

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

J. Oliver Products
c/o Ms. Jane Miller
Biologic Inc.
115 Obtuse Hill
Brookfield, CT 06804

SEP 30 2008

Dear Ms. Miller:

Subject: Amendment – Response to Feb 21, 2008 letter implementing spray drift language and
Permethrin RED risk mitigation labeling

Permethrin 3.2 AG

EPA Reg. No. 83222-3

Your submission dated June 30, 2008

The amendment referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) section 3(c)(7)(a), is acceptable provided that you:

1. Submit and/or cite all data or other material required for registration/reregistration of your product under FIFRA section 3(c)(5) or FIFRA section 4 when the Agency requires all registrants of similar products to submit such data.
2. Make the labeling changes listed below before you release the product for shipment bearing the amended labeling:
 - a. The paragraphs beginning with "Follow manufacturer's instructions for cleaning...etc" and "Discard clothing and other absorbent materials...etc" should be enclosed in a box with the heading "User Safety Requirements".
 - b. In the first and third paragraphs of the Environmental Hazards, revise "this product" to "this pesticide".
 - c. Relocate the paragraph beginning "Do not apply this pesticide in a way...etc." and ending "...State or Tribe, consult the agency responsible for pesticide regulation" from beneath "It is a violation of Federal law...etc" to appear directly above the Agricultural Use Requirements box.

- d. In the Agricultural Use Requirements block, add the following as the last item:

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

- e. Under the heading "Chemigation Use Requirements", delete the precaution "Do not apply when wind speed favors drift beyond the area intended for treatment.". The appropriate spray drift precautions now appear under the heading "Spray Drift Requirements".
- f. Under the heading "Buffer Zones", qualify the site "ponds" to read "natural ponds" in all locations where the term "ponds" occurs. Also, qualify "streams" to read "permanent streams" and correct the website URL (address) for guidance to read as follows:
www.in.nres.usda.gov/technical/agronomy/newconbuf.pdf
- g. On page 5 under "General Use Information", revise "PERMETHRIN 3.2 AG is toxic to fish." to read "PERMETHRIN 3.2 AG is extremely toxic to fish."
- h. In the Rate Conversion chart, delete the entry "0.40" Pounds Active and "16.0" Formulation Ounces, since that rate exceeds the highest rate for agricultural crops presented in Attachment 2 of the Agency's February 21, 2008 letter.
- i. Under the heading "REMARKS" for all crops, replace "Apply every X days or as needed" with "Apply when insects first appear and repeat at [add the appropriate interval] intervals as needed to provide control."
- j. In the REMARKS (and the bulleted notes) for each crop giving the maximum rate per application and the seasonal maximum application rate, give both the ounces of formulated product and the pounds active per acre for both entries. For example, revise the entries to read "Do not apply more than X fl. oz. of product (Y lb. ai)/A per application" and "Do not apply more than X fl. oz. of product (Y lb. ai)/A per season". Substitute X and Y with the appropriate value for each crop. Also, for each crop please consistently present the maximum rate per application before the maximum rate per season.
- k. In the second set of directions under the heading COLE CROPS, add the missing asterisk before "Aids in suppression only".
- l. In the list of Target Pests for Collards and Turnips, revise "Diamond back moth" to "Diamondback moth".
- m. For ALMONDS, revise the first RATE column entry to read "8 - 10 (0.2 - 0.25)" and revise the second entry to read "10 (0.25)".
- n. For APPLES, revise the RATE column entry to read "4 - 10 (0.1 - 0.25)".

