mentioned product.

Therefore in accordance with FIFRA Section 3(c)(7)(B)(C) the conditional registration of the subject products are extended for a period not to exceed November 15, 2000.

You understand that these registrations will expire on November 15, 2000. You understand also that it is EPA's intent to, by November 15, 2000 or sooner, complete its review of all relevant data and other information, and to make FIFRA 3(c)(5) or other appropriate regulatory decisions for cotton and other crop use of synthetic pyrethroids based on EPA's review of such data/information and the statutory and regulatory criteria for such decisions.

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

A stamped copy of the revised labeling is enclosed for your records.

Sincerely yours,

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

Enclosure

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RESTRICTED USE PESTICIDE
Due to Toxicity 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.

KARATE® Insecticide

COMPLETE DIRECTIONS FOR USE

EPA Reg. No. 10182-96
EPA Est. No.

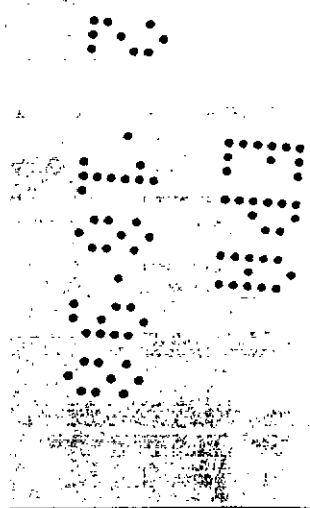
ACCEPTED
with COMMENTS
in EPA Letter Dated

FEB 17 1998

Under the Federal Insecticide,
Fungicide, and Rodenticide Act
as amended, for the pesticide
registered under EPA Reg. No.

10182-96

Made in U.S.A.
ZENECA Ag Products
ZENECA Inc.
Wilmington, DE 19850-5458



**CONDITIONS OF SALE
AND LIMITATION OF WARRANTY AND LIABILITY**

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product should be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of ZENECA or Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold ZENECA and Seller harmless for any claims relating to such factors.

ZENECA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. This warranty does not extend to the use of this product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller or ZENECA, and Buyer and User assume the risk of any such use. ZENECA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

In no event shall ZENECA or Seller be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF ZENECA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF ZENECA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

ZENECA and Seller offer this product, and Buyer and User accept it, subject to the foregoing conditions of sale and limitations of warranty and of liability, which may not be modified except by written agreement signed by a duly authorized representative of ZENECA.

KEEP OUT OF REACH OF CHILDREN

**DANGER
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.)

ACTIVE INGREDIENT:

Lambda-cyhalothrin	
[1 α (S*),3 α (Z)]-(\pm)-cyano-(3-phenoxyphenyl)methyl-	
3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-	
dimethylcyclopropanecarboxylate	13.1%
INERT INGREDIENTS:	86.9%
Total	100.0%

KARATE contains 1 pound of active ingredient per gallon and is an emulsifiable concentrate.

STATEMENT OF PRACTICAL TREATMENT

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation persists.

IF SWALLOWED: Do not induce vomiting. Call a physician immediately.

IF INHALED: Remove victim to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. Get medical attention.

IF IN EYES: Hold eyelids open and flush with steady, gentle stream of water. Remove any contact lenses and repeat flushing procedure for several minutes. Get medical attention if irritation persists.

NOTE TO PHYSICIAN: Induced vomiting as first aid for this substance may result in increased risk of chemical pneumonia or pulmonary edema caused by aspiration of the hydrocarbon solvent. Vomiting should be induced only under professional supervision.

FOR 24-HOUR EMERGENCY MEDICAL ASSISTANCE, CALL 1-800-F-A-S-T-M-E-D (327-8633).

FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident call CHEMTREC 1-800-424-9300.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER

CORROSIVE. CAUSES SKIN DAMAGE. MAY BE FATAL IF SWALLOWED OR INHALED. CAUSES EYE INJURY. HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE ALLERGIC SKIN REACTIONS. **DO NOT** get on skin, in eyes, or on clothing. **DO NOT** breathe spray mist.

Skin exposure may also result in a sensation described as a tingling, itching, burning, or prickly feeling. Onset may occur immediately to 4 hours after exposure and may last 2 to 30 hours, without damage. Wash exposed areas once with soap and water. Relief from the skin sensation may be obtained by applying an oil-based cream.

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 resistant category selection chart.

