

34704-873

09/30/2008

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF  
PREVENTION, PESTICIDES  
AND TOXIC SUBSTANCES

SEP 30 2008

Mr. John Tice  
Loveland Products, Inc.  
P. O. Box 1286  
Greeley, CO 80632-1286

Dear Mr. Tice:

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

Permethrin  
EPA Reg. No. 34704-873  
Your submission dated May 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. In the Restricted Use Block, revise the first line under the heading to read “Due to toxicity to fish and aquatic organisms”.
  - b. Since the label includes no directions for use of cold fogger or fog/mist generators, you may delete the paragraphs headed “Applicators using ULV cold foggers and/or fog mist generators in indoor spaces must wear:” and “Applicators using ULV cold foggers and/or fog mist generators in outdoor spaces must wear:”. In their place add the prohibition “Do not apply this product using ULV cold foggers and/or fog/mist generators.”. Then, revise the beginning of the next paragraph to read “All mixers, loaders, applicators, and other handlers must wear:”. In the last bullet item under this heading, delete “and for handlers performing animal dip applications”, since there are no animal dip application direction on this label.

- c. The heading User Safety Requirements and the associated paragraphs beginning with “Follow manufacturer’s instructions for cleaning...etc” and “Discard clothing and other absorbent materials...etc” should be enclosed in an outline box.
- d. 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. You may include the associated heading “General Application Precautions and Restrictions”. You should delete the similar/identical text that appears under that heading.
- e. 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.nrcs.gov/technical/agronomy/newconbuf.pdf](http://www.in.nrcs.gov/technical/agronomy/newconbuf.pdf)
- f. 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”.
- g. Under the heading “Method of Application” for all crops, delete the statements “Apply as needed”, “Repeat as required to maintain control”, and “Repeat application as necessary to maintain control”, and “or as needed” since the crop directions now include specific retreatment intervals. Alternatively, you may reword these statements to read “Apply when insects first appear and repeat at (add the appropriate interval) intervals as needed to provide control.”.
- h. In the 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 “Maximum rate of application = X fl. oz. of product (Y lb. active)/Acre” and “Seasonal Maximum Application Rate is X fl. oz. product (Y lb. active)/Acre per year”. Substitute X and Y with the appropriate value for each crop. Note the addition of “/Acre” in the seasonal rate.
- i. Revise the “Rate of Application” entry for Broccoli to read “2 to 4 ounces (0.05 to 0.1 pound active per acre)”. Also, for Brussels Sprouts revise the “Maxim rate per application” to read “4 oz. of product (0.1 lb. active)/Acre” and revise the maximum rate of application for Cauliflower to read “4 oz. of product (0.1 lb. active)/Acre”.
- j. In the notes for the crop Cherries, revise the Maximum rate of application to read 8 fl. oz. rather than 6 fl.oz.

- k. Under the heading "Corn (field), Field Corn Grown for Seed, Popcorn", relocate the heading "Sweet Corn and its associated text" with the subheading "General Restrictions" to appear directly above the crop entry "Corn Sweet (1 day phi)".
- l. In the specific directions under the heading "Corn (field), Field Corn Grown for Seed, Popcorn" revise the "'Rate of Application" entry for both the "Pre-emergent Use" and the "Foliar Use" to read 4 to 6 ounces (0.1 to 0.15 pound active ) per acre". Revise the pre-emergent 1000 linear feet rate accordingly.
- m. 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 per acre to read "0.15" and the formulated ounces per acre to read "6" to be in agreement with the "General Restrictions" for this crop.
- n. For Filberts, revise the "Rate of Application" to read "8 to 10 ounces (0.2 to 0.25 pound active per acre)". In the "Method of Application", revise "apply 0.05 to 0.1 pound active" to read "apply 0.05 to 0.06 pound active". Also, revise "0.2 to 0.4 pound active" to read "0.2 to 0.25 pound active" for both the low volume concentrate application and the aerial application directions.
- o. Under "Ornamental Nursery Stock (Field Grown)" and "Roses (Greenhouse)", there is a box with the heading "Method of Application" but no directions on how (equipment) to apply the product are given. Please identify the method of application.
- p. For Papayas, in the Method of Application, revise "repeat at 7 to 10 day intervals" to read "repeat at 10 day intervals".
- q. For Pears (Dormant through Delayed Dormant), revise the Rate of Application to read "8 to 10 ounces (0.2 to 0.25 pound active) per acre". In the first note, revise the Maximum rate per application to read "10 fl. oz of product(0.25 pound active)/Acre".
- r. For Peppers, revise the Rate of Application to read "4 to 8 ounces (0.1 to 0.2 pound active) per acre". In the second note revise the Minimum Retreatment Interval to 5 days. In the third note, revise the Seasonal Maximum Application Rate to "32 fl. oz of product (0.8 pound active)/Acre per year".
- s. In the list of prohibitions for Pine Seed Orchards, add "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.

