



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

March 21, 2019

Solito Sumulong  
Manager of Registrations  
Loveland Products, Inc.  
PO Box 1286  
Greeley, CO 80632

Subject: Label Amendment – Rearranging crop groups so they are in alphabetical order and minor label revisions.  
Product Name: Permethrin  
EPA Registration Number: 34704-873  
Application Date: April 23, 2018  
Decision Number: 540992

Dear Mr. Sumulong:

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

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

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

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Your release for shipment of the product constitutes acceptance of these conditions. If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6. If you have any questions, please contact Jennifer Gaines at 703-305-5967 or via email at [gaines.jennifer@epa.gov](mailto:gaines.jennifer@epa.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Elizabeth Fertich". The signature is written in a cursive style with a large initial "E".

Elizabeth Fertich  
Product Manager 04  
Invertebrate & Vertebrate Branch 1  
Registration Division (7505P)  
Office of Pesticide Programs

Enclosure

**RESTRICTED USE PESTICIDE**

**Due to toxicity to fish and aquatic organisms**

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

**PERMETHRIN    GROUP    3    INSECTICIDE**



# Permethrin

**ACTIVE INGREDIENT:**

	<b>By Wt.</b>
Permethrin: (3-Phenoxyphenyl)methyl (±) cis-trans 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate* .....	<b>38.4%</b>
OTHER INGREDIENTS **: .....	<b>61.6%</b>
<b>TOTAL</b>	<b>100.0%</b>

\* *cis/trans* ratio: Maximum 55% (±) *cis* and minimum 45% (±) *trans*

\*\* Contains petroleum distillate

Contains 3.2 pounds permethrin per gallon.

[Editor's Note for Reviewers: [Brackets] indicate optional passages or passages that depend on packaging.]

**KEEP OUT OF REACH OF CHILDREN**

**WARNING**

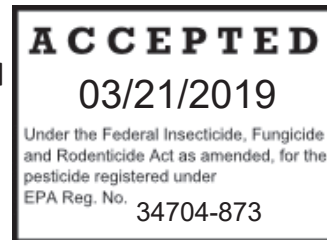
**AVISO**

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

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.)

[For Additional Precautionary Statements, Directions for Use, Storage and Disposal and Other Use Information, See Inside the Label Booklet.]



<b>FIRST AID</b>	
<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 by a poison control center or doctor.</li> <li>• Do not give anything by mouth to an unconscious person.</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 to 20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If inhaled:</b>	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
<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>
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
<b>FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565.</b>	
<b>Note To Physician:</b> Contains petroleum distillates. Vomiting may cause aspiration pneumonia. Probable mucosal damage may contraindicate the use of gastric lavage.	

EPA Reg. No.: 34704-873

EPA Est. No.: 279-FL-001

Net Contents: 1.0 GAL (3.78 L)

[Print code]

[EPA MASTER LABEL—Label ID 03/18]

Formulated for  
Loveland Products Inc.,  
P.O. Box 1286, Greeley, CO 80632-1286

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS  
WARNING**

Harmful if swallowed, absorbed through skin or inhaled. Causes skin irritation. Causes moderate eye irritation. Do not get on skin or clothing. Avoid breathing spray mist. Avoid contact with eyes. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse.

**Personal Protective Equipment (PPE):**

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

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

- Coveralls over long-sleeved shirt and long pants,
- Chemical-resistant gloves,
- Chemical-resistant footwear plus socks, and
- Protective eyewear.

When mixing and loading, wear a chemical resistant apron.

For overheard exposure, wear chemical-resistant headgear.

When cleaning equipment, wear a chemical-resistant apron.

- 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 or heavily contaminated with this product's concentrate. Do not reuse them.

**Engineering Controls:**

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

**USER SAFETY RECOMMENDATIONS**

**Users should:**

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

**ENVIRONMENTAL HAZARDS**

This pesticide is extremely toxic to 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 absorbed 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 foraging the treatment area.

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

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

**PHYSICAL/CHEMICAL HAZARDS**

Do not use or store near heat or open flame.

**DIRECTIONS FOR USE**  
**RESTRICTED USE PESTICIDE**

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

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.

**Use Restrictions:**

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

Use in a handheld cold or thermal fogger is prohibited.

Not for use in outdoor residential misting systems.

Do not breathe dusts, vapors, or spray mist. Do not enter or allow others to enter until vapors, mists, and aerosols have dispersed and the treated area has been thoroughly ventilated.

**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

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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.

This product 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**

This product 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 shallow incorporated. The higher listed rate should be used if incorporation is used.

**Impregnation:** Apply using a minimum of 200 pounds of dry bulk fertilizer per acre and up to a maximum of 450 pounds per acre with the recommended amount of this product 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 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 actual amount of Permethrin required in the preparation of individual fertilizer mixtures should be determined carefully for each production operation. This is necessary to ensure that the actual amount of pesticide contained in the mixture applied to the soil represents the correct rate of use. Bulk fertilizer impregnated with this product 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.

### **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.

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**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 2 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.

**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.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs143\\_023819.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_023819.pdf).