Applicators and other handlers must wear:

- Coveralls over long-sleeved shirt and long pants
- Chemical-resistant gloves, such as barrier laminate or viton \geq 14 mils
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when cleaning equipment, mixing, or loading
- For exposures in enclosed areas, 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)
- For exposures outdoors, dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C)

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.

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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 the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This pesticide is extremely toxic to fish and aquatic organisms and toxic to wildlife. Do not apply directly to water or 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 washwaters.

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 or weeds if bees are visiting the treatment area.

PHYSICAL AND CHEMICAL HAZARDS

Combustible liquid. 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.

This labeling must be in the possession of the user at the time of application.

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 long-sleeved shirt and long pants
 - Chemical-resistant gloves, such as barrier laminate or viton \geq 14 mils
 - Chemical-resistant footwear plus socks
 - Protective eyewear
 - Chemical-resistant headgear for overhead exposure
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STORAGE AND DISPOSAL

PROHIBITIONS: Do not contaminate water, food, or feed by storage and disposal.

STORAGE: Store in original containers only. Keep container closed when not in use. Do not store near food or feed. In case of spill or leak on floor or paved surfaces, soak up with sand, earth, or synthetic absorbent. Remove to chemical waste area.

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL

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

FOR BULK, MINI-BULK, EZ HANDLER® AND BOOMERANG CONTAINER DISPOSAL: Return container to ZENECA, Inc. for reuse with seal intact and in salable condition.

CONTAINER PRECAUTIONS

Before refilling RETURNABLE CONTAINERS, inspect thoroughly for damage such as cracks, punctures, bulges, dents, abrasions, and damaged or worn threads on closure devices.

REFILL ONLY WITH KARATE® Insecticide. The contents of RETURNABLE CONTAINERS cannot be completely removed by cleaning. Refilling with materials other than KARATE® Insecticide will result in contamination and may weaken container.

After filling and before transporting, check for leaks.

Do not refill or transport damaged or leaking container.

CONTAINER IS NOT SAFE FOR FOOD, FEED, OR DRINKING WATER!

GENERAL DIRECTIONS FOR USE

Initial and residual control are contingent upon thorough crop coverage. Apply with ground or air equipment using sufficient water to obtain full coverage of foliage. Apply in a minimum of 2 gallons per acre by air or 10 gallons per acre by ground unless otherwise specified in this label. When foliage is dense or pest pressure is high (heavier insect or egg pressure, larger larval stages), use of higher application volumes and/or higher use rates may improve initial and residual control.

For cutworm control, KARATE® may be applied before, during or after planting. For soil incorporated applications, use higher rates for improved control.

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.

SPRAY DRIFT PRECAUTIONS

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 within 25 feet, or by air within 150 feet of lakes; reservoirs; rivers; permanent streams, marshes, pot holes, or natural ponds; estuaries and commercial fish farm ponds. Increase the buffer zone to 450 feet when ultralow volume (ULV) application is made.
- All aerial and ground application equipment must be properly maintained and calibrated using appropriate carriers.
- For aerial applications, the spray boom should be mounted on the aircraft so as to minimize drift caused by wing tip 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 aquatic areas can be reduced by avoiding applications when wind direction is toward the aquatic area.
- Do not cultivate within 10 feet 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.

In the State of New York, a 25 foot vegetated, non-cropped buffer strip untraversed by drainage tiles must be maintained between a treated field and a coastal salt marsh or stream that drains into a coastal salt marsh, for both aerial or ground application. For aerial applications, the 25 foot vegetated non-cropped buffer strip for runoff protection would be part of the larger 150 foot buffer strip (or 450 foot buffer strip for ULV application) required for spray drift.

CHEMIGATION

SPRINKLER IRRIGATION APPLICATION: Apply KARATE insecticide at rates and timing described elsewhere in this label. Apply with center pivot or continuous-move equipment distributing 1/2 acre-inch or less during treatment. In general, use the least amount of water required for proper distribution and coverage. If stationary systems (solid sets, handlines or wheel lines other than continuous-move) are used, KARATE insecticide should be injected into no more than the last 20-30 minutes of the set. Do not apply when winds are greater than 10-15 mph to avoid drift or wind skips. Thorough coverage of foliage is required for good control. Good agitation should be maintained during the entire application period.

USE PRECAUTIONS - SPRINKLER IRRIGATION APPLICATION

- A. 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 system(s). Do not apply this product through any other type of irrigation system.
- B. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.
- C. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.
- D. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- E. 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.
- F. 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.

3. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- H. 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.
- I. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- J. 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.
- K. 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.
- L. Do not apply when wind speed favors drift beyond the area intended for treatment.
- M. Do not apply through chemigation systems connected to public water systems.

Apply KARATE insecticide as shown in the following charts:

SPRAY RECOMMENDATIONS				
Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Alfalfa Alfalfa Growth Seed	Alfalfa Caterpillar Cutworm Sp GRASS CLOVER WORM Lobster Sp Majabaan Caterpillar Weevils Sp Leafhopper Sp Thistlehorned Alfalfa Hopper	0.015-0.025	1.92-3.20	Apply as required by scouting. Timing and frequency of applications should be based upon insect population reaching locally determined action thresholds. Apply with ground or air equipment using sufficient water to obtain full coverage of foliage. Apply in a minimum of 2 gallons per acre by air or 4 gallons per acre by ground. When foliage is dense and/or pest populations are high, 6-10 gallons per acre by air or 20 gallons per acre by ground should be used. Rate is recommended. Use higher rates for more severe infestations.
	Armyworm CORN EARWORM Fall Armyworm Western Yellow-striped Armyworm Yellow-striped Armyworm Alfalfa Weevil Bean Leaf Beetle (Adult) Blister Beetle Sp Clover Leaf Weevil Sp Clover Root Borer (Adult) Clover Root Curculionid Sp (Adult) Clover Stem Borer (Adult) Coyote Cutworm (Adult) Coyote Weevil (Adult) Cucumber Beetle Sp (Adult) Egyptian Alfalfa Weevil Grape Colaspis (Adult) Green June Beetle (Adult) Japanese Beetle (Adult) Mexican Bean Beetle Peanut Weevil (Adult)	0.02-0.03	2.56-3.84	Avoid application when bees are actively foraging by applying during the early morning or during the evening hours. Bees will not be heard foraging from the soil level and/or morning dew. It may be advisable to remove bee shelters during and for 2-3 days following application. Avoid direct application to bee shelters. Do not apply more than 0.03 lb ai/0.24 spray per acre per application. Do not apply more than 0.24 lb ai/0.96 spray per acre per season. Do not apply within 1 day of harvest for forage or within 7 days of harvest for hay. *For control of first and second instar only. *Suppressive only. *See resistance statement under General Directions for Use.

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SPRAY RECOMMENDATIONS

Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Alfalfa Alfalfa Ground Seed	Sweet Clover Weevil (Adult) White-tailed Borer (Sp) (Larva) Meadow Spittlebug Flea Bug (Sp) (Larva) (Sp) Stink Bug (Sp) Alfalfa Root Chalcid (Larva) Blight (Fungus) Crown Rot (Fungus) Green Peach Aphid ¹ Flea Beetle Spotted Alfalfa Aphid Turnip Moth Grasshopper (Sp)	0.02	0.04	<p>Apply as required by scouting. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds.</p> <p>Apply with ground spray equipment using sufficient water to obtain full coverage of foliage. Apply in a minimum of 2 gallons per acre by air or 10 gallons per acre by ground. When foliage is wet, 10 or 15 gallons per acre by air or 20 gallons per acre by ground and higher rates are recommended. Use higher rates to increase residual control.</p> <p>Avoid application when bees are actively foraging by applying during the early morning or during the evening hours. Be aware of the hazard resulting from application and/or drift to bees which may be adversely affected. Remove beehives during and for 2-3 days following application. Avoid direct application to beehives.</p> <p>Do not apply more than 0.02 lb ai (0.24 fl oz) per acre per outing. Do not apply more than 0.12 lb ai (0.96 fl oz) per acre per season. Do not apply within 1 day of harvest for forage or within 7 days of harvest for hay.</p> <p>¹For control of this pest use only. ²Suppressive only. ³See label for use instructions and directions for use.</p>