- o. For FILBERTS, revise the RATE column entry to read "8 - 10 (0.2 - 0.25)". Also, in the REMARKS section add "Do not apply more than 10 fl. oz. of product (0.25 lb. ai)/A per application" before the seasonal maximum, which should be revised to read "Do not apply more than 30 fl. oz. of product (0.75 lb. ai)/A per season". The REMARKS section does not give a retreatment interval for this crop, only "Apply when insects appear".
- p. For PAPYA (Florida Only), revise the RATE column entry to read "6 (0.15)". Also, in the REMARKS revise "and repeat at 7-10 day intervals" to read "and repeat at 10 day intervals".
- q. For PEACHES AND NECTARINES, revise the RATE column entry to read "4 - 10 (0.1 - 0.25)".
- r. For PISTACHIOS, revise the first RATE column entry to read "8 - 12 (0.2 - 0.3)" and revise the second entry to read "12 (0.3)".
- s. For PEARS, revise the first RATE column entry to read "8 - 10 (0.2 - 0.25)" and revise the second entry to read "8 - 10 (0.2 - 0.25)".
- t. For WALNUTS, revise the RATE column entry to read "8 - 10 (0.2 - 0.25)".
- u. For ALFALFA, present the per application rate before the per-cutting rate. Revise the text for these entries per item "k" (above).
- v. For CORN (Field), Field Corn Grown for Seed, Popcorn (Pre-emergent Use), revise the first RATE column entry to read "4 - 6 (0.1 - 0.15)" and revise the rate per 1000 linear feet accordingly. Revise the first Foliar Use rate to read "4 - 6 (0.1 - 0.15)".
- w. In the table under the entry for "Corn (Field), Field Corn Grown for Seed, Popcorn (At Plant Use)", for the column 20 inch row spacing revise the pounds active per acre to read "0.15" and the formulated ounces per acre to read "6" to be in agreement with the single application maximums permitted for these crops.
- x. For MUSHROOMS, in the REMARKS after "Apply as a fogging or aerosol treatment." add "Use of high pressure hand wand prohibited in mushroom houses."
- y. For RANGE GRASSES (new Mexico Only), delete "Apply as needed."
- z. For CHRYSANTHEMUMS, in the REMARKS add "Note: Spoons used for measuring pesticides must not be used for food purposes after use in measuring pesticides."

- aa. For PINE SEED ORCHARDS, in the REMARKS as "PROHIBITION – Harvesting of conifer seed cones is prohibited within 30 days of application,". Also, delete "Avoid contact with open water.". The Environmental Hazards statement lists the appropriate prohibition with respect to application in the vicinity of water.
- bb. For ROSES (Greenhouse), no directions on how (equipment) to apply the product are given. Please identify the method of application.
- cc. On page 25, revise "should" to "must", so that the sentence reads "Dealers Must Sell in Original Packages Only."

A stamped copy of the label is enclosed for your records. Please submit three copies of the amended labeling bearing the above revisions before you release the amended label for shipment. Please note that acceptance of this amendment does not constitute reregistration of the subject product.

Sincerely,

George LaRocca.
Product Manager 13
Insecticide Branch
Registration Division (7505P)

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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

PERMETHRIN 3.2 AG

Active Ingredient	
Permethrin*	36.8%
Other Ingredients**	63.2%
TOTAL	100.0%

*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

CAUTION

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

Net Contents _____

**ACCEPTED
with COMMENTS
in EPA Letter Dated:
SEP 30 2008**

Under the Federal Insecticide,
Fungicide, and Rodenticide Act
as amended, for the pesticide
registered under EPA Reg. No.
83222-3

PRECAUTIONARY STATEMENTS.

Hazards to Humans & Domestic Animals.

CAUTION. Harmful if swallowed, inhaled or absorbed through the skin. Avoid contact with skin, eyes or clothing. Avoid breathing vapor or spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse. Do not allow people or pets on treated surfaces until the spray has dried. Do not touch treated surfaces until the spray has dried.

Personal Protection Equipment (PPE)

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

All pesticide handlers (mixers, loaders, and applicators) must wear:

- Long-sleeved 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.

See engineering controls for additional requirements.

After the product is diluted in accordance with label directions for use, and/or when mixing and loading using a closed spray tank transfer system such as U-Turn, or an in-line injector system, shirt, pants, socks, shoes, and waterproof gloves are sufficient.

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 products concentrate. Do not reuse them.

User Safety Recommendations:

Users should:

- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Engineering Controls Statement

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

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 when disposing of equipment wash waters.

Under some conditions, it may also have a 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 water.

This product is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area, pesticide to blooming, pollen-shedding or nectar-producing parts of plants if bees may forage on the plants during this time period. The 3-day limitation does not apply if the applicator operates in a state with a formal, state-approved bee protection program, and the applicator follows all applicable requirements of the state-approved program designed to ensure that managed bees are not present in the treatment area during this time period.

Physical/Chemical Hazards

Do not use or store near heat or open flame.

DIRECTIONS FOR USE

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

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

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

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

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses 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
- Shoes plus socks.
- Chemical-resistant gloves made of any waterproof material. ~~such as barrier laminate or butyl rubber.~~

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.