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- t. 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.
- u. On page nine, revise "should" to "must", so that the top 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

Toxic to fish and aquatic organisms

For retail sale to and use only by certified applicators, or persons under their direct supervision and only for those uses covered by the certified applicator's certification.

**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.



## PERMETHRIN

~~34704-873~~

ACTIVE INGREDIENT:	
*Permethrin**	38.4%
INERT INGREDIENTS***	61.6%
	100.0%

\*(3-Phenoxyphenyl)methyl (±) cis-trans 3-(2,2-dichloroethyl)-2,2-dimethylcyclopropanecarboxylate

\*\*cis/trans ratio: Max. 55% (±) cis and min. 45% (±) trans

\*\*\*Contains xylene range aromatic solvents.

Contains 3.2 pounds permethrin per gallon.

U.S. Patent No. 4,024,163

### Personal Protective Equipment (PPE):

Some materials that are chemical-resistant to this product are Barrier laminate or 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.

### Applicators using ULV cold foggers and/or fog/mist generators in outdoor spaces must wear:

- Long-sleeve shirt and long pants,
- Shoes plus socks, and
- Chemical-resistant gloves.

### 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.

### User Safety Requirements:

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, 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.

### Engineering Controls:

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

## KEEP OUT OF REACH OF CHILDREN CAUTION—AVISO

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

### FIRST AID

<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>
<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 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 Swallowed:</b>	<ul style="list-style-type: none"> <li>• Call a poison control center or doctor immediately for treatment advice.</li> <li>• Do not give any liquid to the person.</li> <li>• Do not induce vomiting unless told to do so by the poison control center or doctor.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul>

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. **FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-800-301-7976.**

**Note to Physician:** Vomiting should be supervised by a physician or the professional staff because of the possible pulmonary damages by aspiration of the solvent. See other panels for additional precautionary information.

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EPA EST. NO. 279-FL-1

NET CONTENTS 1 GAL. (3.78 KG.)

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## PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS (AND DOMESTIC ANIMALS)

### CAUTION

Harmful if swallowed, inhaled, or absorbed through skin. Causes moderate eye irritation. Avoid contact with eyes, skin or clothing. Avoid breathing vapor or spray mist. Wash thoroughly with soap and water after handling.

## USER SAFETY RECOMMENDATIONS

Users should:

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

## ENVIRONMENTAL HAZARDS

This pesticide 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 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 waters.

This pesticide 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.

## PHYSICAL/CHEMICAL HAZARDS

Do not use or store near heat or open flame.

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**PERMETHRIN**  
**EPA REG. NO. 34704-873**

**DIRECTIONS FOR USE**

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

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

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

**General Application Precautions and Restrictions:**

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 except during Premises Spray applications. Only protected workers may be in the area during 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, Texas. 21 pp. <http://www.in.csusda/v/technical/agronom/newconbuf.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, streams, marshes, 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, streams, marshes, ponds, estuaries, and commercial fish ponds).

**Buffer Zone for Non-ULV Aerial Application:**

Do not apply within 150 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, marshes, 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 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.

**AGRICULTURAL USE REQUIREMENTS**

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard. Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls,
- Shoes plus socks,
- Chemical-resistant gloves made of any waterproof material.

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

**CHEMIGATION USE DIRECTIONS**

Apply this product only through sprinkler including center pivot, lateral move end tow, side (wheel) roll, traveler, big gun, solid set, or hand move irrigation systems. Do not apply this product through any other type of irrigation system. Do not connect 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. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers, or other experts. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

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

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

The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.

Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock. Do not apply when wind speed favors drift beyond the area intended for treatment.

Permethrin insecticide should be applied continuously for the duration of the water application. Permethrin should be diluted in sufficient volume to ensure accurate application over 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  
OF PERMETHRIN ON DRY BULK FERTILIZERS**

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

The Permethrin/fertilizer mixtures may be surface applied or challovy 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 insecticide 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 absorptive capacity. When absorptivity is sufficient, simple spray impregnation of the fertilizer with Permethrin 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 (Johns-Manville Products Corporation) is a recommended absorbent powder. Generally less than 2% by weight of Microcel E is required. **DO NOT** impregnate Permethrin 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.

The amount of Permethrin 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 insecticide 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 mixture.

**GENERAL INSTRUCTIONS**

Unless otherwise directed by registered supplemental labeling, follow the Directions for Use in each crop group section.

Permethrin is a 3.2 pounds per gallon formulation of the insecticide permethrin. Apply Permethrin 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. Permethrin may be applied by both ground and aerial equipment. 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.