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SPRAY RECOMMENDATIONS

Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Broccoli Brussels Sprouts Cabbage Cauli Broccoli Cauliflower Chinese Broccoli (Gai Lan) Chinese Cabbage (Napa) Chinese Mustard Cabbage (Gai Choy) Kohlrabi	Alfalfa Looper	0.015-0.025	1.92-3.20	<ul style="list-style-type: none"> • 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. • Apply with ground or air equipment using sufficient water to obtain full coverage of foliage. When applying by air, apply in a minimum of 2 gallons of water per acre. • Do not apply within 1 day of harvest. • Do not apply more than 0.24 lb ai (1.92 pints) per acre per season. <p>¹For control of first and second instar only. ²Suppression only. ³See resistance statement under General Directions for Use.</p>
	Cabbage Looper			
	Imported Cabbageworm			
	Southern Cabbageworm			
	Cutworm Spp.	0.02-0.03	2.56-3.84	
	Cabbage Webworm			
	Diamondback Moth ³			
	Armyworm			
	Beet Armyworm ^{1,3}			
	Fall Armyworm ¹			
Yellow-striped Armyworm				
Corn Earworm				
Flea Beetle Spp.				
Japanese Beetle (Adult)				
Vegetable Weevil (Adult)				
Grasshopper Spp.				
Leafhopper Spp.				
Plant Bug Spp. including Lygus Spp. ³				
Stink Bug Spp.				
Meadow Spittlebug				
Aphid Spp. ^{2,3}				
Whitefly Spp. ^{2,3}				
Thrips Spp. ²				
Spider Mite Spp. ²				

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SPRAY RECOMMENDATIONS				
Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Cabbage	Alfalfa Looper Cabbage Looper Imported Cabbageworm Southern Cabbageworm Cutworm Spp. Cabbage Webworm	0.015-0.025	1.92-3.20	<ul style="list-style-type: none"> 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. Apply with ground or air equipment using sufficient water to obtain full coverage of foliage. When applying by air, apply in a minimum of 2 gallons of water per acre.
	Diamondback Moth ¹ Armyworm Beet Armyworm ^{1,2} Fall Armyworm ¹ Yellow-striped Armyworm Corn Earworm Flea Beetle Spp. Japanese Beetle (Adult) Vegetable Weevil (Adult) Grasshopper Spp. Leafhopper Spp. Plant Bug Spp. including Lygus Spp. ³ Stink Bug Spp. Meadow Spittlebug Aphid Spp. ^{2,3} Whitefly Spp. ^{2,3} Thrips Spp. ² Spider Mite Spp. ²	0.02-0.03	2.56-3.84	<ul style="list-style-type: none"> Do not apply within 1 day of harvest. Do not apply more than 0.24 lb ai (1.92 pints) per acre per season. <p>¹For control of first and second instar only. ²Suppression only. ³See resistance statement under General Directions for Use.</p>

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SPRAY RECOMMENDATIONS				
Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Corn Field Corn Popcorn Seed Corn	Cutworm Spp. Western Bean Cutworm ¹ Corn Earworm ¹ Green Cloverworm Meadow Spittlebug	0.015-0.025	1.92-3.20	<ul style="list-style-type: none"> Apply as required by scouting, or locally prescribed corn growth stages, usually at intervals of 7 or more days. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds or other locally recommended methods. Apply with ground or air equipment using sufficient water and application methods to obtain full coverage of target location. When applying by air, apply in a minimum of 2 gallons of water per acre. For chinch bug control, begin applications when bugs migrate from small grains or grass weeds to small corn. Direct spray to the base of corn plants. Repeat applications at 3- to 5-day intervals if needed. KARATE[®] may only suppress heavy infestations and/or subsequent migrations. For control of adult corn rootworm beetles (<i>Diabrotica</i> species) as part of an aerial applied corn rootworm control program use a minimum of 3.84 fl oz/A (0.03 lb ai/A). Do not apply within 21 days of harvest. Do not apply more than 0.12 lb ai (0.96 pints) per acre per season. Do not apply more than 0.06 lb ai (0.48 pints) after silk initiation. Do not apply more than 0.03 lb ai (0.24 pints) after corn has reached the milk stage (yellow kernels with milky fluid).
	Tobacco Budworm ^{1,4} European Corn Borer ¹ Southwestern Corn Borer ¹ Stalk Borer ¹ Hop Vine Borer ¹ Armyworm ² Fall Armyworm ² Yellow-striped Armyworm ² Webworm Spp. Flea Beetle Spp. Western Corn Rootworm Beetle (Adult) Northern Corn Rootworm Beetle (Adult) Southern Corn Rootworm Beetle (Adult) Mexican Corn Rootworm Beetle (Adult) Bean Leaf Beetle Cereal Leaf Beetle Japanese Beetle (Adult) Sap Beetle (Adult) Stink Bug Spp. Grasshopper Spp. Corn Leaf Aphid ³ Bird Cherry-Oat Aphid ^{3,4} English Grain Aphid ³	0.02-0.03	2.56-3.84	
	Beet Armyworm ^{2,4} Chinch Bug Green Bug ^{2,4}	0.03	3.84	<p>¹For control before the larva bores into the plant stalk or ear. ²For control of first and second instar only. ³Suppression only. ⁴See resistance statement under General Directions for Use.</p>