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

PERMETHRIN 3.2 AG should be applied continuously for the duration of the water application. PERMETHRIN 3.2 AG should be diluted 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. The higher rate should be used if incorporation is used.

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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 recommended 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 positioned 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.

The amount of PERMETHRIN 3.2 AG actually required in the preparation of individual fertilizer mixtures should be determined carefully 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. Bulk fertilizer impregnated with PERMETHRIN 3.2 AG should be applied immediately, not stored.

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.

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 Service, USDA, NRCS, 2000, Fort Worth, Texas, 21 pp. <http://www.in.csusda/v/technical/agronom/newconbuf.pdf>

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

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

Spray Drift Requirements

Only apply this product if the wind direction favors on-target deposition.

Do not apply when wind velocity exceeds 15 mph.

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.

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

Ground Application

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 airstblast 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.

Aerial Application

The spray boom should be mounted on the aircraft so as to minimize drift caused by wingtip or rotor vortices. The minimum practical boom length should be used and must not exceed 75% of wing span or 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.

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GENERAL USE 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 with water and applied as an emulsion. When tank mixing as an emulsion with other products, observe all precautions and limitations 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.

DIRECTIONS FOR APPLICATION

Unless otherwise directed by registered supplemental 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. The higher rate should be used 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, rotational crops should not be planted 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
0.40	16.0

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)

Other Uses

- Premises Spray
- Treatment of Preconstruction Lumber and Logs

VEGETABLE CROPS

ARTICHOKE			
CROP	TARGET PESTS	RATE FL OZ/A (LBS ai/A)	REMARKS
Artichoke	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. <u>Apply every 10 days as needed.</u> Applications may be made up to harvest. <u>Do not apply more than 0.9 lb ai/A per season.</u> <u>Do not apply more than 0.3 lb ai/A per application.</u>

ASPARAGUS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS ai/A)	REMARKS
Asparagus	Asparagus beetle Cutworms	2 – 4 (0.05 – 0.1)	
	Asparagus beetle Japanese beetle (Adult stage)* Lygus bugs Tarnished plant bug	4 (0.1)	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
<ul style="list-style-type: none"> • Apply by ground in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage. • <u>Do not apply more than 0.1 lb ai/A per application.</u> • Do not apply more than 0.4 lb ai/A per season. • <u>Apply every 7 days as needed.</u> • Do not apply within 1 day of harvest. 			

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AVOCADO			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Avocado	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. <u>Apply every 7 days as needed.</u> Apply when insects first appear and repeat at 7 to 10 day intervals as needed to provide control. <u>Do not apply more than 0.2 lb ai/A per application.</u> Do not apply more than <u>0.8 lb ai/A</u> per season. Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock. Do not apply within 7 days of harvest.

COLE CROPS – Brassica Leafy Vegetables			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Broccoli, Chinese Broccoli (gai lan, white flowering broccoli), Brussels Sprouts; Cauliflower; Cavalo broccolo, Kohlrabi	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, except for collards (ground application only). 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. Do not apply within 1 day of harvest. <u>Broccoli: Do not apply more than 0.8 pound of active ingredient per season. Do not apply more than 0.2 lb ai/A per application.</u> <u>Brussels Sprouts: Do not apply more than 0.4 lb ai/A per season. Do not apply more than 0.1 lb ai/A per application.</u> <u>Cauliflower: Do not apply more than 0.4 lb ai/A (0.6 lb ai/A in HI) per season. Do not apply more than 0.1 lb ai/A per application.</u> * Aids in the suppression only
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, except for collards (ground application only). 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.

Armyworm spp. Cutworms Flea beetles	4 – 8 (0.1 – 0.2)	Apply every 5 – 10 days or as needed. Do not apply within 1 day of harvest. Do not apply more than 0.4 lb ai/A (0.8 lb ai/A in HI) per season. <u>Do not apply more than 0.2 lb ai/A per application.</u> Aids in the suppression only
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COLLARDS and TURNIPS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
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 – 4 (0.05 – 0.1)	Apply with ground equipment only. Apply in a minimum of 10 gallons of water per acre. Use sufficient water to obtain full coverage of foliage. Apply every <u>3 days</u> or as needed, but do not exceed 8 applications. Do not apply within 1 day of harvest. <u>Do not apply more than 0.45 lb ai/A per season. Do not apply more than 0.15 lb ai/A per application.</u> Do not graze treated areas or feed crop refuse to livestock. * 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 – 4 (0.05 – 0.1)	