**Alfalfa; Alfalfa grown for seed (0 day phi)\*** (Includes lucerne, sainfoin, holy clover, esparcet, birdsfoot trefoil and varieties and/or hybrids of these)

Insects Controlled	Rate of Application	Method of Application
Alfalfa Caterpillar Armyworms, Blue Alfalfa Aphid, Cutworms, Green Cloverworm, Green Peach Aphid Loopers, Pea Aphid, Spotted Alfalfa Aphid, Velvet bean Caterpillar, Webworms	2 to 8 ounces (0.05 to 0.2 pound active) per acre	Use higher recommended dosage for increased pest pressure or for increased residual pest control. Apply with ground equipment in a minimum of 10 gallons of finished spray per acre or 2 gallons of finished spray per acre by aircraft.
Alfalfa Weevil, Cucumber Beetle, Egyptian Alfalfa Weevil, Meadow Spittlebug, Plant Bugs (including <i>Lygus</i> spp.), Potato Leafhopper, Stink Bugs	4 to 8 ounces (0.1 to 0.2 pound active) per acre	

Maximum rate per application is 8 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 30 days.  
Seasonal Maximum Application Rate is 8 fl. oz. per cutting.  
Do not apply to mixed stands with intentionally-grown forage grasses and/or legumes.

**Almonds (7 day phi)**

Insects Controlled	Rate of Application	Method of Application
Navel Orangeworm Peach Twig Borer	8 to 10 ounces (0.2 to 0.25 pound active) per acre	Apply when insects appear. Apply in a minimum of 15 gallons of finished spray per acre by aircraft or 25-400 gallons of finished spray per acre with ground equipment.
Ants	10 ounces (0.25 pound active) per acre	Apply by ground equipment in a minimum of 15 gallons of finished spray per acre. Application should follow mowing of weed growth to insure maximum coverage of the soil surface. Overhead moisture following application will enhance activity.

Maximum rate per application is 10 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 30 fl. oz. product per year.

**Apples**

Insects Controlled	Rate of Application	Method of Application
Green Fruitworm, Oblique Banded Leafroller, Plum Curculio, Redbanded Leafroller, Rosy Apple Aphid, Spotted Tentiform, Leafminer, Tarnished Plant Bug, White Apple Leafhopper	4 to 10 ounces (0.1 to 0.25 pound active) per acre	Use with ground equipment only. Apply in 25-400 gallons of finished spray per acre when insects appear and repeat as required to maintain control.

Maximum rate per application = 10 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 20 fl. oz. product/year.

**Artichoke (0 day phi)**

Insects Controlled	Rate of Application	Method of Application
Artichoke Plume Moth, Leafminers	4 to 12 ounces (0.1 to 0.3 pound active) per acre.	Apply with ground equipment in a minimum of 10 gallons of finished spray per acre or in a minimum of 2 gallons per acre by aircraft. Apply as needed. Bud\$ may be harvested on the day of application.

Maximum rate per application = 12 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 36 fl. oz. product/year.

**Asparagus (1 day phi)**

Insects Controlled	Rate of Application	Method of Application
Asparagus Beetle, Cutworms	2 to 4 ounces (0.05 to 0.1 pound active) per acre	Apply with ground equipment in a minimum of 10 gallons of finished spray per acre. Apply as needed.
Asparagus Beetle, Japanese Beetle (Adult stage)*, Lygus Bugs, Tarnished Plant Bug	4 ounces (0.1 pound active) per acre	For post harvest application, apply to the fern stage of the asparagus plant after spear harvest when larval and adult stage are present. *Not for control of this insect in California.

Maximum rate per application = 4 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 7 days.  
Seasonal Maximum Application Rate is 16 fl. oz. product/year.

**Avocado (7 day phi)**

Insects Controlled	Rate of Application	Method of Application
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 ounces (0.2 pound active) per acre	Apply with 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.

Maximum rate per application = 8 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 7 days.  
Seasonal Maximum Application Rate is 32 fl. oz. product/year.

**Broccoli; Chinese Broccoli (gai lan, white flowering broccoli); Brussels Sprouts; Cauliflower; Cavalo broccolo; Kohlrabi (1 day phi)**

Insects Controlled	Rate of Application	Method of Application
Armyworm spp., Cabbage Looper, Diamondback Moth, Imported Cabbage- worm, Plant Bugs, Thrips	2 to 6 ounces (0.05 to 0.15 pound active) per acre	Apply with ground equipment in a minimum of 10 gallons of finished spray per acre or in a minimum of 2 gallons per acre by aircraft. Apply as needed.

**Broccoli:**  
Maximum rate per application = 8 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 5 days.  
Seasonal Maximum Application Rate is 32 fl. oz. product/year.

**Brussels Sprout:**  
Maximum rate per application is 6 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 5 days.  
Seasonal Maximum Application Rate is 16 fl. oz. product per year.

**Cauliflower:**  
Maximum rate per application is 6 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 5 days.  
Seasonal Maximum Application Rate is 16 fl. oz. product per year. (24 oz. in HI).

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**Cabbage; Cabbage, Chinese (napa) (tight-heading varieties only) (1 day phi)**

Insects Controlled	Rate of Application	Method of Application
Cabbage Looper, Diamondback Moth, Imported Cabbage-worm, Southern White, Butterfly	2 to 8 ounces (0.05 to 0.2 pound active) per acre	Apply with ground equipment in a minimum of 10 gallons per acre or in a minimum of 2 gallons per acre by aircraft.
Armyworm spp., Cutworms, Flea Beetles	4 to 8 ounces (0.1 to 0.2 pound active) per acre	

**Cabbage:**

Maximum rate per application = 8 fl. oz. of product/Acre.