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SPRAY RECOMMENDATIONS

Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Cotton	Cutworm Spp. Tobacco Thrips Soybean Thrips	0.015-0.02	1.92-2.58	<ul style="list-style-type: none"> • Apply as required by scouting, usually at intervals of 5 to 7 days. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds. • Apply with ground or air equipment using sufficient water to obtain full coverage of foliage. Applications may also be made with equipment adapted and calibrated for ULV sprays. KARATE may be mixed with once-refined vegetable oil and applied in a minimum of at least one quart of finished spray per acre. • Under light bollworm/budworm infestation levels, 0.02 lb ai/A may be applied in conjunction with intense field monitoring. • For boll weevil control spray on a 3 to 5 day schedule. • When applied according to label directions for control of cotton bollworm and tobacco budworm, KARATE insecticide also provides ovicidal control of unhatched <i>Heliothis</i> spp. eggs. • Do not apply within 21 days of harvest. • Do not graze livestock in treated areas. • Do not apply more than 1.6 pints (0.2 lb ai) per acre per season. • Do not make more than a total of 10 synthetic pyrethroid applications (of one product or combination of products) to a cotton crop in one growing season. Synthetic pyrethroid products include AMBUSH® insecticide, Ammo® insecticide, Asana® XL insecticide, Baythroid® emulsifiable pyrethroid insecticide, Capture® insecticide/miticide, Danitol® 2.4 EC Spray insecticide/miticide, Decis® insecticide, Fury® insecticide, KARATE® insecticide, Mustang® insecticide, Pounce®, Scout X-TRA® insecticide, SynerGin™ 2 insecticide and WARRIOR® IEC insecticide.
	Lygus Bug Spp. ³ Pink Bollworm Cabbage Looper Cotton Leafperforator Saltmarsh Caterpillar Cotton Leafworm Cotton Fleahopper	0.02-0.03	2.56-3.84	
	Cotton Bollworm Tobacco Bud worm ⁰ Boll Weevil Fall Armyworm Beet Armyworm ^{1,3} European Corn Borer Brown Stink Bug Green Stink Bug Southern Green Stink Bug Twospotted Spider Mite ² Cotton Aphid ^{2,3} Bandedwing Whitefly ^{2,3} Sweetpotato Whitefly ^{2,3}	0.025-0.04	3.20-5.12	

¹For control of first and second instar only.

²Suppression only.

³See resistance statement under General Directions for Use.

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SPRAY RECOMMENDATIONS

Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Lettuce (Head and Stiff)	Alfalfa Looper Cabbage Looper Imported Cabbageworm Cutworm Spp. Saltmarsh Caterpillar Green Cloverworm	0.015-0.025	1.92-3.20	<ul style="list-style-type: none"> 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. Apply with ground or air equipment using sufficient water to obtain full coverage of foliage. When applying by air, apply in a minimum of 2 gallons of water per acre.
	Diamondback Moth ² Armyworm Beet Armyworm ^{1,2} Fall Armyworm ¹ Southern Armyworm Corn Earworm Tobacco Budworm ³ European Corn Borer Flea Beetle Spp. Japanese Beetle (Adult) Vegetable Weevil (Adult) Grasshopper Spp. Leafhopper Spp. Plant Bug Spp. including Lygus Spp. ³ Stink Bug Spp. Meadow Spittlebug Aphid Spp. ^{2,3} Whitefly Spp. ^{2,3} Spider Mite Spp. ²	0.02-0.03	2.56-3.84	