CORN, SWEET			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Corn, Sweet	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)	<p>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.</p> <p><u>Do not apply more than 0.8 lb ai/A per season.</u></p> <p><u>Do not apply more than 0.2 lb ai/A per application.</u></p> <p>Apply every 3 days or as needed.</p> <p>Do not apply within 1 day of harvest.</p> <p>*Pest does not occur on this crop in California</p>

CORN, SWEET (FLORIDA ONLY)			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Corn, Sweet	Aster leafhopper Corn earworm Cutworm European corn borer Fall armyworm Southern armyworm	4 – 10 (0.1 – 0.25)	<p>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.</p> <p><u>Do not apply more than 0.8 lb ai/A per season.</u></p> <p><u>Do not apply more than 0.2 lb ai/A per application.</u></p> <p><u>Apply every 3 days or as needed.</u></p> <p>Do not apply within 1 day of harvest.</p>

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CUCURBIT VEGETABLES			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Cucurbit vegetables*	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.
	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)	Apply every 7 days or as needed. Applications may be made up to harvest. Cantaloupe: <u>Do not apply more than 0.8 lb ai/A (1.2 lb ai/A in HI) per season. Do not apply more than 0.2 lb ai/A per application.</u> Cucumber, Pumpkins, Squash, Watermelon: <u>Do not apply more than 1.2 lb ai/A per season. Do not apply more than 0.2 lb ai/A per application.</u>
* Cucurbit vegetables include: Chayote (fruit), Chinese waxgourd (Chinese preserving melon), Citron melon , Cucumber , Gherkin , Gourd (edible) (includes hyotan, cucuzza), Luffa spp. (includes hechima, Chinese okra), Momordica spp. (includes balsam apple, balsam pear, bitter melon, Chinese cucumber), Muskmelon (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), Pumpkin ; Summer Squash (includes crookneck squash, scallop squash, straightneck squash, vegetable marrow, zucchini), Winter Squash (includes butternut squash, calabaza, hubbard squash, C. mixta, C. pepo, acorn squash, spaghetti squash), Watermelon (includes hybrids and/or varieties of Citrullus spp.)			

EGGPLANT			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Eggplant	Colorado potato beetle	8 (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.
	Cabbage looper Flea beetles Vegetable leafminer	4 – 8 (0.1 – 0.2)	Apply every 7 days or as needed, using sufficient water to obtain uniform coverage. <u>Do not apply more than 0.6 lb ai/A (1.0 lb ai/A in HI) per season.</u> <u>Do not apply more than 0.15 lb ai/A per application.</u> Do not apply within 3 days of harvest.

HORSERADISH			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Horseradish	Imported crucifer weevil (<i>Baris lepidii</i>)	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.
		8 (0.2)	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.
<ul style="list-style-type: none"> Do not apply within 30 days of harvest. <u>Do not apply more than 0.45 lb ai/A per season.</u> <u>Do not apply more than 0.15 lb ai/A per application.</u> Apply every 10 days or as needed. 			

LEAFY VEGETABLES (except Brassica)			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Leafy vegetables*	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. Celery: Apply every 7 days or as needed. <u>Do not apply more than 1.0 lb ai/A (1.2 lb ai/A in HI) per season.</u> <u>Do not apply more than 0.2 lb ai/A per application.</u>
	Alfalfa looper Cabbage looper Leafhoppers	2 – 8 (0.05 – 0.2)	Spinach: <u>Apply every 3 days or as needed. Do not apply more than 0.6 lb ai/A per season. Do not apply more than 0.2 lb ai/A per application.</u> Lettuce: <u>Apply every 7 days or as needed. Do not apply more than 0.8 lb ai/A (1.2 lb ai/A in HI) per season. Do not apply more than 0.2 lb ai/A per application.</u> Do not apply within 1 day of harvest.
<p>* Leafy vegetables: Amaranth (leafy amaranth, Chinese spinach, tampala), Arugula (Roquette), Cardoon, Celery, Chinese celery, Celtuce, Chervil, Chrysanthemum (edible-leaved and garland), Corn salad, Garden Cress, Upland Cress (yellow rocket, winter cress), Dandelion, Dock (sorrel), Endive (escarole), Florence fennel (finocchio), Head and Leaf Lettuce, Orach, Parsley, Garden Purslane, Winter Purslane, Radicchio (red chicory), Rhubarb, Swiss chard, Spinach (including New Zealand and vine, Malabar spinach, Indian spinach).</p>			