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

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

**Buffer Zone for ULV Aerial Application:**

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

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**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, permanent streams, marshes, natural ponds, estuaries, and commercial fish ponds).

**APPLICATION INSTRUCTIONS**

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

**Resistance-Management Recommendations**

For resistance management, this product contains a Group 3 insecticide. Any insect population may contain individuals naturally resistant to this product and other Group 3 insecticides. The resistant individuals may dominate the insect population if this group of insecticides are used repeatedly in the same fields. Appropriate resistance-management strategies should be followed.

To delay insecticide/acaricide resistance, take the following steps:

- Rotate the use of this product or other Group 3 insecticides within a growing season, or among growing seasons, with different groups that control the same pests. Avoid application of more than the prescribed number of and consecutive sprays of this product or other insecticides in the same group in a season.
- Use tank mixtures with insecticides from a different group that are equally effective on the target pest when such use is permitted. Do not rely on the same mixture repeatedly for the same pest population. Consider any known cross-resistance issues (for the targeted pests) between the individual components of a mixture. In addition, consider the following recommendations provided by the Insecticide Resistance Action Committee (IRAC):
  - Individual insecticides selected for use in mixtures should be highly effective and be applied at the rates at which they are individually registered for use against the target species.
  - Mixtures with components having the same IRAC mode of action classification are not recommended for insect resistance management.
  - When using mixtures, consider any known cross-resistance issues between the individual components for the targeted pest(s).
  - Mixtures become less effective if resistance is already developing to one or both active ingredients, but they may still provide pest management benefits.
  - The insect resistance management benefits of an insecticide mixture are greatest if the two components have similar periods of residual insecticidal activity. Mixtures of insecticides with unequal periods of residual insecticide activity may offer an insect resistance management benefit only for the period where both insecticides are active.
- Adopt an integrated pest management program for insecticide use that includes scouting, uses historical information related to pesticide use, crop rotation, record keeping, and which considers cultural, biological and other chemical control practices.
- Monitor after application for unexpected target pest survival. If the level of survival suggests the presence of resistance, consult with your local university specialist or certified pest control advisor.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or IPM recommendations for the specific site and pest problems in your area.
- For further information or to report suspected resistance, contact Loveland Products at 888-574-2878 or at [lovelandproducts.com](http://lovelandproducts.com).

Permethrin is a 3.2-pound-per-gallon formulation of the insecticide permethrin. Apply Permethrin when insects appear or feeding is noticed. The higher listed 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 must not be planted within 60 days of last application.

Not for use in outdoor residential misting systems.

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



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**ALFALFA (INCLUDING ALFALFA GROWN FOR SEED)**

(Includes birdsfoot trefoil, esparcet, holy clover, lucerne, sainfoin, and varieties and/or hybrids of these)

<b>Insects Controlled</b>	<b>Application Rate</b>	<b>Maximum number of applications</b>	<b>Minimum re-treatment interval</b>	<b>Pre-harvest interval</b>	<b>Method of application</b>
Alfalfa caterpillar Armyworms Blue alfalfa aphid Cutworms Green cloverworm Green peach aphid Loopers Pea aphid Spotted alfalfa aphid Velvetbean caterpillar Webworms	2.0 to 8.0 oz product/A (0.05 to 0.20 lb permethrin AI/A)	1 per cutting	30 days	0 days for applications at 0.1 lb AI/A or less  14 days for applications > 0.1 lb AI/A	Use higher listed dosage for increased pest pressure or for increased residual pest control. Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.  <b>For alfalfa grown for seed in Arizona:</b> Apply in at least 5.0 gal/A finished spray with ground equipment or 5.0 gal/A of finished spray by aircraft.  <b>For alfalfa grown for seed in California:</b> Apply in at least 10.0 gal/A finished spray by aircraft.
Alfalfa Weevil Cucumber beetle Egyptian alfalfa weevil Meadow spittlebug Plant bugs (including <i>Lygus</i> spp.) Potato leafhopper Stink bugs	4.0 to 8.0 oz product/A  (0.1 to 0.2 lb permethrin AI/A)				

**USE RESTRICTIONS**

Apply no more than 0.2 lb permethrin AI/A/cutting.

Do not make applications less than 30 days apart.

Do not apply to mixed stands with intentionally-grown forage grasses and/or legumes.

**For alfalfa grown for seed:** Do not feed treated hay or straw. Do not use seed for feed or food.

**ALMONDS**

<b>Insects Controlled</b>	<b>Application Rate</b>	<b>Maximum number of applications</b>	<b>Minimum re-treatment interval</b>	<b>Pre-harvest Interval</b>	<b>Method of application</b>
Navel orangeworm Peach twig borer	8.0 to 10.0 oz product/A (0.20 to 0.25 lb permethrin AI/A)	3	10 days	7 days	Apply when insects appear. Apply by aircraft in at least 15.0 gal/A finished spray or with ground equipment in 25.0 to 400 gal/A finished spray.
Ants	10.0 oz product/A (0.25 lb permethrin AI/A)				Apply by ground equipment in at least 15.0 gal/A finished spray.