Minimum Retreatment Interval is 5 days.

Seasonal Maximum Application Rate is 16 fl. oz. product/year (32 oz. in HI).

**Cantaloupes:** For general use directions refer to the **Cucurbit Vegetables** crop grouping.

**Celery, Florence fennel** (sweet anise, sweet fennel, finocchio) (fresh leaves and leaf petioles only): For general use directions refer to the **Leafy Vegetable** crop grouping.

**Cherries (Includes Sweet Cherries and Tart Cherries) (3 day phi)**

Insects Controlled	Rate of Application	Method of Application
Green Fruitworm, Lesser Peach Tree Borer, Plum Curculio, Redbanded Leafroller, Rose Chafer, Tarnished Plant Bug	4 to 8 ounces (0.1 to 0.2 pound active) per acre	Use Permethrin insecticide as a dilute spray. Apply when insects appear. Apply with ground equipment in 25-400 gallons of finished spray per acre.

Maximum rate per application = 6 fl. oz. of product/Acre.

Minimum Retreatment Interval is 10 days.

Seasonal Maximum Application Rate is 24 fl. oz. product/year.

*East of the Rockies*, do not exceed 4 applications after petal fall.

*West of the Rockies*, do not exceed 3 applications after petal fall.

**Chrysanthemums**

Insects Controlled	Rate of Application	Method of Application
Liriomyza Leafminer Flies	20 fluid ounces (0.5 pound active) per 100 gallons (1 teaspoon per gallon)	Avoid spraying the blooms. Permethrin may be applied on a weekly schedule. Caution: Permethrin 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 applications.

**Collards and Turnips (1 day phi)**

Insects Controlled	Rate of Application	Method of Application
Beet Armyworm, Cabbage Looper, Corn Earworm, Cutworms, Diamondback Moth, European Corn Borer, Fall Armyworm, Green Cloverworm, Imported Cabbage-worm, Leafhoppers, Leafminer, Southern Armyworm, Southern White Butterfly, Tobacco Budworm, Vegetable Leafminer, Aphids*	2 to 4 ounces (0.05 to 0.1 pound active) per acre	Apply with ground equipment only. Apply with ground equipment in a minimum spray volume of 10 gallons of finished spray per acre. Apply as needed.

Maximum rate per application = 6 fl. oz. of product/Acre.

Minimum Retreatment Interval is 3 days.

Seasonal Maximum Application Rate is 18 fl. oz. product/year.

\* Suppression only.

**Conifers (Container and Field Grown)**

Insects Controlled	Rate of Application	Method of Application
Nantucket Pine Tip Moth	4 to 8 fluid ounces (0.1 to 0.2 pound active) per acre	Permethrin 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.

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

General Restrictions:

**Field Corn:**

Maximum rate per application = 6 fl. oz. of product/Acre.

Minimum Retreatment Interval is 7 days.

Seasonal Maximum Application Rate is 18 fl. oz. product/year.

**Sweet Corn:**

Maximum rate per application = 8 fl. oz. of product/Acre.

Minimum Retreatment Interval is 3 days.

Seasonal Maximum Application Rate is 32 fl. oz. product/year.

Insects Controlled	Rate of Application	Method of Application
<b>Preemergent Use:</b> Armyworms Cutworms Stalk Borers	4 to 8 ounces (0.1 to 0.2 pound active) per acre as a broadcast spray  OR  0.3 to 0.6 ounces per 1000 linear feet row (based on a 4" band and 40" row spacing.)	Permethrin may be applied as a preplant incorporated, pre-emergence, or at planting time application. Apply as a broadcast spray by ground or air (minimum of 2 gallons finished spray per acre by air) or 4-15 inch band using sufficient spray volume to achieve adequate coverage.  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 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.
<b>Foliar Use:</b> Armyworm (including Fall Armyworm), Corn Borer European Southwestern Corn Earworm, Corn Rootworm Beetles, Cutworms, Flea Beetle, Hop Vine Borer, Stalk Borers Webworms	4 to 8 ounces (0.1 to 0.2 pound active) per acre	When treating for stalk borers, Permethrin 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 are suggested to initiate movement. For control of Corn Earworm apply just before silking and continue as necessary to maintain control. Apply a minimum of 2 gallons of finished spray per acre by air or 10 gallons per acre with ground equipment.
<b>Foliar Use:</b> Western Bean Cutworm	2 to 4 ounces (0.05 to 0.1 pound active) per acre	

Forage may be harvested on the day of application.