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ONIONS, BULB and GARLIC			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Onion, bulb Garlic	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. Begin applications when pest appear and repeat as necessary to maintain control. Use the higher label rates as onion thrips population increases and avoid rescue situations. <u>Onions: Do not apply more than 1.0 lb ai/A per season. Apply every 7 days or as needed. Do not apply more than 0.3 lb ai/A per application.</u> <u>Garlic: Do not apply more than 0.8 lb ai/A per season. Apply every 10 days or as needed. Do not apply more than 0.2 lb ai/A per application.</u> Do not apply within 1 day of harvest.
	Cutworms Leafminers Onion maggots (adults) Stink bugs	4 – 12 (0.1 – 0.3)	

PEPPERS, BELL			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Peppers, bell	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. <u>Do not apply more than 0.8 lb ai/A per season.</u> <u>Do not apply more than 0.2 lb ai/A per application.</u> <u>Apply every 5 days or as needed.</u> Do not apply within 3 days of harvest.
	European corn borer	8 (0.2)	

POTATOES			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Potatoes	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)	<p>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.</p> <p>PERMETHRIN 3.2 AG also may be applied using refined non-volatile vegetable oil for control of listed pests. PERMETHRIN 3.2 AG should be diluted with oil and applied 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.</p> <p><u>Do not apply more than 0.8 lb ai/A per season.</u></p> <p><u>Do not apply more than 0.2 lb ai/A per application.</u></p> <p><u>Apply every 10 days or as needed.</u></p> <p>Do not apply within 14 days of harvest.</p>

TOMATOES, TOMATILLOS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Tomatoes Tomatillos	Beet armyworm Cabbage looper Colorado potato beetle Granulate cutworm Homworms Southern armyworm Tomato fruitworm Tomato pinworm Vegetable leafminers	2 - 8 (0.05 - 0.2)	<p>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.</p> <p>Do not apply to cherry tomatoes or other varieties which produce fruit less than one inch in diameter.</p> <p><u>Do not apply more than 0.6 lb ai/A (0.8 lb ai/A in HI) per season.</u></p> <p><u>Do not apply more than 0.2 lb ai/A per application.</u></p> <p><u>Apply every 7 days or as needed.</u></p> <p>May be applied up until harvest.</p>

TREE FRUIT AND NUTS

ALMONDS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Almonds	Naval orangeworm Peach twig borer	8 – 16 (0.2 – 0.4)	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	16 (0.4)	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.
<ul style="list-style-type: none"> • <u>Do not apply more 0.25 lb ai/A per application.</u> • <u>Do not apply more than 0.75 lb ai/A per season.</u> • <u>Apply every 10 days or as needed.</u> • Do not graze livestock in treated areas. • Do not feed cover crops from treated areas to livestock. • Do not apply within 7 days of harvest. 			

APPLES			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Apples	Green fruitworm Oblique banded leafroller Plum curculio Redbanded leafroller Rosy apple aphid Spotted tentiform leafminer Tarnished plant bug White apple leafhopper	4 – 16 (0.1 – 0.4)	Apply by ground equipment only. Apply in 25-400 gallons of finished spray per acre. <u>Apply every 10 days or as needed.</u> Apply when insects appear and repeat as required to maintain control. Do not apply more than 0.5 lb ai/A per season. <u>Do not apply more than 0.25 lb ai/A per application.</u> Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock. Do not apply after petal fall.

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CHERRIES			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Cherries (includes Sweet Cherries and Tart Cherries)	Green fruitworm Lesser peach tree borer <i>Plum curculio</i> Redbanded leafroller Rose chafer Tarnished plant bug	4 – 8 (0.1 – 0.2)	<p>Apply by ground equipment only. Apply in 25-400 gallons of finished spray per acre.</p> <p>Apply when insects first appear.</p> <p><u>Apply every 10 days or as needed.</u></p> <p>Do not apply within 3 days of harvest.</p> <p>Do not apply more than 0.6 lb ai/A per season.</p> <p><u>Do not apply more than 0.2 lb ai/A per application.</u></p> <p>Do not graze livestock in treated areas.</p> <p>Do not feed cover crops from treated areas to livestock.</p> <p>East of the Rockies: Do not exceed 6 applications per season, with no more than 4 applications after petal fall.</p> <p>West of the Rockies: Do not apply more than 4 applications per season, with no more than 3 applications after petal fall.</p>