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					Application should follow mowing of weed growth to ensure maximum coverage of the soil surface. Overhead moisture following application will enhance activity.
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**USE RESTRICTIONS**

Apply no more than 0.75 lb permethrin AI/A/season.  
Do not graze livestock in treated areas or feed cover crops from treated areas to livestock.

**APPLES**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Method of application
Green fruitworm Leafminer Oblique banded leafroller Plum curculio Redbanded leafroller Rosy apple aphid Spotted tentiform leafminer Tarnished plant bug White apple leafhopper	4.0 to 10.0 oz product/A (0.10 to 0.25 lb permethrin AI/A)	2	10 days	Apply only with ground equipment in 25.0 to 400 gal/A finished spray when insects appear.

**USE RESTRICTIONS**

Apply no more than 0.5 lb permethrin AI/A/season.  
Do not apply after petal fall.  
Do not graze livestock in treated areas or feed cover crops from treated areas to livestock.

**ARTICHOKE**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Artichoke plume moth Leafminers	4.0 to 12.0 oz product/A (0.1 to 0.3 lb permethrin AI/A)	3	10 days	0 days	Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray. Buds may be harvested on the day of application.

**USE RESTRICTIONS**

Apply no more than 0.9 lb permethrin AI/A/season.

**ASPARAGUS**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Asparagus beetle (except post-harvest) Cutworms	2.0 to 4.0 oz product/A	4	7 days	1 day	Apply with ground equipment in at least 10.0 gal/A finished spray.

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	(0.05 to 0.10 lb permethrin AI/A)				
Asparagus beetle (post-harvest) Japanese beetle (adult stage) * Lygus bugs Tarnished plant bug	4.0 oz product/A (0.10 lb permethrin AI/A)				Apply with ground equipment in at least 10.0 gal/A finished spray.  For post-harvest applications, apply at the maximum rate to the fern stage of the asparagus plant after spear harvest when larval and adult stage are present.
<b>USE RESTRICTIONS</b> *Not for control of Japanese Beetle adults in California. Apply no more than 0.4 lb permethrin AI/A/season.					

**AVOCADO**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	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	8.0 oz product/A (0.20 lb permethrin AI/A)	4	7 days	7 days	Apply with ground equipment in 25.0 to 400 gal/A finished spray. Apply when insects first appear and repeat as needed to provide control.
<b>USE RESTRICTIONS</b> Apply no more than 0.8 lb permethrin AI/A/season. Do not graze livestock in treated areas or feed cover crops from treated areas to livestock.					

**BROCCOLI; BROCCOLI, CHINESE**

(including gai lon, white flowering broccoli)

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Armyworm spp. Cabbage looper	2.0 to 8.0 oz product/A	5	4 days	1 day	Apply with ground equipment in at least 10.0 gal/A finished spray or by

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Diamondback moth Imported cabbageworm Plant bugs Thrips	(0.05 to 0.20 lb permethrin AI/A)				aircraft in at least 2.0 gal/A finished spray.
<b>USE RESTRICTIONS</b> Apply no more than 0.8 lb permethrin AI/A/season.					

**BRUSSELS SPROUTS**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Armyworm spp. Cabbage looper Diamondback moth Imported cabbageworm Plant bugs Thrips	2.0 to 4.0 oz product/A (0.05 to 0.10 lb permethrin AI/A)	4	5 days	1 day	Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.
<b>USE RESTRICTIONS</b> Apply no more than 0.4 lb permethrin AI/A/season.					

**CABBAGE; CABBAGE, CHINESE (NAPA)**

(tight-heading varieties only)

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Cabbage Looper Diamondback moth Imported cabbageworm Southern white butterfly	2.0 to 8.0 oz product/A (0.05 to 0.20 lb permethrin AI/A)	2 (4 in Hawaii)	5 days	1 day	Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.
Armyworm spp. Cutworms Flea beetles	4.0 to 8.0 oz product/A (0.1 to 0.2 lb permethrin AI/A)				
<b>USE RESTRICTIONS</b> Apply no more than 0.4 lb permethrin AI/A/season, and 0.8 in Hawaii.					

**CANTALOUPE**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Cabbage looper Cucumber beetle (adults) Cutworms Leafhoppers Melonworm	4.0 to 8.0 oz product/A (0.1 to 0.2 lb permethrin AI/A)	4 (6 in Hawaii)	7 days	0 days	Apply with ground equipment in at least 20.0 gal/A finished spray or by aircraft in at least 4.0 gal/A finished spray.

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Pickleworm Plant bugs (including Lygus and Stink bugs) Rindworms Squash vine borer					
Aphids Leafminers Squash bug	8.0 oz product/A (0.20 lb permethrin AI/A)				

**USE RESTRICTIONS**

Apply no more than 0.8 lb permethrin AI/A/season, and 1.2 in Hawaii.

**CAULIFLOWER**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Armyworm spp. Cabbage looper Diamondback moth Imported cabbageworm Plant bugs Thrips	2.0 to 4.0 oz product/A (0.05 to 0.10 lb permethrin AI/A)	4 (6 in Hawaii)	5 days	1 day	Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.

