



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

May 20, 2016

Nick Seibert  
Agent for Direct AG Source, LLC  
c/o Winfield Solutions  
P.O. Box 64589  
St. Paul, MN 55164

Subject: Label Amendment – Deletion of kohlrabi.  
Product Name: Permethrin 3.2 AG  
EPA Registration Number: 83222-3  
Application Date: January 11, 2016  
Decision Number: 513019

Dear Mr. Seibert:

The amended label referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act, as amended, is acceptable. This approval does not affect any conditions that were previously imposed on this registration. You continue to be subject to existing conditions on your registration and any deadlines connected with them.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one copy of the final printed labeling before you release the product for shipment with the new labeling. In accordance with 40 CFR 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR 152.3.

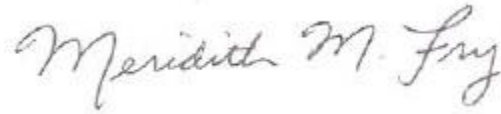
Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance.

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

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EPA Reg. No. 83222-3  
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with FIFRA section 6. If you have any questions, please contact Jennifer Gaines at 703-305-5967 or via email at [gaines.jennifer@epa.gov](mailto:gaines.jennifer@epa.gov).

Sincerely,

A handwritten signature in cursive script that reads "Meredith M. Fry".

Meridith M. Fry, Ph.D., Product Manager 4  
Invertebrate & Vertebrate Branch 1 (IVB1)  
Registration Division (7505P)  
Office of Pesticide Programs

Enclosure

**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

GROUP	3A	INSECTICIDE
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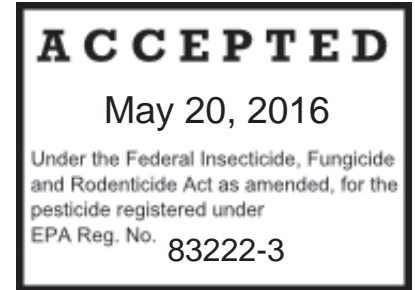
**PERMETHRIN 3.2 AG  
Insecticide**

**Active Ingredient**

Permethrin*	36.8%
<b>Other Ingredients**</b>	<b>63.2%</b>
<b>TOTAL</b>	<b>100.0%</b>

\**cis/trans* ratio: Max. 42% (±) *cis* and min. 58% (±) *trans*  
\*\* Contains petroleum distillates.

Contains 3.2 pounds permethrin per gallon as an emulsifiable concentrate.



**KEEP OUT OF REACH OF CHILDREN**

**WARNING**

<b>FIRST AID:</b>	
<b>IF ON SKIN OR CLOTHING</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF SWALLOWED</b>	<ul style="list-style-type: none"> <li>• Immediately call a poison control center or doctor.</li> <li>• Do not induce vomiting unless told to do so by a poison control center or doctor.</li> <li>• Do not give any liquid to the person.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul>
<b>IF IN EYES</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF INHALED</b>	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth to mouth if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
<p>Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For emergency medical assistance call the Rocky Mountain Poison Control Center at 1-866-767-5089.</p> <p align="center"><b>FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident call CHEMTREC 1-800-424-9300</b></p>	
<b>NOTE TO PHYSICIAN:</b> Contains petroleum distillates – vomiting may cause aspiration pneumonia	

**Net Contents: 1 gallon, 30 gallons, 55 gallons**

Direct AG Source, LLC  
30473 260<sup>th</sup> St.  
Eldora, IA 50627

EPA Reg. No. 83222-3  
EPA Est. No.

**PRECAUTIONARY STATEMENTS****Hazards to Humans & Domestic Animals.**

WARNING. Causes skin irritation. Harmful if absorbed through skin. Do not get on skin or clothing. Harmful if swallowed. Causes moderate eye irritation. Avoid contact with eyes. Harmful if inhaled. Avoid breathing vapor or spray mist.

**Personal Protection Equipment (PPE)**

Some materials that are chemical-resistant to this product are barrier laminate and Viton. If you want more options, follow the instructions for category G on an EPA chemical-resistance category selection chart.

Applicators using ULV cold foggers or fog/mist generators in indoor spaces must wear:

- Coveralls over long-sleeved shirt and long pants
- Chemical-resistant gloves
- Chemical-resistant footwear plus socks, and
- Chemical-resistant headgear, if overhead exposure.

All other mixers, loaders, applicators, and other handlers must wear:

- Long-sleeve shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves for all handlers except for applicators using motorized ground equipment, pilots, and flaggers
- Chemical-resistant apron for mixers/loaders, persons cleaning equipment, and persons exposed to the concentrate and for handlers performing animal dip applications

See engineering controls for additional requirements.

**Engineering Controls**

Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)].

**User Safety Requirements**

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

**User Safety Recommendations:**

Users should:

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

**Environmental Hazards**

This product is extremely toxic to aquatic organisms, including fish and invertebrates. 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 by cleaning of equipment or disposal of equipment washwaters.

Under some conditions, it may also have the potential for transport into surface water in runoff (primarily adsorbed to suspended soil particles), for several months or more after application. These include poorly draining or wet soils with readily visible slopes toward adjacent surface waters, frequently flooded areas, and areas overlying extremely shallow groundwater, areas with in-field canals or ditches that drain to surface water, areas not separated from adjacent surface waters with vegetated filter strips, and areas overlying tile drainage systems that drain to surface waters.

This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this pesticide to or allow it to drift to blooming crops or weeds while bees are foraging in the treatment area

Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the

permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

### Physical/Chemical Hazards

Do not use or store near heat or open flame.

## DIRECTIONS FOR USE RESTRICTED USE PESTICIDE

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

**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 agricultural advisor for the best alternative method of control for your area.

### USE RESTRICTIONS

Application is prohibited directly into sewers or drains, or to any area like a gutter where drainage to sewers, storm drains, water bodies, or aquatic habitat can occur. Do not allow the product to enter any drain during or after application.

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.

### 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 on this product that are covered by Worker Protection Standard.

Do not enter or allow worker entry to 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 made of any waterproof material.
- Shoes plus socks.

**PROHIBITION:** Harvesting of conifer seed cones is prohibited within 30 days of application.

### BUFFER ZONES

#### Vegetative Buffer Strip

Construct and maintain a minimum 10-foot wide vegetative filter strip of grass or other permanent vegetation between the field edge and down gradient aquatic habitat (such as, but not limited to: lakes; reservoirs; rivers; permanent streams; marshes or natural ponds; estuaries; and commercial fish farm ponds).

Only apply products containing permethrin onto fields where a maintained vegetative buffer strip of at least 10 feet exists between the field and down gradient aquatic habitat.

For guidance, refer to the following publication for information on constructing and maintaining effective buffers: *Conservation Buffers to Reduce Pesticide Losses*. Natural Resources Conservation Services. USDA, NRCS. 2000. Fort Worth, TX. 21 pp. [www.in.nrcs.gov/technical/agronomy/newconfuf.pdf](http://www.in.nrcs.gov/technical/agronomy/newconfuf.pdf).

Buffer Zone for Ground Application (groundboom, overhead chemigation, or airblast)

Do not apply within 25 feet of aquatic habitats (such as, but not limited to: lakes; reservoirs; rivers; permanent streams; marshes; natural ponds; estuaries; and commercial fish ponds).