FILBERTS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Filberts	Filbertworm Oblique banded leafroller	8 – 16 (0.2 – 0.4)	<p>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.</p> <p>Do not apply within 14 days of harvest.</p> <p>Do not apply more than 1.6 lb ai/A per season.</p> <p>Apply when insects appear.</p> <p>Do not graze livestock in treated areas.</p> <p>Do not feed cover crops from treated areas to livestock.</p>

PAPAYA (Florida Only)			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Papaya	Aphids Brown soft scale Mealybug Papaya fruit fly Papaya webworm Papaya whitefly Scale crawlers	8 (0.2)	<p>Apply by ground equipment only. Apply in 25-400 gallons of finished spray per acre.</p> <p>Spray to wet all foliage. Apply when insects first appear and repeat at 7-10 day intervals as needed to provide control.</p> <p>Do not apply within 7 days of harvest.</p> <p><u>Apply every 10 days or as needed.</u></p> <p><u>Do not apply more than 0.75 lb ai/A per season.</u></p> <p><u>Do not apply more than 0.15 lb ai/A per application.</u></p> <p><u>Do not apply more than 1.2 pounds of active ingredient per acre per season.</u></p> <p>Do not graze livestock in treated areas.</p> <p>Do not feed cover crops from treated areas to livestock.</p>

PEACHES and NECTARINES			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Peaches Nectarines	Green fruitworm Lesser peach tree borer Oriental fruit moth Peach twig borer Plum curculio Rose chafer Tarnished plant bug	4 – 12 (0.1 – 0.3)	<p>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.</p> <p><u>Do not apply more than 0.75 lb ai/A per season.</u></p> <p><u>Do not apply more than 0.25 lb ai/A per application.</u></p> <p><u>Apply every 10 days or as needed.</u></p> <p><u>Do not apply more than 1.5 pounds of active ingredient per acre per season.</u></p> <p>Do not apply within 14 days of harvest.</p> <p>Do not graze livestock in treated areas.</p> <p>Do not feed cover crops from treated areas to livestock.</p>

PISTACHIOS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Pistachios	Leaffooted bugs Naval orangeworm Peach twig borer Plant bugs Stink bugs	8 – 16 (0.2 – 0.4)	Use sufficient water to obtain full coverage of foliage.
	Ants	16 (0.4)	Application should follow mowing of weed growth to ensure maximum coverage of the soil surface. Overhead moisture following application will enhance activity.
<ul style="list-style-type: none"> 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. Do not apply after 10 percent hull split. <u>Do not apply more than 0.9 lb ai/A per season.</u> <u>Apply every 10 days or as needed.</u> <u>Do not apply more than 0.3 lb ai/A per application.</u> Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock. May be applied up until harvest. 			

PEARS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Pears (Dormant through Delayed Dormant)	Pear psylla	8 – 16 (0.2 – 0.4)	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	8 – 16 (0.2 – 0.4)	Pre-bloom sprays can be applied from dormant through bud burst stages.
<ul style="list-style-type: none"> 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. <u>Do not apply more than 0.65 lb ai/A per season.</u> <u>Do not apply more than 0.25 lb ai/A per application.</u> <u>Apply every 10 days or as needed.</u> Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock. 			

WALNUTS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Walnuts	Codling moth Navel orangeworm Walnut husk fly	8 – 16 (0.2 – 0.4)	<p>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.</p> <p>Apply when insects appear.</p> <p><u>Apply every 10 days or as needed.</u></p> <p><u>Do not apply more than 0.75 lb ai/A per season.</u></p> <p><u>Do not apply more than 0.25 lb ai/A per application.</u></p> <p>Do not apply within 1 day of harvest.</p> <p>Do not graze livestock in treated areas.</p> <p>Do not feed cover crops from treated areas to livestock.</p>