**USE RESTRICTIONS**

Apply no more than 0.4 lb permethrin AI/A/season, and 0.6 in Hawaii.

**CHERRIES**

(includes Sweet and Tart)

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Green fruitworm Lesser peach tree borer Plum curculio Redbanded leafroller Rose chafer Tarnished plant bug	4.0 to 8.0 oz product/A (0.1 to 0.2 lb permethrin AI/A)	3	10 days	3 days	Use this product as a dilute spray. Apply when insects appear. Apply with ground equipment in 25.0 to 400 gal/A finished spray.

**USE RESTRICTIONS**

Apply no more than 0.6 lb permethrin AI/A/season.  
Do not graze livestock in treated areas.  
Do not feed cover crops from treated areas to livestock.

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**CHRYSANTHEMUMS**

For Terrestrial Non-Food Use. See Leafy Greens Section for Food Use Instructions.

Insects Controlled	Application Rate	Method of application
Liriomyza leafminer flies	20.0 oz product (0.5 lb permethrin AI)/100 gal (1.0 tsp/gal)	Avoid spraying the blooms. Permethrin may be applied on a weekly schedule. <b>Caution:</b> Permethrin has demonstrated excellent plant safety, however, not all cultivars have been tested. Before treating large numbers of plants of a cultivar, treat a few plants and observe prior to full-scale applications.

**COLLARDS**

(only in AR, AZ, GA, IL, NC, OK, SC, and TX)

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Aphids * Beet armyworm Cabbage looper Corn earworm Cutworms Diamondback moth European corn borer Fall armyworm Green cloverworm Imported cabbageworm Leafhoppers Leafminer Southern armyworm Southern white butterfly Tobacco budworm Vegetable leafminer	2.0 to 6.0 oz product/A (0.05 to 0.15 lb permethrin AI/A)	3	3 days	1 day	Apply with ground equipment only with at least 10.0 gal/A finished spray. Apply when insects first appear and repeat as needed to provide control.  <b>For aerial use in Arkansas, Indiana, and Texas only:</b> Apply in at least 1.0 gal/A finished spray.

**USE RESTRICTIONS**

\* Suppression only.  
Apply no more than 0.45 lb permethrin AI/A/season.

**CONIFERS (CONTAINER AND FIELD GROWN)**

Insects Controlled	Application Rate	Method of application
Nantucket pine tip moth	4.0 to 8.0 oz product/A (0.1 to 0.2 lb permethrin AI/A)	Permethrin may be diluted in a non-volatile vegetable oil or water in a minimum of 1.0 gal/A finished spray using equipment calibrated to give adequate coverage. Begin application when the adults appear and repeat at 5- to 7-day intervals throughout the season.

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**CONIFERS (NURSERIES)**

(nurseries only in Alabama and Georgia)

Insects Controlled	Application Rate	Method of application
Regeneration weevil	64.0 oz product (1.6 lb permethrin AI)/100,000 trees	For nurseries only: Apply this product in enough water to achieve thorough coverage.

**CORN (FIELD CORN, FIELD CORN GROWN FOR SEED, and POPCORN)**

Insects Controlled	Application Rate	Maximum number of applications/ SEASON	Minimum re-treatment interval	Pre-harvest interval	PRE-EMERGENT method of application
Armyworms Cutworms Seed corn maggot * Stalk borers Wireworm *	4.0 to 6.0 oz product/A (0.10 to 0.15 lb permethrin AI/A)  OR  0.30 to 0.45 oz product/1000 lin ft of row (based on a 4" band and 40" row spacing)	3	7 days	0 days for forage  30 days for grain and fodder (stover)	This product may be applied as a pre-plant incorporated, pre-emergence, or at-planting time application. Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray or 4" to 15" band using sufficient spray volume to achieve adequate coverage. Use linear row calculations proportional to the standard Band Width/Row Width formula to adjust rates for different band widths or row spacings. Use higher rates of this product when incorporating into the soil without exceeding the listed 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.

**USE RESTRICTIONS**

\* Not for use in California.

Apply no more than 0.45 lb permethrin AI/A/season, including other methods of application.

Insects Controlled	Application Rate	Maximum number of applications/ SEASON	Pre-harvest interval	AT-PLANT method of application												
Armyworms Cutworms Seed corn maggot * Wireworm *	0.30 oz product/1000 lin ft of row (based on a 4" band and 40" row spacing)	3	0 days for forage  30 days for grain and fodder (stover)	Apply as an in-furrow, band or T-band treatment using a minimum 4" band. Use table below to determine the product needs for each acre.  <b>At-plant needs for each acre</b> <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Row Spacing (in) at 0.3 fl oz rate</th> <th>40.0</th> <th>30.0</th> <th>20.0</th> </tr> </thead> <tbody> <tr> <td>Product oz/A</td> <td>4.0</td> <td>6.0</td> <td>6.0</td> </tr> <tr> <td>Lb Permethrin AI/A</td> <td>0.10</td> <td>0.15</td> <td>0.15</td> </tr> </tbody> </table>	Row Spacing (in) at 0.3 fl oz rate	40.0	30.0	20.0	Product oz/A	4.0	6.0	6.0	Lb Permethrin AI/A	0.10	0.15	0.15
Row Spacing (in) at 0.3 fl oz rate	40.0	30.0	20.0													
Product oz/A	4.0	6.0	6.0													
Lb Permethrin AI/A	0.10	0.15	0.15													

**USE RESTRICTIONS**

\* Not for use in California.