Buffer zone for ULV Aerial Application

Do not apply within 450 feet of aquatic habitats (such as, but not limited to: lakes; reservoirs; rivers; permanent streams; marshes; natural ponds; estuaries; and commercial fish ponds).

Buffer Zone for Non-ULV Aerial Application

Do not apply within 15 feet of aquatic habitats (such as, but not limited to: lakes; reservoirs; rivers; permanent streams; marshes; natural ponds; estuaries; and commercial fish ponds).

**SPRAY DRIFT REQUIREMENTS**Wind Direction and Speed

Only apply this product if the wind direction favors on-target deposition.  
Do not apply when the wind velocity exceeds 15 mph.

Temperature Inversion

Do not make aerial or ground applications into 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.

Droplet Size

Use only medium or coarser spray nozzles (for ground and non-ULV aerial application) according to ASAE (S572) definition for standard nozzles. In conditions of low humidity and high temperatures, applicators should use a coarser droplet size.

Additional Requirements for Ground Applications

Wind speed must be measured adjacent to the application site on the upwind side, immediately prior to application. For ground boom applications, apply using a nozzle height of no more than 4 feet above the ground or crop canopy.

For airblast applications, turn off outward pointing nozzles at row ends and when spraying the outer two rows. To minimize spray loss over the top in orchard applications, spray must be directed into the canopy.

Additional Requirements 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 the wing span or 80% rotor diameter.

Flight speed and nozzle orientation must be considered in determining droplet size.

Spray must be released at the lowest height consistent with pest control and flight safety. Do not release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety.

When applications are made with a cross-wind, the swath will be displaced downwind. The applicator must compensate for this displacement at the downwind edge of the application area by adjusting the path of the aircraft upwind.

**Chemigation**

Apply this product only through the following types of sprinkler irrigation: 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 an 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 non-uniform distribution of treated water. For questions concerning calibration consult the equipment manufacturer or your local State Extension Service representative. A person knowledgeable of the chemigation system and responsible for its operation, or person under the supervision of the person responsible, 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, 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.

Apply PERMETHRIN 3.2 AG continuously for the duration of the water application. Dilute PERMETHRIN 3.2 AG - in sufficient volume to ensure accurate application of the area to be treated. When using chemigation, a minimum of 0.1 inch per acre of irrigation water is recommended. Agitation generally is not required when a suitable diluent is used. A diluent test should be conducted to ensure that phase separation will not occur during dilution and application. Failure to achieve a uniform dilution throughout the time of application may result in undesirable residues or less than desirable control.

### **Commercial Impregnation and Application on Dry Bulk Fertilizers**

PERMETHRIN 3.2 AG may be impregnated on dry bulk fertilizers. When applied as directed, PERMETHRIN 3.2 AG/dry bulk fertilizer mixtures provide insect control equal to that provided by the same rates of PERMETHRIN 3.2 AG applied in water.

The PERMETHRIN 3.2 AG/fertilizer mixtures may be surface applied or shallow incorporated. Use the higher rate if incorporation is used.

Impregnation: Apply using a minimum of 200 pounds of dry bulk fertilizer per acre and up to a maximum of 450 pounds per acre with the required amount of PERMETHRIN 3.2 AG per acre. Use a closed rotary-drum mixer or a similar type of closed blender equipped with suitable spray equipment. The spray nozzle(s) should be in a position to provide a uniform, fine spray pattern over the tumbling fertilizer for thorough coverage. The physical properties of fertilizers vary particularly in liquid absorption capacity. When absorptivity is sufficient, simply spray impregnation of the fertilizer with PERMETHRIN 3.2 AG provides a satisfactory, dry mixture. If the absorptive capacity is inadequate, the use of a highly absorptive powder is required to provide a dry, flowable mixture. Microcel E (Johnson Manville Product Corporation) is a recommended absorbent powder. Generally less than 2% by weight of Microcel E is required. DO NOT impregnate PERMETHRIN 3.2 AG onto straight coated ammonium nitrate or straight limestone because these materials will not absorb the insecticide. Dry fertilizer blends containing mixtures of ammonium nitrate or limestone may be impregnated with PERMETHRIN 3.2 AG.

Carefully determine the amount of PERMETHRIN 3.2 AG actually required in the preparation of individual fertilizer mixtures for each production operation. This is necessary to ensure that the amount of pesticide actually contained in the mixture applied to the soil represents the correct rate of use. Apply bulk fertilizer impregnated with PERMETHRIN 3.2 AG; do not store.

All individual state regulations relating to bulk dry fertilizer blending, registration, labeling and application of the mixtures are the responsibility of the individual and/or company selling the fertilizer and PERMETHRIN 3.2 AG mixture.

## **PRODUCT INFORMATION**

### **Important:**

PERMETHRIN 3.2 AG is toxic to fish. Exercise care when making applications near ponds, lakes, streams, reservoirs and other aquatic environments where fish are present.

For advice concerning current control practices with relation to specific local conditions, consult your local State Cooperative Extension or regulatory agencies.

PERMETHRIN 3.2 AG is formulated as an emulsifiable concentrate (EC) formulation and is to be diluted and applied as an emulsion. When tank mixing as an emulsion with other products, follow all precautions and directions on the labels of each product in the mixture.

PERMETHRIN 3.2 AG can be tank-mixed with natural pyrethrin-containing products or Insect Growth Regulators (IGRs). Do not tank mix with dichlorvos (DDVP) or other fumigant products.

### APPLICATION INSTRUCTIONS

Unless otherwise directed by state-specific 24c labeling, follow the Directions for Use in each crop group section.

PERMETHRIN 3.2 AG is a 3.2 pounds per gallon formulation of the insecticide permethrin. Apply PERMETHRIN 3.2 AG when insects appear or feeding is noticed. Use the higher rate as pest populations increase. Repeat the application as necessary to maintain control. Use sufficient water to obtain full coverage. With the exception of crops listed below, do not plant rotational crops within 60 days of last application.

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

### RATE CONVERSION CHART

POUNDS ACTIVE PER ACRE	FORMULATION OUNCES PER ACRE
0.05	2.0
0.10	4.0
0.15	6.0
0.20	8.0
0.25	10.0
0.30	12.0



**Index to Crops Listed on this Label**

Vegetable Crops:

- Artichoke
- Asparagus
- Avocado
- Cole Crops (Brassica Leafy Vegetables)
- Collards and Turnips
- Corn, Sweet
- Corn, Sweet (Florida only)
- Cucurbit Vegetables
- Eggplant
- Horseradish
- Leafy Vegetables (except Brassica)
- Onions, Bulb and Garlic
- Peppers, Bell
- Potatoes
- Tomatoes, Tomatillos

Tree Fruit and Nuts

- Almonds
- Apples
- Cherries
- Filberts
- Papaya (Florida Only)
- Peaches and Nectarines
- Pistachios
- Pears
- Walnuts

Other Crops

- Alfalfa
- Corn (Field), Field Corn Grown for Seed, Popcorn
  - Pre-emergent Use
  - Foliar Use
- Corn (Field), Field Corn Grown for Seed, Popcorn
  - At Plant Use
- Mushrooms
- Range Grass (New Mexico Only)
- Soybeans