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

Insects Controlled	Rate of Application	Method of Application
Armyworms, Cutworms, Seed Corn Maggot*, Wireworm* *Not for use in California.	0.3 ounces per 1,000 linear feet of row	Apply as an in-furrow, band or T-band treatment using a minimum 4" band. Use table below to determine the Permethrin needs for each acre.
Row Spacings (inches)	40	30    20
Permethrin (pounds ai per acre)	0.10	0.15    0.20
Permethrin (formulated ounces per acre)	4.0	6.0    8.0

**Corn, Sweet (1 day phi)**

Insects Controlled	Rate of Application	Method of Application
Corn Earworm, Corn Rootworm Beetles*, Cutworms, European Corn Borer, Fall Armyworm, Flea Beetle, Hop Vine Borer, Leafhoppers, Southern Armyworm, Stalk Borers	4 to 8 ounces (0.1 to 0.2 pound active) per acre	Apply every 3 to 5 days or as needed. Apply with ground equipment in a minimum of 10 gallons of finished spray per acre or in a minimum of 2 gallons per acre by aircraft. *Not for use in California.

**Corn, Sweet (Florida Only)**

Insects Controlled	Rate of Application	Method of Application
Aster Leafhopper, Corn Earworm, Cutworm, European Corn Borer, Fall Armyworm, Southern Armyworm	4 to 10 ounces (0.1 to 0.25 pound active) per acre	Apply every 3 to 5 days or as needed. Apply with ground equipment in a minimum of 10 gallons of finished spray per acre or in a minimum of 2 gallons per acre by aircraft.



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**Cucurbit Vegetables (0 day phi):** such as **Chayote (fruit)** (*Sechium edule*); **Chinese waxgourd (Chinese preserving melon)** (*Bemincasa hispida*); **Citron melon** (*Citrullus lanatus var. citroides*); **Cucumber** (*Cucumis sativus*); **Gherkin** (*Cucumis anguria*); **Gourd, edible** (*Lagenaria* spp.) (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 Cucumis melo)** (includes 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** (*Cucurbita* spp.); **Squash, summer** (*Cucurbita pepo* var. *meloepo*) (includes crookneck squash, scallop squash, straightneck squash, vegetable marrow, zucchini); **Squash, winter** (*Cucurbita maxima*; *C. moshata*) (includes butternut squash, calabaza, hubbard squash); **(C. mixta; C. pepo)** includes acorn squash, spaghetti squash); **Watermelon** (includes hybrids and/or varieties of *Citrullus* spp.).

Insects Controlled	Rate of Application	Method of Application
Aphids, Leafminers, Squash Bug	8 ounces (0.2 pound active) per acre	Apply with ground equipment in a minimum spray volume of 20 gallons of finished spray per acre or in a minimum of 4 gallons per acre by aircraft.
Cabbage Looper, Cucumber Beetle (adults), Cutworms, Leafhoppers, Melonworm, Pickleworm, Plant Bugs (including Lygus and Stink Bugs), Rindworms, Squash Vine Borer	4 to 8 ounces (0.1 to 0.2 pound active) per acre	

**Cantaloupes:**  
Maximum rate per application = 8 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 7 days.  
Seasonal Maximum Application Rate is 32 fl. oz. product/year (48 oz. in HI).

**Cucumbers, Pumpkins, Squash and Watermelon:**  
Maximum rate per application = 8 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 7 days.  
Seasonal Maximum Application Rate is 48 fl. oz. product/year.

**Eggplants (3 day phi)**

Insects Controlled	Rate of Application	Method of Application
Colorado Potato Beetle	8 ounces (0.2 pound active) per acre	Apply with ground equipment in a minimum of 10 gallons of finished spray per acre or a minimum of 2 gallons by aircraft. Apply using sufficient water to obtain uniform coverage. Apply as needed.
Cabbage Looper, Flea Beetles, Vegetable Leafminer	4 to 8 ounces (0.1 to 0.2 pound active) per acre	

Maximum rate per application = 6 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 7 days.  
Seasonal Maximum Application Rate is 24 fl. oz. product/year (40 oz. in HI).

**Filberts (14 day phi)**

Insects Controlled	Rate of Application	Method of Application
Filbertworm, Oblique Banded Leafroller	8 to 16 ounces (0.2 to 0.4 pound active) per acre	For full coverage application apply 0.05 to 0.1 pound active per 100 gallons (based on 400 gallons finished spray per acre) and spray to run-off, OR for low volume concentrate application apply 0.2 to 0.4 pound active per acre (50 to 200 gallons finished spray per acre). For aerial application apply 0.2 to 0.4 pound active in a minimum of 10 gallons of finished spray per acre. Apply when insects appear.

Maximum rate per application is 12 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 36 fl. oz. product per year.

**Horseradish (30 day phi)**

Insects Controlled	Rate of Application	Method of Application
Imported Crucifer Weevil ( <i>Baris lepidii</i> )	0.1% active solution (2 pints, 1 ounce of Permethrin per 100 gallons)	As a spring preplant dip, soak sets for 30 minutes and air-dry before planting.
	8 ounces (0.2 pound active) per acre	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.

Maximum rate per application is 6 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 18 fl. oz. product per year.