Apply no more than 0.15 lb permethrin AI/A/season as an at-plant application.

Insects Controlled	Application Rate	Maximum number of applications/ SEASON	Minimum re-treatment interval	Pre-harvest interval	FOLIAR method of application
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Western bean cutworm	2.0 to 4.0 oz product/A (0.05 to 0.10 lb permethrin AI/A)	3	7 days	0 days for forage  30 days for grain and fodder (stover)	When treating for stalk borers, this product must be applied when or shortly before the stalk borer larvae are moving into the corn from surrounding weeds and grasses. Mowing or using burndown herbicide are suggested to initiate movement.  For control of <b>Corn Earworm</b> apply just before silking and continue at intervals of at least 7 days as needed to provide control. Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.
Armyworm (including Fall armyworm) Corn borer (including European and Southwestern corn borer) Corn earworm Corn rootworm beetles Cutworms Flea beetle Hop vine borer Stalk borers Webworms	4.0 to 6.0 oz product/A (0.10 to 0.15 lb permethrin AI/A)				

**USE RESTRICTIONS**

Apply no more than 0.45 lb permethrin AI/A/season, including other methods of application.

**CORN, SWEET**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Corn earworm Corn rootworm beetles* Cutworms European corn borer Fall armyworm Flea beetle Hop vine borer Leafhoppers Southern armyworm Stalk borers	4.0 to 8.0 oz product/A (0.1 to 0.2 lb permethrin AI/A)	4	3 days	1 days	Apply when insects first appear and repeat at 3- to 5-day intervals as needed to provide control. Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.

**USE RESTRICTIONS**

\* Pest does not occur on this crop in California.  
Apply no more than 0.8 lb permethrin AI/A/season.

**CUCURBIT VEGETABLES CROP GROUP 9 (except CANTALOUPE)**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Cabbage looper Cucumber beetle (adults) Cutworms Leafhoppers Melonworm	4.0 to 8.0 oz product/A (0.1 to 0.2 lb permethrin AI/A)	4	7 days	0 days	Apply with ground equipment in at least 20.0 gal/A finished spray or by aircraft in at least 4.0 gal/A finished spray.



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Pickleworm Plant bugs (including Lygus and Stink bugs) Rindworms Squash vine borer					
Aphids Leafminers Squash bug	8.0 oz product/A (0.2 lb permethrin AI/A)				
<b>USE RESTRICTIONS</b> Apply no more than 0.8 lb permethrin AI/A/season.					

**EGGPLANTS**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Cabbage looper Flea beetles Vegetable leafminer	4.0 to 6.0 oz product/A (0.10 to 0.15 lb permethrin AI/A)	4 (For exception in Hawaii, please refer to USE RESTRICTIONS)	7 days	3 days	Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray. Apply using sufficient water to obtain uniform coverage.
Colorado potato beetle	6.0 oz product/A (0.15 lb permethrin AI/A)				
<b>USE RESTRICTIONS</b> Apply no more than 0.6 lb permethrin AI/A/season, and 1.0 in Hawaii.					

**FILBERTS (HAZELNUTS)**

Insects Controlled	Application Rate	Maximum number of applications	Pre-harvest interval	Method of application
Filbertworm Oblique banded leafroller	8.0 to 10.0 oz product/A (0.20 to 0.25 lb permethrin AI/A)	3	14 days	Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in 25.0 or 50.0 gal/A finished spray. Apply when insects first appear.
<b>USE RESTRICTIONS</b> Apply no more than 0.75 lb permethrin AI/A/season. Do not graze livestock in treated areas or feed cover crops from treated orchards to livestock.				

**GARLIC**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Armyworms Onion thrips	4.0 to 8.0 oz product/A (0.1 to 0.2 lb permethrin AI/A)	4	10 days	1 days	Apply with ground equipment in at least 20.0 gal/A finished spray or by aircraft in at least 5.0 gal/A finished spray. Begin applications when pests appear. Use the higher label rates as <b>Onion Thrips</b> population increases and avoid rescue situations.
Cutworms Leafminers	6.0 to 8.0 oz product/A				

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Onion maggots (adults) Stink Bugs	(0.15 to 0.20 lb permethrin AI/A)				
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**USE RESTRICTIONS**

Apply no more than 0.8 lb permethrin AI/A/season.

**GRASS, RANGELAND**

(New Mexico only)

Insects Controlled	Application Rate	Maximum number of applications	Method of application
Range caterpillar	0.4 oz product/A (0.01 lb permethrin AI/A)	1	Apply using sufficient spray volume to obtain uniform coverage. Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.