Ornamentals

- Chrysanthemum
- Conifers (Container and Field Grown)
- Ornamental Nursery Stock (Field Grown)
- Pine Seed Orchards
- Roses (Field Grown)
- Roses (Greenhouse)

Lawn and Ornamental Uses

Other Uses

- Premises Spray
- Treatment of Preconstruction Lumber and Logs

**VEGETABLE CROPS**

<b>ARTICHOKE</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Artichoke plume moth Leafminers	4 – 12 (0.1 – 0.3)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage. Applications may be made up to harvest.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply more than 12 oz. product (0.3 lbs. a.i.) per application.</li> <li>Do not apply more than 36 oz. product (0.9 lbs. a.i.) per acre per season.</li> <li>Do not apply at intervals less than 10 days.</li> </ul>		

<b>ASPARAGUS</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Asparagus beetle Cutworms	2 – 4 (0.05 – 0.1)	Apply by ground in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.  Do not apply more than 16 oz. product (0.4 lbs. a.i.) per acre per season.
Asparagus beetle Japanese beetle (Adult stage)* Lygus bugs Tarnished plant bug	4 (0.1)	Apply by ground in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.  Post harvest application only. Apply to the fern stage of the asparagus plant after spear harvest when larval and adult stages are present.  *Not for control of this insect in California
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply at intervals less than 7 days.</li> <li>Do not apply within 1 day of harvest.</li> </ul>		

<b>AVOCADO</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Avocado caterpillar Avocado lace bug Avocado leafhopper Avocado leafroller Avocado looper Avocado tree girdler Avocado whitefly Brown soft scale Mirids Omnivorous looper Orange tortrix Scale crawlers Spanworm Thrips Twig borers	8 (0.2)	Apply by ground equipment in 25-400 gallons of finished spray per acre.  Apply when insects first appear and repeat at 7 to 10 day intervals as needed to provide control.

**RESTRICTIONS:**

- Do not apply more than 32 oz. product (0.8 lbs. a.i.) per acre per season.
- Do not graze livestock in treated areas.
- Do not feed cover crops from treated areas to livestock.
- Do not apply at intervals less than 7 days.
- Do not apply within 7 days of harvest.

COLE CROPS – Brassica Leafy Vegetables			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	SPECIFIC APPLICATION INSTRUCTIONS
Broccoli, Chinese Broccoli (gai lon, white flowering broccoli), Brussels Sprouts; Cauliflower; Cavalo broccolo,	Cabbage looper Armyworm spp. Imported cabbageworm Diamondback moth Plant bugs Thrips Cabbage aphid*	2 – 4 (0.05 – 0.1)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.  Apply every 5 days as needed. Maximum rate for broccoli is 8 oz. product (0.2 lbs. a.i.)/A.  Do not apply more than 0.8 lbs. a.i. per acre per season for broccoli, or 0.4 lbs a.i. per acre per season for Brussels sprouts and cauliflower.
Cabbage, Chinese Cabbage (napa, tight- headed varieties only)	Cabbage looper Imported cabbageworm Diamondback moth Southern white butterfly Cabbage aphid*	2 – 8 (0.05 – 0.2)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.  Apply every 5 – 10 days or as needed.
	Armyworm spp. Cutworms Flea beetles	4 – 8 (0.1 – 0.2)	Do not apply more than 16 oz. product (0.4 lbs. a.i.) per acre per season (32 oz. product/0.8 lbs. a.i. in Hawaii).  * Aids in the suppression only
<b>RESTRICTIONS:</b>			
<ul style="list-style-type: none"> <li>• Do not apply at intervals less than 5 days.</li> <li>• Do not apply within 1 day of harvest.</li> </ul>			

<b>COLLARDS and TURNIPS</b>			
<b>CROP</b>	<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Collards (AR, AZ, GA, IL, NC, OK, SC, and TX only)	Beet armyworm Cabbage looper Corn earworm Cutworms Diamond back moth European corn borer Fall armyworm Green cloverworm Imported cabbageworm Leafhoppers Leafminer Southern armyworm Southern white butterfly Tobacco budworm Vegetable leafminer Aphids*	2 – 6 (0.05 – 0.15)	Apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage. Apply with ground equipment only. Apply as needed. AR, TX: Do not apply more than 18 oz. product (0.45 lbs. a.i.) per acre per season.  * Aids in the suppression only
Turnips (FL, GA, IL, IN, OK, SC, TX, and WA only)	Beet armyworm Cabbage looper Corn earworm Cutworms Diamond back moth European corn borer Fall armyworm Green cloverworm Imported cabbageworm Leafhoppers Leafminer Southern armyworm Southern white butterfly Tobacco budworm Vegetable leafminer Aphids*	2 – 6 (0.05 – 0.15)	Apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.  Apply with ground equipment only. Apply as needed. Do not graze treated areas or feed crop refuse to livestock. TX, IN: Do not apply more than 18 oz. product (0.45 lbs. a.i.) per acre per season. SC, GA, FL, WA: Do not apply more than 18 oz. product (0.45 lbs. a.i.) per acre per season.  * Aids in the suppression only
<b>RESTRICTIONS:</b>			
<ul style="list-style-type: none"> <li>• Do not apply at intervals less than 3 days.</li> <li>• Do not exceed 8 applications.</li> <li>• Do not apply within 1 day of harvest.</li> </ul>			

CORN, SWEET		
TARGET PESTS	RATE FL OZ/A (LBS A/A)	SPECIFIC APPLICATION INSTRUCTIONS
Aster leafhopper Corn earworm Corn rootworm beetles* Cutworms European corn borer Fall armyworm Flea beetle Hop vine borer Leafhoppers Southern armyworm Stalk borers	4 – 8 (0.1 – 0.2)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage. Apply every 3 to 5 days or as needed. *Pest does not occur on this crop in California
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply more than 32 oz. product (0.8 lbs. a.i.) per acre per season.</li> <li>Do not apply at intervals less than 3 days.</li> <li>Do not apply within 1 day of harvest.</li> </ul>		