18/27

SPRAY RECOMMENDATIONS				
Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Onion (Bulb and Garlic)	Cutworm Spp. Seedcorn Maggot (Adult) Onion Maggot (Adult) Leafminer Spp. (Adult)	0.015-0.025	1.92-3.20	<ul style="list-style-type: none"> 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. Use the higher label rates as thrips population increases and avoid rescue situations. Apply with ground or air equipment using sufficient water and application methods to obtain full coverage of foliage. When applying by air, apply in a minimum of 2 gallons of water per acre. For thrips control by aerial application, the addition of 1% COC v/v, 1/4% NIS v/v or a silicone adjuvant (follow manufacturers use directions) may enhance the deposition of the spray and increase plant coverage. Do not apply within 14 days of harvest. Do not apply more than 0.24 lb ai (1.92 pints) per acre per season. <p>¹For control of the first and second instar only. ²Suppression only. ³See resistance statement under General Directions for Use.</p>
	Armyworm Spp. ¹ Onion Thrips Tobacco Thrips Western Flower Thrips ^{2,3} Flower Thrips ² Aphid Spp. ² Plant Bug Spp. Stink Bug Spp.	0.02-0.03	2.56-3.84	
Peanut	Cutworm Spp. Green Cloverworm Velvetbean Caterpillar Red-necked Peanut Worm Potato Leafhopper	0.015-0.025	1.92-3.20	<ul style="list-style-type: none"> Apply as required by scouting, usually at intervals of 7 or more days. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds. Apply with ground or air equipment using sufficient water to obtain full coverage of foliage. When applying by air, apply in a minimum of 2 gallons of water per acre. Do not apply within 14 days of harvest. Do not apply more than 0.12 lb ai (0.96 pints) per acre per season. Do not graze livestock in treated areas. Do not use treated vines or hay for animal feed. <p>¹For control of the first and second instar only. ²Suppression only. ³See resistance statement under General Directions for Use.</p>
	Corn Earworm Fall Armyworm ¹ Bean Leaf Beetle Southern Corn Rootworm (Adult) Vegetable Weevil Whitefringed Beetle (Adult) Stink Bug Spp. Tobacco Thrips Grasshopper Spp.	0.02-0.03	2.56-3.84	
	Beet Armyworm ^{1,3} Soybean Looper ^{2,3} Lesser Cornstalk Borer ² Spider Mite Spp. ² Aphid Spp. ²	0.03	3.84	

12/9/98

SPRAY RECOMMENDATIONS

Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Rice	True Armyworm Fall Armyworm Yellow-striped Armyworm Rice Water Weevil (adult) Rice Stink Bug Grasshopper Spp. Leafhopper Spp. Oat Birdcherry Aphid Green Bug	0.025-0.04	3.20-5.10	<p>Apply as required by scouting. Timing and frequency of application should be based upon local economic thresholds. Determine the need for repeat applications, usually at intervals of 5-7 days, by scouting.</p> <p>KARATE can be safely used when propanil products are being used for weed control.</p> <p>Apply by air or by 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.</p> <p>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 weevils have not been previously present. Adults may also be treated at later stages of rice development to reduce overwintering populations.</p> <p>For control of rice water weevil in water seeded rice, make the first foliar application after pinpoint flood as indicated by scouting for the presence of adults and/or feeding scars usually 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.</p> <p>Green bug is known to have many biotypes. KARATE may only provide suppression. If satisfactory control is not achieved with the first application of KARATE, a resistant biotype may be present. Use alternate chemistry for control.</p> <p>Do not release flood water within 7 days of an application.</p> <p>Do not apply more than 0.12 lb ai (0.96 pints) per acre per season. Do not apply more than 0.08 lb ai (0.64 pints) per acre within 28 days of harvest or more than 0.04 lb ai (0.32 pints) per acre within 21 days of harvest.</p> <p>Do not apply within 21 days of harvest.</p> <p>Do not use treated rice fields for the aquaculture of edible fish and crustacea.</p> <p>Do not apply as an ultra-low volume (ULV) spray.</p>

20/27

SPRAY RECOMMENDATIONS				
Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Sorghum (Grain)	Cutworm Spp. Sorghum Midge	0.015-0.02	1.92-2.56	<ul style="list-style-type: none"> 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. Apply with ground or air equipment using sufficient water and application methods to obtain full coverage of target location. When applying by air, apply in a minimum of 2 gallons of water per acre. For sorghum midge control, begin applications when 25% of the sorghum heads have emerged and are in tip bloom. Repeat applications at 5-day intervals if needed. For chinch bug control, begin applications when bugs migrate from small grains or grass weeds to small sorghum. Direct spray to the base of sorghum plants. Repeat applications at 3- to 5-day intervals if needed. KARATE may only suppress heavy infestations and/or subsequent migrations. Do not apply within 30 days of harvest. Do not apply more than 0.08 lb ai (0.64 pints) per acre per season. Do not apply more than 0.06 lb ai (0.48 pints) per acre per season after crop emergence. Do not apply more than 0.02 lb ai (0.16 pints) per acre per season once crop is in soft dough stage. Do not graze livestock in treated areas or harvest for fodder, silage or hay.
	Armyworm Beet Armyworm ^{1,2} Fall Armyworm ¹ Yellow-striped Armyworm ¹ Corn Earworm Webworm Spp. European Corn Borer ² Southwestern Corn Borer ² Lesser Cornstalk Borer ² Flea Beetle Spp. Stink Bug Spp. Grasshopper Spp.	0.02-0.03	2.56-3.84	
	Chinch Bug	0.03	3.84	¹ For control of the first and second instars only. ² For control before the larva bores into the plant stalk. ³ See resistance statement under General Directions for Use.