**USE RESTRICTIONS**

Cattle may be present during application.  
Do not harvest or feed hay to livestock.

**HORSERADISH**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Imported crucifer weevil ( <i>Baris lepidii</i> )	33.3 oz product/100 gal (0.83 lb permethrin AI/100 gal) (0.1% permethrin AI solution)	1	n/a	30 days	As a <b>spring pre-plant dip</b> , soak sets for 30 minutes and air-dry before planting.
	6.0 oz product/A (0.15 lb permethrin AI/A)	3	10 days		Apply with <b>ground equipment</b> in at least 20.0 gal/A finished spray.

**USE RESTRICTIONS**

Apply no more than 0.45 lb permethrin AI/A/season.

**KOHLRABI**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Armyworm spp. Cabbage looper Diamondback moth Imported cabbageworm Plant bugs Thrips	2.0 to 4.0 oz product/A (0.05 to 0.10 lb permethrin AI/A)	4 (6 in Hawaii)	5 days	1 day	Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.

**USE RESTRICTIONS**

Apply no more than 0.4 lb permethrin AI/A/season, and 0.6 in Hawaii.

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**LEAFY GREENS SUBGROUP 4A (EXCEPT SPINACH)**

includes: Amaranth; Arugula; Chervil; Chrysanthemum, edible-leaved and garland; Corn salad; Cress, garden and upland; Dandelion; Dock; Endive; Lettuce, head and leaf; Orach; Parsley; Purslane, garden and winter; Radicchio

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Alfalfa looper Cabbage looper Leafhoppers	2.0 to 8.0 oz product/A (0.05 to 0.20 lb permethrin AI/A)	4 (6 in Hawaii)	7 days	1 days	Apply when insects first appear and repeat as needed by air or ground to provide control. Use sufficient water to obtain full coverage of foliage. Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.
Aphids Beet armyworm Corn earworm Cutworms European corn borer Fall armyworm Green cloverworm Leafminers Southern armyworm Tobacco budworm	4.0 to 8.0 oz product/A (0.1 to 0.2 lb permethrin AI/A)				
<b>USE RESTRICTIONS</b> Apply no more than 0.8 lb permethrin AI/A/season, and 1.2 in Hawaii.					

**LEAFY PETIOLES SUBGROUP 4B**

includes: Cardoon; Celery; Celery, Chinese; Celtuce; Fennel, Florence (sweet anise, sweet fennel, finocchio); Rhubarb; Swiss chard

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Alfalfa looper Cabbage looper Leafhoppers	2.0 to 8.0 oz product/A (0.05 to 0.20 lb permethrin AI/A)	5 (6 in Hawaii)	7 days	1 days	Apply when insects first appear and repeat as needed by air or ground to provide control. Use sufficient water to obtain full coverage of foliage. Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.
Aphids Beet armyworm Corn earworm Cutworms European corn borer Fall armyworm Green cloverworm Leafminers Southern armyworm Tobacco budworm	4.0 to 8.0 oz product/A (0.1 to 0.2 lb permethrin AI/A)				

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**USE RESTRICTIONS**

Apply no more than 1.0 lb permethrin AI/A/season, and 1.2 in Hawaii.

**MUSHROOMS**

(Mushroom houses and adjacent premise areas)

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Mushroom flies (Sciariid and Phorid adults)	2.0 to 2.5 oz (0.0500 to 0.0625 lb AI)/30.0 oz water or suitable diluent. Use 1 qt solution/standard double house (35,000 ft <sup>3</sup> /8,000 ft <sup>2</sup> )	30 per crop of 5 breaks	1 day	3 days	Apply as a <b>fogging or aerosol treatment</b> . 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.

**USE RESTRICTIONS**

Use of high-pressure hand wand prohibited in mushroom houses.

Make no more than 20 applications prior to pinning of first break; make no more than 2 applications between each break. Limit the length of exposure to 1 hour; then ventilate the house. Use fans to ventilate in houses that do not have forced air circulation. Wear a powered air purifying respirator equipped with either an organic vapor removing cartridge plus a high efficiency (HE) filter (NIOSH approval number prefix TC23C), or a powered air purifying canister-type respirator (gas-mask) equipped with an organic vapor canister that incorporates HE filters (NIOSH approval number prefix TC-14G).

**NECTARINES, PEACHES**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Green fruitworm Lesser peach tree borer Oriental fruit moth Peach twig borer Plum curculio Rose chafer Tarnished plant bug	4.0 to 10.0 oz product/A (0.10 to 0.25 lb permethrin AI/A)	3	10 days	14 days	Apply with ground equipment in 25.0 to 400 gal/A finished spray or by aircraft in at least 10.0 gal/A finished spray. Spray to wet all foliage.

**USE RESTRICTIONS**

Apply no more than 0.75 lb permethrin AI/A/season. Do not graze livestock in treated areas or feed cover crops from treated areas to livestock.