OTHER CROPS

ALFALFA			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Alfalfa: lucerne, sainfoin, holy clover, esparcet, birdsfoot trefoil and varieties and/or hybrids of these. Alfalfa grown for seed	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)	<p>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.</p> <p>Use higher recommended 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.</p>
	Alfalfa weevil Cucumber beetle Egyptian alfalfa weevil Meadow spittlebug Plant bugs (including <i>Lygus</i> spp.) Potato leathopper Stink bugs	4 – 8 (0.1 – 0.2)	<p>Apply only to fields planted to pure stands of alfalfa.</p> <p>May be applied up until harvest when rates of 0.1 pound per active per acre or less are used. When rates greater than 0.1 pound active per acre are used, do not apply within 14 days of harvest.</p> <p>Do not apply more than 0.2 lb ai/A per cutting.</p> <p>Do not apply more than 0.2 lb ai/A per application.</p> <p><u>Apply every 30 days or as needed.</u></p>

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CORN (FIELD), FIELD CORN GROWN FOR SEED, POPCORN (Pre-emergent and Foliar Use)			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
Field Corn, Field corn grown for seed, Popcorn (Pre-emergent Use)	Armyworm Cutworm Stalk borers	4 – 8 (0.1 – 0.2) as a broadcast spray	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.
		OR 0.3 – 0.6 oz per 1000 linear feet row (based on a 4" band and 40" row spacing)	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 recommended dosage. When using tank mixes, observe 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.
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 Western bean cutworm	4 – 8 (0.1 – 0.2)	<u>Apply every 7 days or as needed.</u> <u>Do not apply more than 0.45 lb ai/A per season.</u> <u>Do not apply more than 0.15 lb ai/A per application.</u> <u>Do not apply more than 0.6 pound of active ingredient per acre per season.</u> <u>Do not make treatments less than 6 days apart.</u>
		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.
<ul style="list-style-type: none"> 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. Do not apply within 30 days of harvest of grain or fodder (stover). Forage may be harvested on the day of application. 			

CORN (FIELD), FIELD CORN GROWN FOR SEED, POPCORN (At Plant Use)			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
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 ai per acre)		0.10	0.15 0.20

MUSHROOMS (Mushroom Houses and Adjacent Premise Areas)			
CROP	TARGET PESTS	RATE FL OZ (LBS AI)	REMARKS
Mushrooms (Mushroom houses and adjacent premise areas)	Mushroom flies (Sciarid and Phorid adults)	2 – 2.5 (0.05 – 0.0625)	<p>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.).</p> <p>Apply as a fogging or aerosol treatment.</p> <p>Do not apply within 3 days of harvest.</p> <p>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 take precautions to prevent persons and animals from entering the area. 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.</p> <p>Wear a respirator with either an organic vapor-removing cartridge with a pre-filter approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).</p>

RANGE GRASS (New Mexico Only)			
CROP	TARGET PESTS	RATE FL OZ/A (LBS A/A)	REMARKS
Range Grass (New Mexico only)	Range caterpillar	0.4 (0.1)	<p>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.</p> <p>Apply as needed. Do not apply more than once per year.</p> <p>Cattle may be present during application.</p> <p>Do not harvest or feed hay to livestock.</p>

SOYBEANS			
CROP	TARGET PESTS	RATE FL OZ/A (LBS A/A)	REMARKS
Soybeans	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. PERMETHRIN 3.2 AG should be diluted with oil and applied 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. <u>Do not apply more than 0.4 lb ai/A per season.</u> <u>Do not apply more than 0.2 lb ai/A per application.</u>
	Beet armyworm Corn earworm Soybean looper Webworms	4 - 8 (0.1 - 0.2)	<u>Apply every 10 days or as needed.</u> Do not graze treated areas or feed soybean forage or hay. Do not apply within 60 days of harvest.

ORNAMENTALS

CHRYSANTHEMUMS			
CROP	TARGET PESTS	RATE FL OZ (LBS AI)	REMARKS
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. Caution: NOTE: 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.

CONIFERS (Container and Field Grown)			
CROP	TARGET PESTS	RATE FL OZ/A (LBS A/A)	REMARKS
Conifers (container and field grown)	Nantucket pine tip moth	4 - 8 (0.1 - 0.2)	PERMETHRIN 3.2 AG may be diluted 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.