**Leafy Vegetables (except Brassica) (1 day phi):** such as: **Amaranth** (leafy amaranth, Chinese spinach, tampala); **Arugula** (Roquette); **Cardoon**; **Celery**; **Celery, Chinese**; **Celtuce**; **Chervil**; **Chrysanthemum, edible-leaved and garland**; **Corn salad**; **Cress, garden**; **Cress, upland** (yellow rocket, winter cress); **Dandelion**; **Dock** (sorrel); **Endive** (escarole); **Fennel**, **Florence** (finochio); **Lettuce, head and leaf**; **Orach**; **Parsley**; **Purslane, garden**; **Purslane, winter**; **Radichio** (red chicory); **Rhubarb**; **Swiss chard**.

**Spinach** (including New Zealand and vine, Malabar spinach, Indian spinach).\*

Insects Controlled	Rate of Application	Method of Application
Aphids, Beet Armyworm, Corn Earworm, Cutworms, European Corn Borer, Fall Armyworm, Green Cloverworm, Leafminers, Southern Armyworm, Tobacco Budworm	4 to 8 ounces (0.1 to 0.2 pound active) per acre	Apply every 3 to 5 days or as needed by air or ground. Use sufficient water to obtain full coverage of foliage. Apply with ground equipment in a minimum of 10 gallons of finished spray per acre or in a minimum of 2 gallons per acre by aircraft.
Alfalfa Looper, Cabbage Looper, Leafhoppers	2 to 8 ounces (0.05 to 0.2 pound active) per acre	

**Spinach:**  
Maximum rate per application is 8 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 3 days.  
Seasonal Maximum Application Rate is 24 fl. oz. product per year.

**Lettuce:**  
Maximum rate per application is 8 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 7 days.  
Seasonal Maximum Application Rate is 32 fl. oz. product per year (48 oz. in HI).

**Celery:**  
Maximum rate per application is 8 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 7 days.  
Seasonal Maximum Application Rate is 40 fl. oz. product per year (48 oz. in HI).

**Lettuce, Head:** For general use directions refer to the **Leafy Vegetable** crop grouping

**Mushrooms (Mushroom houses and adjacent premise areas) (3 day phi)**  
Use of high pressure hand wand prohibited in mushroom houses.

Insects Controlled	Rate of Application	Method of Application
Mushroom Flies (Sciarid and Phorid adults)	Apply as a fogging or aerosol treatment at the rate of 2.0 to 2.5 ounces (0.05-0.0625 lb.ai) per 30 ounces of water or suitable diluent. Use 1 quart of solution per standard double house (35,000 cu. ft.: 8000 sq. ft.)	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. 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).

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**Onions, Bulb and Garlic (1 day phi)**

Insects Controlled	Rate of Application	Method of Application
Armyworms, Onion Thrips	6 to 12 ounces (0.15 to 0.3 pound active) per acre	Apply with ground equipment in a minimum of 20 gallons of finished spray per acre or in a minimum of 5 gallons per acre by aircraft. 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 to 12 ounces (0.1 to 0.3 pound active) per acre	

**Onions:**

Maximum rate per application = 12 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 7 days.  
Seasonal Maximum Application Rate is 40 fl. oz. product/year.

**Garlic:**

Maximum rate per application = 8 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 32 fl. oz. product/year.

**Ornamental Nursery Stock (Field and Container Grown)**

Insects Controlled	Rate of Application	Method of Application
Ants, Aphids, Bagworm, Beet Armyworm, Birch leafminer, Cabbage Looper, Citrus Thrips, Fungus gnats, Japanese Beetles, <i>Heliothis</i> spp., Lace Bug, Leafhoppers, Leafminers, Leafrollers, Lygus Bugs, Pine sawflies, Plant Bugs, Root Weevils (adults), Webworms, Whiteflies, Zimmerman Pine Moths	4 to 8 ounces (0.1 to 0.2 pounds active) per 100 gallons of water	Permethrin may be used to control specified pests on non-edible ornamental and non-bearing plants of fruiting species. Caution: Marginal leaf burn may occur on <i>Salvia</i> , <i>Dieffenbachia</i> and <i>Pteris</i> Fern. Application to blooming plants may cause browning of petals. Permethrin has demonstrated excellent plant safety; however, not all species and varieties have been tested. Before treating large numbers of plants of a particular variety, treat a few plants and observe prior to full scale application.

**Ornamental Trees**

Clearwing Moth borer, Ash borer, Banded Ash Clearwing, Dogwood borer, Lesser Peachtree borer, Lilac borer, Oak borer, Rhododendron borer	1 to 2 qts. per 100 gallons	Apply to the lower branches and trunks prior to adult emergence. Adult emergence varies according to pest species, host tree, environmental conditions and geographic location. Thorough coverage of bark is required for control.
Bark Beetles: <i>Dendroctonus</i> spp., Elm bark beetles, Mountain pine beetles, Pine engravers, Turpentine beetles, Western pine beetles	2 to 5 qts. per 100 gallons	
Coleopteran borers: Bronze birch borer, Flatheaded borers	2 to 5 qts. per 100 gallons	
For the maximum residual control of the above listed pests	5.35 qts. per 100 gallons	

**Papaya (Florida Only) (7 day phi)**

Insects Controlled	Rate of Application	Method of Application
Aphids, Brown Soft Scale, Mealybug, Papaya Fruit Fly, Papaya Webworm, Papaya Whitefly, Scale Crawlers,	6 ounces (0.15 pound active) per acre	Apply with 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.