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**ONIONS (DRY BULB ONLY)**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Armyworms Onion thrips	4.0 to 12.0 oz product/A (0.1 to 0.3 lb permethrin AI/A)	Please refer to USE RESTRICTIONS	7 days	1 days	Apply with ground equipment in at least 20.0 gal/A finished spray or by aircraft in at least 5.0 gal/A finished spray. Begin applications when pests appear. Use the higher label rates as <b>Onion Thrips</b> population increases and avoid rescue situations.
Cutworms Leafminers Onion maggots (adults) Stink bugs	6.0 to 12.0 oz product/A (0.15 to 0.30 lb permethrin AI/A)				
<b>USE RESTRICTIONS</b> Apply no more than 1.0 lb permethrin AI/A/season.					

**ORNAMENTAL NURSERY STOCK (FIELD AND CONTAINER GROWN)**

Insects Controlled	Application Rate	Method of application
Ants Aphids Bagworm Beet armyworm Birch leafminer Cabbage looper Citrus thrips Fungus gnats <i>Heliothis</i> spp. Japanese beetles Lace bug Leafhoppers Leafminers Leafrollers Lygus bugs Pinesaw flies Plant bugs Root weevils (adults) Webworms Whiteflies Zimmerman pine moths	4.0 to 8.0 oz product (0.1 to 0.2 lb permethrin AI)/ 100 gal water	Permethrin may be used to control specified pests on non-edible ornamental and non-bearing plants of fruiting species. <b>Caution:</b> 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.

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**ORNAMENTAL TREES**

Insects Controlled	Application Rate	Method of application
Ash borer Banded ash clearwing Clearwing moth borer Dogwood borer Lesser peachtree borer Lilac borer Oak borer Rhododendron borer	1.0 to 2.0 qt/ 100 gal (0.8 to 1.6 lb permethrin AI/A)	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.
<b>Bark Beetles:</b> <i>Dendroctonus</i> spp. Elm bark beetles Mountain pine beetles Pine engravers Turpentine beetles Western pine beetles  <b>Coleopteran borers:</b> Bronze birch borer Flatheaded borer	2.0 to 5.0 qt/100 gal (1.6 to 4.0 lb permethrin AI/A)	
For the maximum residual control of the above listed pests	5.35 qt/100 gal (4.28 lb permethrin AI/A)	

**PAPAYA**

(Florida only)

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Aphids Brown soft scale Mealybug Papaya fruit fly Papaya webworm Papaya whitefly Scale crawlers	6.0 oz product/A (0.15 lb permethrin AI/A)	5	10 days	7 days	Apply with ground equipment in 25.0 to 400 gal/A finished spray. Apply when insects first appear and repeat as needed to provide control.

**USE RESTRICTIONS**

Apply no more than 0.75 lb permethrin AI/A/season.  
Do not graze livestock in treated areas.  
Do not feed cover crops from treated areas to livestock.

**PEARS**

Insects Controlled	Application Rate	Minimum re-treatment interval	Method of application
Pear psylla	8.0 to 16.0 oz product/A (0.2 to 0.4 lb permethrin AI/A)	10 days	Apply at this rate and for this pest <b>during the dormant through delayed dormant growth periods only</b> . This product may be combined with 2.0 to 8.0 gal spray oil/A.

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			Apply with ground equipment in 25.0 to 400 gal/A finished spray or by aircraft in at least 10.0 gal/A finished spray.
Codling moth Green fruitworm Pear psylla	8.0 to 10.0 oz product/A (0.20 to 0.25 lb permethrin AI/A)		Sprays can be applied at this rate for these pests <b>pre-bloom: from dormant through bud burst stages.</b>
<b>USE RESTRICTIONS</b> Apply no more than 0.65 lb permethrin AI/A/season. Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock.			

**PEPPERS, BELL**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Cabbage looper Corn earworm Cutworms Flea beetle Pepper weevil Vegetable leafminer	4.0 to 8.0 oz product/A (0.1 to 0.2 lb permethrin AI/A)	4	5 days	3 days	Apply using sufficient water to obtain uniform coverage. Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.
European corn borer	8.0 oz product/A (0.2 lb permethrin AI/A)				
<b>USE RESTRICTIONS</b> Apply no more than 0.8 lb permethrin AI/A/season.					

**PINE SEED ORCHARDS**

Insects Controlled	Application Rate	Method of application
Cone worms Seed bugs	8.0 to 16.0 oz product (0.2 to 0.4 lb permethrin AI)/A	<b>Ground application:</b> Depending on the type of sprayer system, use at least 25.0 gal/A finished spray for low-volume, and at least 400 gal/treated A for high-volume applications. Repeat applications at 4-week intervals. Make up to 3 applications/season. To control <b>webbing coneworm</b> : Make first application within 1 week of female flower closure or peak pollen flight. To control <b>other coneworms and seed bugs</b> : Make first application within 30 days following female flower closure.
	24.0 oz product (0.6 lb permethrin AI)/A	<b>Aerial application:</b> Apply in at least 5.0/A finished spray. Apply once/season. To control <b>webbing coneworm</b> : Make only application within 1 week of female flower closure or peak pollen flight. To control <b>other coneworms and seed bugs</b> : Make only application within 30 days following female flower closure.
<b>USE RESTRICTIONS</b> Do not graze livestock in treated areas. Do not feed cover crops from treated areas to livestock. Harvesting of conifer seed cones is prohibited within 30 days of application.		