ORNAMENTAL NURSERY STOCK (Field Grown)			
CROP	TARGET PESTS	RATE FL OZ (LBS AI)	REMARKS
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	<p>PERMETHRIN 3.2 AG may be used to control specified pests on non-edible ornamentals and non-bearing plants of fruiting species.</p> <p>Caution: NOTE: Marginal leaf burn may occur on Salvia, Dieffenbachia and Pteris Fern. Application to blooming plants may cause browning of petals.</p> <p>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.</p>

PINE SEED ORCHARDS			
CROP	TARGET PESTS	RATE FL OZ	REMARKS
Pine seed orchards	Coneworms Seed bugs	8 in 100 gallons of water (0.025% dilution by weight)	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.
		42 in 100 gallons of water (0.125% dilution by weight)	Repeat applications at 4 week intervals, but do not apply more than 6 applications. For high volume sprayers, apply 5 to 10 gallons of finished spray per tree.
		30 per acre	For low volume sprayers, apply 100 gallons per tree. For aerial application, use in not less than 10 gallons of water. Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock. Avoid contact with open water.

ROSES (Field Grown)			
CROP	TARGET PESTS	RATE FL OZ/A (LBS AI/A)	REMARKS
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.

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ROSES (Greenhouse)			
CROP	TARGET PESTS	RATE FL OZ (LBS AI)	REMARKS
Roses (greenhouse)	Beet armyworm Cabbage looper Omnivorous leafroller	8 (0.2) per 100 gallons of water	PERMETHRIN 3.2 AG is not phytotoxic to the following varieties of greenhouse roses: Ballona, Bottina, 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.

OTHER USES

PREMISES SPRAY (For Agricultural Use Only)			
SITE	TARGET PESTS	RATE FL OZ	REMARKS
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 to 12.5 gallons of water Sprayer: apply 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. Do not treat manure or litter. Do not apply directly to livestock or poultry. Avoid contamination of feed and water. The use of any residual fly spray should be supplemental with proper manure management and general sanitation to reduce or eliminate fly breeding sites.

TREATMENT OF PRECONSTRUCTION LUMBER AND LOGS

General Information

PERMETHRIN 3.2 AG should be diluted with water. 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

Directions for Application

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, the wood should be totally submersed in the solution until thoroughly wet and then allowed to dry in a suitable location. Dipping solutions to which PERMETHRIN 3.2 AG has been added should be agitated 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 the wood should be placed in the treatment chamber, the PERMETHRIN 3.2 AG solution added and the system pressurized 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, the wood should be placed in a suitable location for drying.
3. For spray treatments, the wood should be sprayed thoroughly including back and ends.
4. For brush treatments, all parts of wood surfaces should be thoroughly treated.

STORAGE AND DISPOSAL

Pesticide Storage

Store at temperatures above 40°F (5°C).

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.

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

Keep out of reach of children and animals.

Store in a dry place and avoid excess heat in storage. Store in original containers only.

Carefully open containers. After partial use, replace lids and close tightly. Do not put concentrate or dilute material into food or drink containers. Do not contaminate other pesticides, fertilizers, water, food, or feed by storage or disposal.

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 Disposal

Metal Containers: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other approved State and Local procedures.

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

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

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

ATTENTION

Dealers Should Sell in Original Packages Only.

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WARRANTY STATEMENT

James Oliver Products, LLC warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for purposes stated on such label only when used in accordance with directions under normal use conditions. It is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of James Oliver Products, LLC. To the extent allowed by law, James Oliver Products, LLC shall in no event be liable for consequential, special, or indirect damages resulting from the use or handling of this product. All such risks shall be assumed by the Buyer. In addition to the foregoing, no purchaser of this product (other than an end user) shall be entitled to any reimbursement for any loss suffered as a result of any suspension or cancellation of the registration for this product by the U.S. Environmental Protection Agency. Except, as warranted by this label, James Oliver Products, LLC makes no warranties, guarantees, or representations of any kind, either expressed or implied, or by usage of trade, statutory or otherwise, with regard to the product sold, including, but not limited to merchantability, fitness for a particular purpose, use or eligibility of the product for any particular trade usage. To the extent consistent with applicable law, the exclusive remedy of any buyer or user of this product for any and all losses, injuries, or damage resulting from or in any way arising from the use, handling, or application of this product, whether in contract, warranty, tort, negligence, strict liability, or otherwise, shall be damages not exceeding the purchase price paid for this product or, at James Oliver Products, LLC election, the replacement of this product.

J. Oliver Products
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EPA Reg. No. 83222 -3

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7401-TX-001
44616-MO-001

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