21/27

SPRAY RECOMMENDATIONS

Crop	Target Pests	Rate		Remarks
		lb a/A	fl oz/A	
Soybean	Corn Earworm Velvetbean Caterpillar Green Cloverworm Cabbage Looper Painted Lady (Thistle) Caterpillar Saltmarsh Caterpillar Woollybear Caterpillar Cutworm Spp. Bean Leaf Beetle Mexican Bean Beetle Western Corn Rootworm Beetle (Adult) Northern Corn Rootworm Beetle (Adult) Southern Corn Rootworm Beetle (Adult) Mexican Corn Rootworm Beetle (Adult) Three-Cornered Alfalfa Hopper Potato Leafhopper Thrips Spp.	0.015-0.025	1.92-3.20	<ul style="list-style-type: none"> 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. Do not graze or harvest treated soybean forage, straw or hay for livestock feed. Apply with ground or air equipment using sufficient water to obtain full coverage of foliage. When applying by air, apply in a minimum of 2 gallons of water per acre. For control of adult corn rootworm beetles (<i>Diabrotica</i> species) as part of an aerial applied corn rootworm control program use a minimum of 2.56 fl oz/A (0.02 lb a/A). Do not apply within 45 days of harvest. Do not apply more than 0.06 lb ai (0.48 pints) per acre per season.
	Armyworm ¹ Fall Armyworm ¹ Yellow-striped Armyworm ¹ Tobacco Budworm ² Webworm Spp. European Corn Borer Silverspotted Skipper Japanese Beetle (Adult) Blister Beetle Spp. Stink Bug Spp. Plant Bug Spp. Grasshopper Spp.	0.025-0.03	3.20-3.84	
	Beet Armyworm ^{1,3} Soybean Looper ^{2,3} Lesser Cornstalk Borer ² Spider Mite Spp. ²	0.03	3.84	

¹For control of the first and second instar only.

²Suppression only.

³See resistance statement under General Directions for Use.

12/21

SPRAY RECOMMENDATIONS				
Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Sunflower	Sunflower Beetle Cutworm Spp.	0.015-0.025	1.92-3.20	<ul style="list-style-type: none"> 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. Apply with ground or air equipment using sufficient water to obtain full coverage of sunflower heads and/or foliage. When applying by air, apply in a minimum of 2 gallons of water per acre. Do not apply within 45 days of harvest. Do not apply more than 0.12 lb ai (0.96 pints) per acre per season. Do not apply more than 0.09 lb ai (0.72 pints) per acre per season after bloom initiation. Do not apply as an ultra low volume (ULV) spray. <p>¹For control of first and second instar only. ²Suppression only. ³See resistance statement under General Directions for Use.</p>
	Sunflower Moth Banded Sunflower Moth Fall Armyworm ¹ Woollybear Caterpillar Spotted Cabbage Looper Painted Lady (Thistle) Caterpillar Seed Weevil (Adult) Stem Weevil (Adult) Head-Clipper Weevil (Adult) Japanese Beetle (Adult) Sunflower Maggot (Adult) Leafhopper Spp. Meadow Spittlebug Stink Bug Spp. Grasshopper Spp.	0.02-0.03	2.56-3.84	
	Beet Armyworm ^{1,3} Spider Mite Spp. ²	0.03	3.84	