CUCURBIT VEGETABLES*		
TARGET PESTS	RATE FL OZ/A (LBS A/A)	SPECIFIC APPLICATION INSTRUCTIONS
Aphids Leafminers Squash bugs	8 (0.2)	Apply by air or ground equipment. By air, apply in a minimum of 4 gallons of water per acre. By ground, apply in a minimum of 20 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.  Applications may be made up to harvest.  For Cantaloupe, do not apply more than 32 oz. product (0.8 lbs a.i.) per acre per season (48 oz. product/1.2 lbs. a.i. in Hawaii).
Cabbage looper Cucumber beetle (adult) Cutworms Leafhoppers Melonworm Pickleworm Plant bugs (including Lygus and Stink bugs) Rindworms Squash vine borer	4 – 8 (0.1 – 0.2)	For all others, do not apply more than 48 oz. product (1.2 lbs. a.i.) per acre per season.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply at intervals less than 7 days.</li> </ul>		
<p>* Cucurbit vegetables include: <b>Chayote</b> (fruit), <b>Chinese waxgourd</b> (Chinese preserving melon), <b>Citron melon</b>, <b>Cucumber</b>, <b>Gherkin</b>, <b>Gourd (edible)</b> (includes hyotan, cucuzza), <b>Luffa spp.</b> (includes hechima, Chinese okra), <b>Momordica spp.</b> (includes balsam apple, balsam pear, bitter melon, Chinese cucumber), <b>Muskmelon</b> (hybrids and/or cultivars of Cucumia melo, including true cantaloupe, cantaloupe, casaba, crenshaw melon, golden pershaw melon, honeydew melon, honey balls, mango melon, Persian melon, pineapple melon, Santa Claus melon, and snake melon), <b>Pumpkin</b>; <b>Summer Squash</b> (includes crookneck squash, scallop squash, straightneck squash, vegetable marrow, zucchini), <b>Winter Squash</b> (includes butternut squash, calabaza, hubbard squash, C. mixta, C. pepo, acorn squash, spaghetti squash), <b>Watermelon</b> (includes hybrids and/or varieties of Citrullus spp.)</p>		

<b>EGGPLANT</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS A/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Cabbage looper Colorado potato beetle Flea beetles Vegetable leafminer	6 (0.15)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.  Apply as needed, using sufficient water to obtain uniform coverage.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>• Do not apply more than 24 oz. product (0.6 lbs. a.i.) per acre per season 1.0 in Hawaii).</li> <li>• Do not apply at intervals less than 7 days.</li> <li>• Do not apply within 3 days of harvest.</li> </ul>		

<b>HORSERADISH</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS A/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Imported crucifer weevil (Baris lepidii)	0.1% active solution (2 pt, 1 oz per 100 gallons)	As a spring preplant dip, soak sets for 30 minutes and air-dry before planting.
	6 (0.15)	For foliar application, apply with ground equipment in a minimum spray volume of 20 gallons finished spray per acre. Make up to 3 foliar applications as needed to control weevil adults during oviposition.  Do not apply more than 18 oz. product (0.45 lbs. a.i.) per acre per season.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>• Do not apply within 30 days of harvest.</li> <li>• Do not apply at intervals less than 10 days.</li> </ul>		

LEAFY VEGETABLES (except Brassica)*		
TARGET PESTS	RATE FL OZ/A (LBS AI/A)	SPECIFIC APPLICATION INSTRUCTIONS
Aphids Beet armyworm Corn earworm Cutworms European corn borer Fall armyworm Green cloverworm Leafminers Southern armyworm Tobacco budworm	4 – 8 (0.1 – 0.2)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.  For Celery, do not apply more than 40 oz. product (1.0 lbs. a.i.) per acre per season (1.2 in Hawaii).  For Spinach (including New Zealand and vine, Malabar and Indian spinach), do not apply more than 24 oz. product (0.6 lbs. a.i.) per acre per season.
Alfalfa looper Cabbage looper Leafhoppers	2 – 8 (0.05 – 0.2)	For Lettuce (head and leaf), do not apply more than 32 oz. product (0.8 lbs. a.i.) per acre per season (48 oz. product/1.2 lbs. a.i. in Hawaii).  For other crops, do not apply more than 80 fl. oz. product (2.0 lbs. a.i.) per acre per season.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>For Spinach, do not apply at intervals less than 3 days. For all others, do not apply at intervals less than 7 days.</li> <li>Do not apply within 1 day of harvest.</li> </ul>		
* Leafy vegetables: <b>Amaranth</b> (leafy amaranth, Chinese spinach, tampala), <b>Arugula</b> (Roquette), <b>Cardoon</b> , <b>Celery</b> , <b>Chinese celery</b> , <b>Celtuce</b> , <b>Chervil</b> , <b>Chrysanthemum</b> (edible-leaved and garland), <b>Corn salad</b> , <b>Garden Cress</b> , <b>Upland Cress</b> (yellow rocket, winter cress), <b>Dandelion</b> , <b>Dock</b> (sorrel), <b>Endive</b> (escarole), <b>Florence fennel</b> (finocchio), <b>Head and Leaf Lettuce</b> , <b>Orach</b> , <b>Parsley</b> , <b>Garden Purslane</b> , <b>Winter Purslane</b> , <b>Radicchio</b> (red chicory), <b>Rhubarb</b> , <b>Swiss chard</b> , <b>Spinach</b> (including New Zealand and vine, Malabar spinach, Indian spinach).		

ONIONS, BULB		
TARGET PESTS	RATE FL OZ/A (LBS AI/A)	SPECIFIC APPLICATION INSTRUCTIONS
Armyworms Onion thrips	6 – 12 (0.15 – 0.3)	Apply by air or ground equipment. By air, apply in a minimum of 5 gallons of water per acre. By ground, apply in a minimum of 20 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.
Cutworms Leafminers Onion maggots (adults) Stink bugs	4 – 12 (0.1 – 0.3)	
Begin applications when pests appear and repeat as necessary to maintain control. Use the higher label rates as onion thrips population increases and avoid rescue situations.		
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply more than 40 oz. product (1.0 lbs. a.i.) per acre per season.</li> <li>Do not apply at intervals less than 7 days.</li> <li>Do not apply within 1 day of harvest.</li> </ul>		

<b>GARLIC</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Armyworms Onion thrips	6 – 18 (0.15 – 0.2)	Apply by air or ground equipment. By air, apply in a minimum of 5 gallons of water per acre. By ground, apply in a minimum of 20 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.  Begin applications when pests appear and repeat as necessary to maintain control. Use the higher label rates as onion thrips population increases and avoid rescue situations.
Cutworms Leafminers Onion maggots (adults) Stink bugs	4 – 8 (0.1 – 0.2)	
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply more than 32 oz. product (0.8 lbs. a.i.) active ingredient per acre per season.</li> <li>Do not apply at intervals less than 10 days.</li> <li>Do not apply within 1 day of harvest.</li> </ul>		

<b>PEPPERS, BELL</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Cabbage looper Corn earworm Cutworms Flea beetle Pepper weevil Vegetable leafminer	4 – 8 (0.1 – 0.2)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.
European corn borer	8 (0.2)	
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply more than 32 oz. product (0.8 lbs. a.i.) per acre per season.</li> <li>Do not apply at intervals less than 5 days.</li> <li>Do not apply within 3 days of harvest.</li> </ul>		

<b>POTATOES</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Aster leafhopper Beet armyworm Cabbage looper Colorado potato beetle Cutworms European corn borer Potato aphid Potato flea beetle Potato leafhopper Potato psyllid Potato tuberworm Tarnished plant bug	4 – 8 (0.1 – 0.2)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.  PERMETHRIN 3.2 AG also may be applied using refined non-volatile vegetable oil for control of listed pests. Dilute PERMETHRIN 3.2 AG with oil and apply in a minimum of one quart total volume per acre using equipment calibrated to give adequate coverage. Use sufficient spray volume to obtain full coverage.



**RESTRICTIONS:**

- Do not apply more than 32 oz. product (0.8 lbs. a.i.) per acre per season.
- Do not apply at intervals less than 10 days.
- Do not apply within 14 days of harvest.