Maximum rate per application is 6 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 30 fl. oz. product per year.

**Peaches, Nectarines (14 day)**

Insects Controlled	Rate of Application	Method of Application
Green Fruitworm, Lesser Peach Tree, Borer, Oriental Fruit Moth, Peach Twig Borer, Plum Curculio, Rose Chafer, Tarnished Plant Bug	4 to 10 ounces (0.1 to 0.25 pound active) per acre	Apply with ground equipment using 25-400 gallons of spray per acre or a minimum of 10 gallons per acre by aircraft. Spray to wet all foliage.

Maximum rate per application is 10 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 30 fl. oz. product per year.

**Pears (Dormant through Delayed Dormant)**

Insects Controlled	Rate of Application	Method of Application
Pear Psylla	8 to 16 ounces (0.2 to 0.4 pound active) per acre	Permethrin may be combined with 2 to 8 gallons of spray oil per acre. Apply during the dormant through delayed dormant growth periods only. Apply in a minimum of 10 gallons of finished spray per acre by aircraft and 25-400 gallons per acre by ground equipment.

Maximum rate per application is 16 fl. oz. of product/Acre (dormant only).  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 26 fl. oz. product per year.

**Pears (Pre-Bloom)**

Insects Controlled	Rate of Application	Method of Application
Codling Moth, Green Fruitworm, Pear Psylla	8 to 10 ounces (0.2 to 0.25 pound active) per acre	Apply with ground equipment using 25-400 gallons of finished spray per acre or a minimum of 10 gallons per acre by aircraft. Pre-bloom sprays can be applied from dormant through bud burst stages.

Maximum rate per application is 10 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 26 fl. oz. product per year.

**Peppers, Bell (3 day phi)**

Insects Controlled	Rate of Application	Method of Application
Cabbage Looper, Corn Earworm, Cutworms, Flea Beetle, Pepper Weevil, Vegetable Leafminer	4 to 10 ounces (0.1 to 0.25 pound active) per acre	Apply using sufficient water to obtain uniform coverage. Apply as needed. Apply with ground equipment using a minimum of 10 gallons of finished spray per acre or a minimum of 2 gallons per acre by aircraft.
European Corn Borer	8 ounces (0.2 pound active) per acre	

Maximum rate per application is 10 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 26 fl. oz. product per year.

**Pine Seed Orchards**

Insects Controlled	Rate of Application	Method of Application
Coneworms, Seed Bugs	8 ounces 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 ounces in 100 gallons of water (0.125% dilution by weight)	For low volume sprayers, apply 100 gallons per acre.
	30 ounces 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.

Do not graze livestock in treated areas.

Do not feed cover crops from treated areas to livestock.

Avoid contact with open water.

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**Pistachios (0 day phi)**

Insects Controlled	Rate of Application	Method of Application
Leaffooted Bugs, Navel Orangeworm, Peach Twig Borer, Plant Bugs, Stink Bugs	8 to 12 ounces (0.2 to 0.3 pound active) per acre	Use sufficient water to obtain full coverage of foliage. Apply Permethrin in a minimum of 10 gallons of finished spray per acre by aircraft or by ground equipment in 25-400 gallons of finished spray per acre.
Ants	12 ounces (0.3 pound active) per acre	Application should follow mowing of weed growth to insure maximum coverage of the soil surface. Overhead moisture following application will enhance activity.

Do not apply after 10% hull split.  
Maximum rate per application is 12 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 36 fl. oz. product per year.

**Potatoes (14 day phi)**

Insects Controlled	Rate of Application	Method of Application
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 to 8 ounces (0.1 to 0.2 pound active) per acre	Apply with ground equipment in a minimum of 10 gallons of finished spray per acre or in a minimum of 2 gallons per acre by aircraft. Permethrin may also be applied using refined non-volatile vegetable oil for control of listed pests. Permethrin 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.

Maximum rate per application is 8 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 32 fl. oz. product per year.

**Pumpkins:** For general use directions refer to the **Cucurbit Vegetables** crop grouping.

**Range Grass (New Mexico Only)**

Insects Controlled	Rate of Application	Method of Application
Range Caterpillar	0.4 ounces (0.01 pound active) per acre	Apply using sufficient spray volume to obtain uniform coverage. Apply with ground equipment in a minimum of 10 gallons of finished spray per acre or in a minimum of 2 gallons per acre by aircraft.

Do not apply more than once per year.  
Cattle may be present during application.  
Do not harvest or feed hay to livestock.