23/21

SPRAY RECOMMENDATIONS				
Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Sweet Corn	Corn Earworm Fall Armyworm ¹ Southern Armyworm ¹ Beet Armyworm ^{1,2} Yellow-Striped Armyworm ¹ Cutworm Spp. Western Bean Cutworm Webworm Spp. European Corn Borer Southwestern Corn Borer Common Cornstalk Borer Western Corn Rootworm Beetle (Adult) Northern Corn Rootworm Beetle (Adult) Southern Corn Rootworm Beetle (Adult) Mexican Corn Rootworm Beetle (Adult) Japanese Beetle (Adult) Sap Beetle (Adult) Flea Beetle Spp. Tarnished Plant Bug Stink Bug Spp. Chinch Bug Aster Leafhopper Grasshopper Spp. Aphid Spp. ^{2,3} Spider Mite Spp. ²	0.02-0.03	2.56-3.84	<ul style="list-style-type: none"> Apply as required by scouting, or locally prescribed corn growth stages, usually at intervals of 4 or more days. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds or other locally recommended methods and should be targeted for control before insects enter the stalk or ear. Apply with ground or air equipment using sufficient water and application methods to obtain full coverage of foliage and ears (if present). When applying by air, apply in a minimum of 2 gallons of water per acre. For control of adult corn rootworm beetles (<i>Diabrotica</i> species) as part of an aerial applied corn rootworm control program use a minimum of 3.2 fl oz/A (0.025 lb ai/A). Do not apply within 1 day of harvest. Do not apply more than 0.48 lb ai (3.84 pints) per acre per season. <p>¹For control of first and second instar only. ²Suppression only. ³See resistance statement under General Directions for Use.</p>
	Corn Silkworm (Adult) ²	0.03	3.84	

24/27

SPRAY RECOMMENDATIONS

Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Tomato and Tomatillo	Cabbage Looper Cutworm Spp. Hornworm Spp.	0.015-0.025	1.92-3.20	<ul style="list-style-type: none"> 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. Apply with ground or air equipment using sufficient water to obtain full coverage of foliage. When applying by air, apply in a minimum of 2 gallons of water per acre. Do not apply within 5 days of harvest. Do not apply more than 0.38 lb ai (2.88 pints) per acre per season. Do not use on varieties in which the mature tomatoes will be less than one inch in diameter (such as cherry tomatoes). <p>¹For control of first and second instar only. ²Suppression only. ³See resistance statement under General Directions for Use.</p>
	Tomato Fruitworm Tobacco Budworm ³ Tomato Pinworm Beet Armyworm ^{1,3} Southern Armyworm ¹ Yellow-striped Armyworm ¹ Fall Armyworm ¹ European Corn Borer Leafminer Spp. ² Colorado Potato Beetle ³ Flea Beetle Spp. Grasshopper Spp. Leafhopper Spp. Aphid Spp. ^{2,3} Whitefly Spp. ^{2,3} Meadow Spittlebug Stink Bug Spp. Plant Bug Spp.	0.02-0.03	2.56-3.84	

05/21

SPRAY RECOMMENDATIONS

Crop	Target Pests	Rate		Remarks
		lb ai/A	fl oz/A	
Wheat, Wheat Hay, and Triticale	Cutworm Spp. Army Cutworm	0.015-0.025	1.92-3.20	<ul style="list-style-type: none"> 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. Apply with ground or air equipment using sufficient water and application methods to obtain full coverage of foliage. When applying by air, apply in a minimum of 2 gallons of water per acre. For chinch bug control, repeat applications at 3- to 5-day intervals if needed. KARATE may only suppress heavy infestations and/or migrations. Greenbug is known to have many biotypes. KARATE may provide suppression only. In this situation, a second application using an alternative chemistry may be needed. Do not apply within 30 days of harvest. Do not apply more than 0.06 lb ai (0.48 plnts) per acre per season. <p>¹Best control is obtained before insects begin to roll leaves. Once wheat has started to boot, KARATE may provide suppression only. Higher rates and increased coverage will be necessary. ²See resistance statement under General Directions for Use.</p>
	Armyworm Fall Armyworm Yellow-striped Armyworm Flea Beetle Spp. Cereal Leaf Beetle Stink Bug Spp. English Grain Aphid ¹ Russian Wheat Aphid ¹ Bird Cherry-Oat Aphid ¹ Grasshopper Spp.	0.02-0.03	2.58-3.84	
	Grass Sawfly	0.025-0.03	3.20-3.84	
	Chinch Bug Greenbug ^{1,2}	0.03	3.84	

26/27

RATE CONVERSION CHART

LB AI PER ACRE	FL OZ PER ACRE	PINTS PER ACRE	TREATED ACRES PER GALLON
0.015	1.92	0.12	66
0.02	2.56	0.16	50
0.025	3.20	0.20	40
0.03	3.84	0.24	33
0.04	5.12	0.32	25

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