**TOMATOES, TOMATILLOS**

<b>TOMATOES, TOMATILLOS</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Beet armyworm Cabbage looper Colorado potato beetle Granulate cutworm Hornworms Southern armyworm Tomato fruitworm Tomato pinworm Vegetable leafminers	2 – 8 (0.05 – 0.2)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.  May be applied up until harvest.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>• Do not apply at intervals less than 7 days.</li> <li>• Do not apply more than 24 oz. product (0.6 lbs. a.i.) per acre per season (0.8 in Hawaii).</li> <li>• Do not apply to cherry tomatoes or other varieties which produce fruit less than one inch in diameter.</li> </ul>		

**TREE FRUIT AND NUTS****ALMONDS**

<b>ALMONDS</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Navel orangeworm Peach twig borer	10 (0.25)	Apply when insects appear and repeat as required to maintain control. Apply by air or ground equipment. By air, apply in a minimum of 15 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre.
Ants	10 (0.25)	Apply by ground equipment only in a minimum of 15 gallons of water per acre. Application should follow mowing of weed growth to ensure maximum coverage of the soil surface. Overhead moisture following application will enhance activity.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>• Do not apply more than 30 oz. product (0.75 lbs. a.i.) per acre per season.</li> <li>• Do not graze livestock in treated areas.</li> <li>• Do not feed cover crops from treated areas to livestock.</li> <li>• Do not apply at intervals less than 10 days.</li> <li>• Do not apply within 7 days of harvest.</li> </ul>		

<b>APPLES</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS A/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Green fruitworm Oblique banded leafroller Plum curculio Redbanded leafroller Rosy apple aphid Spotted tentiform leafminer Tarnished plant bug White apple leafhopper	10(0.25)	Apply by ground equipment only. Apply in 25-400 gallons of finished spray per acre. Apply when insects appear and repeat as required to maintain control.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>• Do not apply more than 20 oz. product (0.5 lbs. a.i.) per acre per season.</li> <li>• Do not graze livestock in treated areas.</li> <li>• Do not feed cover crops from treated areas to livestock.</li> <li>• Do not apply at less than 10 day intervals.</li> <li>• Do not apply after petal fall.</li> </ul>		

<b>CHERRIES (including sweet and tart cherries)</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS A/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Green fruitworm Lesser peach tree borer Plum curculio Redbanded leafroller Rose chafer Tarnished plant bug	4 – 8 (0.1 – 0.2)	Apply by ground equipment only. Apply in 25-400 gallons of finished spray per acre. Apply when insects first appear.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>• East of the Rockies: Do not exceed 6 applications per season, with no more than 4 applications after petal fall.</li> <li>• West of the Rockies: Do not apply more than 4 applications per season, with no more than 3 applications after petal fall.</li> <li>• Do not apply more than 24 oz. product (0.6 lbs. a.i.) per acre per season.</li> <li>• Do not graze livestock in treated areas.</li> <li>• Do not feed cover crops from treated areas to livestock.</li> <li>• Do not apply at less than 10 day intervals.</li> <li>• Do not apply within 3 days of harvest.</li> </ul>		

<b>FILBERTS/HAZELNUTS</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Filbertworm Oblique banded leafroller	10 (0.25)	Apply by air or ground equipment. By air, apply in a minimum of 10 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre. Apply when insects appear.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply more than 30 oz. product (0.75 lbs. a.i.) per acre per season.</li> <li>Do not graze livestock in treated areas.</li> <li>Do not feed cover crops from treated areas to livestock.</li> <li>Do not apply at intervals less than 10 days.</li> <li>Do not apply within 14 days of harvest.</li> </ul>		

<b>PAPAYA (Florida Only)</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Aphids Brown soft scale Mealybug Papaya fruit fly Papaya webworm Papaya whitefly Scale crawlers	6 (0.15)	Apply by ground equipment only. Apply in 25-400 gallons of finished spray per acre. Spray to wet all foliage. Apply when insects first appear and repeat at 7-10 day intervals as needed to provide control.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply more than 30 oz. product (0.75 lbs. a.i.) per acre per season.</li> <li>Do not apply at intervals less than 10 days.</li> <li>Do not apply within 7 days of harvest.</li> <li>Do not graze livestock in treated areas.</li> <li>Do not feed cover crops from treated areas to livestock.</li> </ul>		

<b>PEACHES and NECTARINES</b>		
<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Green fruitworm Lesser peach tree borer Oriental fruit moth Peach twig borer Plum curculio Rose chafer Tarnished plant bug	4 – 10 (0.1 – 0.25)	Apply by air or ground equipment. By air, apply in a minimum of 10 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre. Spray to wet all foliage.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply more than 30 oz. product (0.75 lbs. a.i.) per acre per season.</li> <li>Do not graze livestock in treated areas.</li> <li>Do not feed cover crops from treated areas to livestock.</li> <li>Do not apply at interval less than 10 days.</li> <li>Do not apply within 14 days of harvest.</li> </ul>		

PISTACHIOS		
TARGET PESTS	RATE FL OZ/A (LBS AI/A)	SPECIFIC APPLICATION INSTRUCTIONS
Leaffooted bugs Naval orangeworm Peach twig borer Plant bugs Stink bugs	8 – 12 (0.2 – 0.3)	Apply by air or ground equipment. By air, apply in a minimum of 10 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre.  Use sufficient water to obtain full coverage of foliage.  May be applied up until harvest.
Ants	12 (0.3)	Apply by air or ground equipment. By air, apply in a minimum of 10 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre.  Application should follow mowing of weed growth to ensure maximum coverage of the soil surface. Overhead moisture following application will enhance activity.  May be applied up until harvest.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply after 10 percent hull split.</li> <li>Do not apply more than 36 oz. product (0.9 lbs. a.i.) per acre per season.</li> <li>Do not graze livestock in treated areas.</li> <li>Do not feed cover crops from treated areas to livestock.</li> <li>Do not apply at intervals less than 10 days.</li> </ul>		

PEARS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	SPECIFIC APPLICATION INSTRUCTIONS
Pears (Dormant through Delayed Dormant)	Pear psylla	8 – 16 (0.2 – 0.4)	Apply by air or ground equipment. By air, apply in a minimum of 10 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre. Use sufficient water to obtain uniform coverage  May be combined with 2 to 8 gallons of spray oil per acre.  Apply during the dormant through delayed dormant growth periods only.
Pears (Pre-Bloom)	Codling moth Green fruitworm Pear psylla	10 (0.25)	Apply by air or ground equipment. By air, apply in a minimum of 10 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre. Use sufficient water to obtain uniform coverage  Pre-bloom sprays can be applied from dormant through bud burst stages.
<b>RESTRICTIONS:</b>			
<ul style="list-style-type: none"> <li>Do not graze livestock in treated areas.</li> <li>Do not apply more than 26 oz. product (0.65 lbs. a.i.) per acre per season.</li> <li>Do not apply at intervals less than 10 days.</li> <li>Do not feed cover crops from treated areas to livestock.</li> </ul>			