**Roses (Field Grown)**

Insects Controlled	Rate of Application	Method of Application
<i>Heliothis</i> spp.	4 to 8 fluid ounces (0.1 to 0.2 pound active) per acre	Permethrin may be applied with ground equipment in a minimum of 10 gallons of finished spray per acre or in a minimum of 2 gallons of finished spray per acre by aircraft.

**Roses (Greenhouse)**

Insects Controlled	Rate of Application	Method of Application
Beet Armyworm, Cabbage Looper, Omnivorous Leafroller	8 fluid ounces (0.2 pound active) per 100 gallons of water	Caution: Permethrin 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, and a small number of plants should be treated under local conditions to determine plant safety prior to commercial use.

**Soybeans (60 day phi)**

Insects Controlled	Rate of Application	Method of Application
Bean Leaf Beetle, Cabbage Looper, Corn Rootworm Beetles, Cutworms, Flea Beetle, Green Cloverworm, Japanese Beetle, Mexican Bean Beetle, Potato Leafhopper, Saltmarsh Caterpillar (Woollybear Caterpillar), Thistle Caterpillar, Velvetbean Caterpillar	2 to 4 ounces (0.05 to 0.1 pound active) per acre	Apply with ground equipment in a minimum of 10 gallons of finished spray per acre or in a minimum of 2 gallons per acre by aircraft. Permethrin may also be applied using refined non-volatile vegetable oil for control of listed pests. Permethrin 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.
Beet Armyworm, Corn Earworm, Soybean Looper, Webworms	4 to 8 ounces (0.1 to 0.2 pound active) per acre	

Maximum rate per application is 8 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 16 fl. oz. product per year.

**Spinach:** Refer to **Leafy Vegetable** crop grouping for general use directions. Do not apply more than 1.0 pound active ingredient per acre per season.

**Tomatoes, Tomatillos (0 day phi)**

Insects Controlled	Rate of Application	Method of Application
Beet Armyworm, Cabbage Looper, Colorado Potato Beetle, Granulate Cutworm, Hornworms, Southern Armyworm, Tomato Fruitworm, Tomato Pinworm, Vegetable Leafminers	2 to 8 ounces (0.05 to 0.2 pound active) per acre	Apply with ground equipment in a minimum of 10 gallons finished spray per acre or in a minimum of 2 gallons per acre by aircraft.

Maximum rate per application is 8 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 7 days.  
Seasonal Maximum Application Rate is 24 fl. oz. product per year (32 oz. in HI).

**Walnuts (1 day phi)**

Insects Controlled	Rate of Application	Method of Application
Codling Moth, Navel Orangeworm, Walnut Husk Fly	8 to 10 ounces (0.2 to 0.25 pound active) per acre	For full coverage application apply 0.05 to 0.1 pound active per 100 gallons (based on 400 gallons finished spray per acre), spray to run-off; OR, for low volume application apply 0.2 to 0.4 pound active per acre (25-200 gallons finished spray per acre). For aerial application apply 0.2 to 0.4 pound active in a minimum of 10 gallons of finished spray per acre. Apply when insects appear.

Maximum rate per application is 10 fl. oz. of product/Acre.  
Minimum Retreatment Interval is 10 days.  
Seasonal Maximum Application Rate is 30 fl. oz. product per year.

**Premises Spray**

For agricultural use only.  
Spray directly to walls and ceiling as residual surface treatment only. Do not treat manure or litter. Avoid contamination of feed and water. Do not apply directly to livestock or poultry.

For Application In	Target Insects	Method of Application	Dilute	Application Rate
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.	Sprayer	4 ounces to 12.5 gallons water	1 gallon per 750 square feet of surface

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 site.

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**Rate Conversion Chart**

<u>Pounds Active per Acre</u>	<u>Formulation</u>	<u>Ounces per Acre</u>
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

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

**STORAGE AND DISPOSAL**

**PESTICIDE STORAGE:** Do not store below 10°F. (- 12°C). Do not use or store near heat, open flame or hot surfaces. Keep out of reach of children and animals. Store in original containers only. Store in a cool dry place and avoid excess heat. Carefully open containers. After partial use replace lids and close tightly. Do not put concentrate or dilute material into food or drink containers. Do not contaminate other pesticides, fertilizers, water, food, or feed by storage or disposal. In case of spill, avoid contact, isolate area and keep out animals and unprotected persons. Confine spills. To confine spill: If liquid, dike surrounding area or absorb with sand, cat litter or commercial clay. If dry material, cover to prevent dispersal. Place damaged package in a holding container. Identify contents.

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

**CONTAINER DISPOSAL: Nonrefillable container.** Do not reuse this container to hold materials other than pesticides or dilute pesticides (rinsate). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact The Agricultural Container Recycling Council (ACRC) at [www.acrecycle.org](http://www.acrecycle.org).

Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

**Triple rinse as follows:** 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.

**Pressure rinse as follows:** Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

For help with any spill, leak, fire or exposure involving this material, call day or night CHEMTREC - 1-800-424-9300.

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