WALNUTS		
TARGET PESTS	RATE FL OZ/A (LBS A/A)	SPECIFIC APPLICATION INSTRUCTIONS
Codling moth Navel orangeworm Walnut husk fly	10 (0.25)	Apply by air or ground equipment. By air, apply in a minimum of 10 gallons of water per acre. By ground, apply in 25-400 gallons of finished spray per acre. Use sufficient water to obtain uniform coverage. Apply when insects appear.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply more than 30 oz. product (0.75 lbs. a.i.) per acre per season.</li> <li>Do not graze livestock in treated areas.</li> <li>Do not feed cover crops from treated areas to livestock.</li> <li>Do not apply at intervals less than 10 days.</li> <li>Do not apply within 1 day of harvest.</li> </ul>		

## OTHER CROPS

ALFALFA			
CROP	TARGET PESTS	RATE FL OZ/A (LBS A/A)	SPECIFIC APPLICATION INSTRUCTIONS
Alfalfa Alfalfa grown for seed (Includes lucerne, sainfoin, holy clover, esparcet, birdsfoot trefoil and varieties and/or hybrids of these)	Alfalfa caterpillar Armyworms Blue alfalfa aphid Cutworms Green cloverworm Green peach aphid Loopers Pea aphid Spotted alfalfa aphid Velvetbean caterpillar Webworms	2 – 8 (0.05 – 0.2)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre.  Use higher gallonage, 5-10 gallons by air or 20 by ground, of finished spray per acre when foliage is dense and/or when pest populations are high.  Apply only to fields planted to pure stands of alfalfa.  May be applied up until harvest when rates of 0.1 pound per active per acre or less are used.  When rates greater than 4 oz. product (0.1 lbs. a.i.) are used, do not apply within 14 days of harvest.
	Alfalfa weevil Cucumber beetle Egyptian alfalfa weevil Meadow spittlebug Plant bugs (including <i>Lygus</i> spp.) Potato leafhopper Stink bugs	4 – 8 (0.1 – 0.2)	Use higher labeled dosage for increased pest pressure or for increased residual pest control.  Avoid application when bees are actively foraging by applying during the early morning or during the evening hours.
<b>RESTRICTIONS:</b>			
<ul style="list-style-type: none"> <li>Do not apply more than 8 oz. product (0.2 lbs. a.i.) per cutting.</li> <li>Do not apply at intervals less than 30 days.</li> </ul>			

CORN (FIELD), FIELD CORN GROWN FOR SEED, POPCORN			
CROP	TARGET PESTS	RATE FL OZ/A (LBS A/A)	SPECIFIC APPLICATION INSTRUCTIONS
Field Corn, Field corn grown for seed, Popcorn (Pre-emergent Use)	Armyworm Cutworm Stalk borers	4 – 6 (0.1 – 0.15) as a broadcast spray  OR  0.3 – 0.6 oz per 1000 linear feet row (based on a 4” band and 40” row spacing)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage.  Forage may be harvested on the day of application.  May be applied as a preplant incorporated, pre-emergence, or at planting time application. Apply in the time period from 5 days prior to planting up to emergence of the crop. Apply as a broadcast spray by ground or air or 4-15 inch band using sufficient spray volume to achieve adequate coverage.
Field Corn, Field Corn Grown for Seed, Popcorn (Foliar Use)	Armyworm (including Fall Armyworm) Corn borer European, Southwestern Corn earworm Corn rootworm beetles Cutworm Flea beetle Hop vine borer Stalk borers Webworms	4 – 6 (0.1 – 0.15)	Linear row calculations should be used proportional to the standard Band Width/Row Width formula to adjust rates for different band widths or row spacings. Use higher rates of PERMETHRIN 3.2 AG when incorporating into the soil without exceeding the labeled dosage.  When using tank mixes, follow all restrictions and precautions which appear on the labels of these products. Provide constant agitation during mixing and application to keep the mixture in solution.
	Western bean cutworm	2 – 4 (0.05 – 0.1)	When treating for stalk borers, PERMETHRIN 3.2 AG must be applied when or shortly before the stalk borer larvae are moving into the corn from surrounding weeds and grasses. Mowing or burndown herbicide is suggested to initiate movement. For control of corn earworm, apply just before silking and continue as necessary to maintain control.
<b>RESTRICTIONS:</b>			
<ul style="list-style-type: none"> <li>• Maximum rate is 6 oz. product (0.15 lbs. a.i.) per acre.</li> <li>• Do not apply more than 18 oz. product (0.45 lbs. a.i.) per acre per season.</li> <li>• Do not apply at intervals less than 7 days.</li> <li>• Do not apply within 30 days of harvest of grain or fodder (stover).</li> </ul>			

CORN (FIELD), FIELD CORN GROWN FOR SEED, POPCORN			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	SPECIFIC APPLICATION INSTRUCTIONS
Field Corn, Field corn grown for seed, Popcorn (At Plant Use)	Armyworm Cutworm Seed corn maggot* Wireworm*	0.3 oz per 1000 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 PERMETHRIN 3.2 AG needs for each acre. * Not for use in California
Row Spacings (inches)		40	30 20
PERMETHRIN 3.2 AG (ounces per acre)		4.0	6.0 8.0
PERMETHRIN 3.2 AG (pounds a.i. per acre)		0.10	0.15 0.20

MUSHROOMS (Mushroom Houses and Adjacent Premise Areas)		
TARGET PESTS	RATE OZ (LBS AI)	SPECIFIC APPLICATION INSTRUCTIONS
Mushroom flies (Sciarid and Phorid adults)	2 – 2.5 (0.05 – 0.0625)	Apply in 30 ounces of water or suitable diluent. Use 1 quart of solution per standard double house (35,000 cu. ft.: 8000 sq. ft.). Apply as a fogging or aerosol treatment.  Preparation of the building prior to fogging: (1) Close all doors, windows, and ventilators, (2) Lock or barricade all entrances, turn off pilot lights, post warning signs, and do not allow persons and animals to enter the building. Use prior to filling the house, during cool-down, during spawning, up to pinning, and between breaks. Do not use when mushrooms are present. Treat once daily as needed when flies appear. Do not make more than 20 applications prior to pinning of first break; apply no more than two applications between each break. Do not apply more than 30 applications total per crop of 5 breaks. Length of exposure time should be limited to 1 hour; then ventilate the house. Use fans to ventilate in houses that do not have forced air circulation. Wear a powered air purifying respirator equipped with either an organic vapor-removing cartridge plus a high efficiency (HE) filter (NIOSH approval number prefix TC-23C), or a powered air purifying canister-type respirator (gas-mask) equipped with an organic vapor canister that incorporates HE filters (NIOSH approval number prefix TC-14G).
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply within 3 days of harvest.</li> <li>Do not use high pressure hand wands in mushroom houses.</li> </ul>		

RANGE GRASS (New Mexico Only)		
TARGET PESTS	RATE FL OZ/A (LBS AI/A)	SPECIFIC APPLICATION INSTRUCTIONS
Range caterpillar	0.4 (0.1)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of finished spray per acre. Use sufficient volume to obtain uniform coverage. Apply as needed. Cattle may be present during application.
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply more than once per year.</li> <li>Do not harvest or feed hay to livestock.</li> </ul>		

SOYBEANS		
TARGET PESTS	RATE FL OZ/A (LBS AI/A)	SPECIFIC APPLICATION INSTRUCTIONS
Bean leaf beetle Cabbage looper Corn rootworm beetle Cutworms Flea beetle Green cloverworm Japanese beetle Mexican bean beetle Potato leafhopper Saltmarsh caterpillar (Woollybear caterpillar) Thistle caterpillar Velvetbean caterpillar	2 – 4 (0.05 – 0.1)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of water per acre.  PERMETHRIN 3.2 AG may also be applied using refined non-volatile vegetable oil for control of listed pests. Dilute PERMETHRIN 3.2 AG with oil and apply in a minimum of 1 quart total volume per acre using equipment calibrated to give adequate coverage. When applying in water by aircraft, 1 quart of oil may be substituted for 1 quart of water per gallon of finished spray.
Beet armyworm Corn earworm Soybean looper Webworms	4 – 8 (0.1 – 0.2)	
<b>RESTRICTIONS:</b>		
<ul style="list-style-type: none"> <li>Do not apply more than 16 oz. product (0.4 lbs. a.i.) per acre per season.</li> <li>Do not graze treated areas or feed soybean forage or hay.</li> <li>Do not apply at intervals less than 10 days.</li> <li>Do not apply within 60 days of harvest.</li> </ul>		

CHRYSANTHEMUMS			
CROP	TARGET PESTS	RATE OZ (LBS AI)	SPECIFIC APPLICATION INSTRUCTIONS
Chrysanthemums	Liriomyza leafminer flies	20 (0.5) per 100 gallons of water (1 teaspoon per gallon)	Avoid spraying the blooms. May be applied on a weekly schedule. PERMETHRIN 3.2 AG has demonstrated excellent plant safety; however, not all cultivars have been tested. Before treating large numbers of plants of a particular cultivar, treat a few plants and observe prior to full scale application.



<b>CONIFERS (Container and Field Grown)</b>			
<b>CROP</b>	<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Conifers (container and field grown)	Nantucket pine tip moth	4 – 8 (0.1 – 0.2)	Dilute PERMETHRIN 3.2 AG in a non-volatile vegetable oil or water in a minimum of 1 gallon of finished spray per acre using equipment calibrated to give adequate coverage.  Begin application when the adults appear and repeat at 5 to 7 day intervals or as needed throughout the season.

<b>ORNAMENTAL NURSERY STOCK (Field Grown)</b>			
<b>CROP</b>	<b>TARGET PESTS</b>	<b>RATE OZ (LBS AI)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Ornamental nursery stock (field grown)	Bagworm Beet armyworm Cabbage looper Citrus thrips Lace bug Leafhoppers Leafminers Whiteflies	4 – 8 (0.1 – 0.2) per 100 gallons of water	PERMETHRIN 3.2 AG may be used to control specified pests on non-edible ornamentals and non-bearing plants of fruiting species.  Marginal leaf burn may occur on Salvia, Dieffenbachia and Pteris Fern. Application to blooming plants may cause browning of petals.  PERMETHRIN 3.2 AG has demonstrated excellent plant safety; however, not all species and cultivars have been tested. Before treating large numbers of plants of a particular variety, treat a few plants and observe prior to full scale application.

<b>PINE SEED ORCHARDS</b>			
<b>CROP</b>	<b>TARGET PESTS</b>	<b>RATE OZ</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Pine seed orchards	Coneworms Seed bugs	8 in 100 gallons of water (0.025% dilution by weight)	For high volume sprayers, apply 5 to 10 gallons of finished spray per tree.
		42 in 100 gallons of water (0.125% dilution by weight)	For low volume sprayers, apply 100 gallons per tree.
		30 per acre	For aerial application, use in not less than 10 gallons of water.
To control webbing coneworm – make first application within 1 week of female flower closure or peak pollen flight. To control other coneworms and seed bugs – make first application within 30 days following female flower closure. Repeat applications at 4 week intervals, but do not apply more than 6 applications.			

**RESTRICTIONS:**

- Do not graze livestock in treated areas.
- Harvesting of conifer seed cones is prohibited within 30 days of application.
- Do not feed cover crops from treated areas to livestock.
- Avoid contact with open water.

<b>ROSES (Field Grown)</b>			
<b>CROP</b>	<b>TARGET PESTS</b>	<b>RATE FL OZ/A (LBS AI/A)</b>	<b>SPECIFIC APPLICATION INSTRUCTIONS</b>
Roses (field grown)	Heliothis spp.	4 – 8 (0.1 – 0.2)	Apply by air or ground equipment. By air, apply in a minimum of 2 gallons of water per acre. By ground, apply in a minimum of 10 gallons of finished spray per acre.

<b>ROSES (Greenhouse)</b>			
<b>CROP</b>	<b>TARGET PESTS</b>	<b>RATE OZ (LBS AI)</b>	<b>RESTRICTIONS</b>
Roses (greenhouse)	Beet armyworm Cabbage looper Omnivorous leafroller	8 (0.2) per 100 gallons of water	<p>Spray plant foliage thoroughly using standard spraying equipment including but not limited to hand-held, backpack, or power sprayers.</p> <p>PERMETHRIN 3.2 AG is not phytotoxic to the following varieties of greenhouse roses: Ballena, Bettina, Cara Mia, Coquette, Excitement, Forever Yours, G. Wave, Jack Frost, Jr. Bridesmaid, Matador, Paul's Pink, Samantha, Seventeen, Sonia, Town Crier, Tropicana and Visa. Other varieties may vary in their sensitivity to PERMETHRIN 3.2 AG, and a small number of plants should be treated under local conditions to determine plant safety prior to commercial use.</p>

**LAWN AND ORNAMENTAL USES**  
**(Including Field and Container Grown Nursery Stock, Greenhouses, Interiorscapes and Plantscapes, Lawns, Trees, and Shrubs)**

PERMETHRIN 3.2 AG may be used to control insect pests on ornamentals and lawns in landscaped areas around residential, institutional, public, commercial and industrial buildings, parks, recreational areas and athletic fields.

PLANT	PEST	TREATMENT RATE	SPECIFIC APPLICATION INSTRUCTIONS
<p><b>Ornamental Plants,</b> foliage and flowering plants, evergreens, woody and herbaceous non-edible ornamentals and non-bearing plants of fruiting species in landscaped areas around industrial, residential and commercial buildings, non-crop areas, nurseries and greenhouses; and, for treatment of plants intended for aesthetic purposes in interior gardens and plantscapes.</p>	<p>Ants  Aphids  Bagworm  Beet Armyworm  Birch Leafminer  Cabbage Looper  Cankercworms  Citrus Thrips  Coneworms*  Fungus Gnat  Gypsy Moth  Caterpillars  Heliothis spp.  Japanese Beetles  Lace Bug  Leaf Feeding Caterpillars  Leafhoppers  Leafminers  Leaf rollers  Lygus Bugs  Mealybugs  Nantucket Pine Tip Moth*  Pine Sawflies  Plant Bugs  Root Weevils (Adult)  Seed bugs*  Tent Caterpillars  Webworms  Whiteflies  Zimmerman Pine Moth</p>	<p>4 to 8  Fluid Ounces  Per  100 gallons  -- or --  Broadcast  4 to 8  Fluid Ounces  Per Acre</p>	<p>Apply sufficient volume of water to adequately cover foliage.</p> <p>Use higher rate for moderate to high infestations.</p> <p>Direct application to blooms may cause browning of petals. Marginal leaf burn may occur on Salvia, Dieffenbachia and Pteris Fern.</p> <p>*For control of coneworms, Nantucket pine tip moth and seed bugs in evergreens: Begin application when adults appear. Repeat applications may be made on 5-7 day intervals as needed. To control Webbing Coneworms make first application just prior to peak pollen flight. To control other Coneworms and Seed Bugs, make application 30 days following flower closure. Mix 8 oz. in 100 gals. of water and apply 5 to 10 gals. of spray per tree.</p>
<p><b>Ornamental Trees</b></p>	<p>Clearwing moth borers: Ash borer, Banded Ash Clearwing, Dogwood borer, Lesser peachtree borer, Lilac borer, Oak borer, Peachtree borer, Rhododendron borer</p>	<p>1 to 2 Quarts per  100 gallons</p>	<p>Treat thoroughly lower branches and trunk area but not to the point of runoff prior to adult emergence.</p> <p>Emergence varies according to host tree, environmental conditions and geography of the country.</p>

PLANT	PEST	TREATMENT RATE	SPECIFIC APPLICATION INSTRUCTIONS
	Bark Beetles: Dendroctonus spp., Ips spp., Elm bark beetles, Mountain pine beetle, Pine engravers, Turpentine beetles, Western pine beetle Coleopteran borers: Bronze birch borer, Flatheaded appletree borer	2 to 5 Quarts per 100 gallons	Thorough coverage of bark on scaffold limbs to the ground level of the trunk is recommended for best control.
<b>Lawns</b> (around residential, commercial, industrial, institutional, and public buildings, parks, recreational areas, and athletic fields) and grass nurseries	Chinchbugs Pillbugs Sod Webworm Ants Ant Mounds Armyworm Fire Ants Centipedes Crickets Mole Crickets Earwigs Firebrats Fleas <sup>1</sup> Ground beetles Millipedes Scorpions Silverfish Sowbugs Spiders	0.4 to 0.8 Fluid Ounces per 1000 Square Feet	Apply using 4 – 25 gallons of spray volume.  Use higher rate for moderate to high infestations.  Do not apply more than 40 oz. product (2.0 lbs. a.i.) per acre per year.  <sup>1</sup> Fleas: Mix 0.4 – 0.8 fl. oz. product (0.01 to 0.02 lbs. a.i.) in 4 to 25 gallons of water per 1000 square feet. Use the higher rate for fast knockdown and increased residual control. Dense or excessive (greater than 3 inches) lawn height and arid conditions may require higher volume application rates. Repeat application if necessary. Application in combination with compatible surfactants or wetting agents may enhance penetration.

**OTHER USES**

PREMISES SPRAY (For Agricultural Use Only)			
SITE	TARGET PESTS	DILUTE	SPECIFIC APPLICATION INSTRUCTIONS
For Application In: Dairies, Barns, Feedlots, Stables, Poultry houses, Swine and Livestock houses	House flies, Stable flies and other manure breeding flies Also aids in the reduction of Cockroaches, Mosquitoes and Spiders	4 oz. product (0.1 lb. a.i.) to 12.5 gallons of water Apply by sprayer at 1 gallon per 750 sq. ft. of space	Spray directly to walls and ceiling as residual surface treatment only. Re-treat as necessary, but not more often than once every 2 weeks. The use of any residual fly spray should be supplemental with proper manure management and general sanitation to reduce or eliminate fly breeding sites.
<b>RESTRICTIONS:</b>			
<ul style="list-style-type: none"> <li>Do not apply directly to livestock or poultry.</li> <li>Do not treat manure or litter.</li> <li>Do not contaminate feed or water.</li> </ul>			

**TREATMENT OF PRECONSTRUCTION LUMBER AND LOGS**

PERMETHRIN 3.2 AG should be diluted. To prepare the spray, dilute PERMETHRIN 3.2 AG as shown in the following spray dilution chart:

GALLONS OF SPRAY MIXTURE DESIRED	GALLONS OF PERMETHRIN 3.2 AG FOR 0.5% SOLUTION	GALLONS OF PERMETHRIN 3.2 AG FOR 0.75% SOLUTION	GALLONS OF PERMETHRIN 3.2 AG FOR 1.0% SOLUTION
40	½	¾	1
80	1	1½	2
200	2½	3¾	5
400	5	7½	10
800	10	15	20

**Application Instructions**

To protect unseasoned lumber and logs from wood destroying insects, such as Termites, Carpenter Ants and Beetles (Ambrosia, Powder-post, Old house borers and others), totally treat wood with a 0.5% to 1.0% solution of PERMETHRIN 3.2 AG. This solution can be applied by various methods including spraying, brushing, dipping, and pressure treatment. Frequent monitoring of dip and pressure systems are necessary to insure that the desired level of PERMETHRIN 3.2 AG is maintained. Wood can be handled after treatment when dry.

1. For dip treatments, totally submerge the wood in the solution until thoroughly wet and then allow to dry in a suitable location. Agitate dipping solutions, to which PERMETHRIN 3.2 AG has been added, before use if left unused for long periods of time. Sediment, debris and other deposits should be periodically cleaned from the tank.
2. For pressure treatments, place the wood in the treatment chamber, add the PERMETHRIN 3.2 AG solution and pressurize the system up to 250 psi for up to one hour depending on the density and type of wood treated. After the pressure is released and the system drained, place the wood in a suitable location for drying.
3. For spray treatments, spray the wood thoroughly, including back and ends.
4. For brush treatments, thoroughly treat all parts of wood surfaces.

**STORAGE AND DISPOSAL**

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

**Pesticide Storage:** Store in a cool, dry place at temperatures above 40°F (5°C). Store in original containers only. Keep out of reach of children and animals. Carefully open containers. After partial use, replace lids and close tightly. Do not put concentrate or dilute material into food or drink containers.

If feasible, shake container well before using. If crystals form, warm to room temperature by placing container in a room at ambient temperature 70°F (21°C) until crystals dissolve.

In case of spill, avoid contact, isolate area and keep out animals and unprotected persons. To confine spill, dike surrounding area or absorb with sand, cat litter, commercial clay or gel absorbents. If dry material, cover to prevent dispersal. 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 at the nearest EPA Regional Office for guidance.

**Container Handling: Nonrefillable container.** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Then offer for recycling if available, or reconditioning if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities. Triple rinse as follows:

**Containers less than 5 gallons:** Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

**Containers greater than 5 gallons:** Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

## ATTENTION

**Dealers Must Sell in Original Packages Only.**

### IMPORTANT INFORMATION READ BEFORE USING PRODUCT

#### 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 reflect the opinion of experts based on field use and tests, and must be followed carefully. It is impossible to eliminate all risks 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 Direct AG Source, LLC or Seller. Handling, storage, and use of the product by Buyer or User are beyond the control of Direct AG Source, LLC and Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold Direct AG Source, LLC and Seller harmless for any claims relating to such factors.

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