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**PISTACHIOS**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Leaffooted bugs Navel orangeworm Peach twig borer Plant bugs Stink bugs	8.0 to 12.0 oz product/A (0.2 to 0.3 lb permethrin AI/A)	3	10 days	0 days	Use sufficient water to obtain full coverage of foliage. Apply with ground equipment in 25.0 to 400 gal/A finished spray or by aircraft in at least 10.0 gal/A finished spray.
Ants	12.0 oz product/A (0.3 lb permethrin AI/A)				Application should follow mowing of weed growth to ensure maximum coverage of the soil surface. Overhead moisture following application will enhance activity.

**USE RESTRICTIONS**

Apply no more than 0.9 lb permethrin AI/A/season.  
Do not apply after 10% hull split.  
Do not graze livestock in treated areas.  
Do not feed cover crops from treated areas to livestock.

**POTATOES**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	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	4.0 to 8.0 oz product/A (0.1 to 0.2 lb permethrin AI/A)	4	10 days	14 days	Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray. This product may also be applied using refined nonvolatile vegetable oil for control of listed pests. Dilute this product with oil and apply in at least 1 qt/A total volume using equipment calibrated to give adequate coverage. Use sufficient spray volume to obtain full coverage.

**USE RESTRICTIONS**

Apply no more than 0.8 lb permethrin AI/A/season.



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**ROSES (FIELD GROWN)**

Insects Controlled	Application Rate	Method of application
<i>Heliothis</i> spp.	4.0 to 8.0 oz product (0.1 to 0.2 lb permethrin AI)/A	Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.

**ROSES (GREENHOUSE)**

Insects Controlled	Application Rate	Remarks
Beet Armyworm Cabbage Looper Omnivorous Leafroller	8.0 oz product (0.2 lb permethrin AI)/A	<b>Caution:</b> This product is not phytotoxic to the following varieties of greenhouse roses: Ballena, Bettina, Cara Mia, Coquette, Excitement, Forever Yours, G. Wave, Jack Frost, Junior Bridesmaid, Matador, Paul's Pink, Samantha, Seventeen, Sonia, Town Crier, Tropicana and Visa. Other varieties may vary in their sensitivity to this product and a small number of plants should be treated under local conditions to determine plant safety prior to commercial use.

**SOYBEANS**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Bean leaf beetle Cabbage looper Corn rootworm beetles Cutworms Flea beetle Green cloverworm Japanese beetle Mexican bean beetle Potato leafhopper Thistle caterpillar Velvetbean caterpillar Woollybear caterpillar, including Saltmarsh caterpillar	2.0 to 4.0 oz product/A (0.05 to 0.10 lb permethrin AI/A)	2	10 days	60 days 40 days *	Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray. This product may also be applied using refined nonvolatile vegetable oil for control of listed pests. Dilute this product with oil and apply in at least 1 qt/A total volume using equipment calibrated to give adequate coverage. Use sufficient spray volume to obtain full coverage. When applying in water by aircraft, 1.0 qt oil may be substituted for 1.0 qt water/gal finished spray.
Beet armyworm Corn earworm Soybean looper Webworms	4.0 to 8.0 oz product/A (0.1 to 0.2 lb permethrin AI/A)				

**USE RESTRICTIONS**

Apply no more than 0.4 lb permethrin AI/A/season.  
Do not graze or feed soybean forage or hay.

\* In AR, FL, LA, MS, OK and TX only and at a 4.0 oz product/A rate or less.

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**SPINACH**

Includes: New Zealand spinach and Vine spinach

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Alfalfa looper Cabbage looper Leafhoppers	2.0 to 8.0 oz product/A (0.05 to 0.20 lb permethrin AI/A)	3	3 days	1 days	Apply when insects first appear and repeat at 3- to 5-day intervals as needed by air or ground to provide control.  Use sufficient water to obtain full coverage of foliage. Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.
Aphids Beet armyworm Corn earworm Cutworms European corn borer Fall armyworm Green cloverworm Leafminers Southern armyworm Tobacco budworm	4.0 to 8.0 oz product/A (0.1 to 0.2 lb permethrin AI/A)				

**USE RESTRICTIONS**

Apply no more than 0.6 lb permethrin AI/A/season.

**TOMATILLOS, TOMATOES**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Beet armyworm Cabbage looper Colorado potato beetle Granulate cutworm Hornworms Southern armyworm Tomato fruitworm Tomato pinworm Vegetable leafminers	2.0 to 8.0 oz product/A (0.05 to 0.20 lb permethrin AI/A)	3 (4 in Hawaii)	7 days	0 days	Apply with ground equipment in at least 10.0 gal/A finished spray or by aircraft in at least 2.0 gal/A finished spray.

**USE RESTRICTIONS**

Apply no more than 0.6 lb permethrin AI/A/season, and 0.8 in Hawaii.

Do not apply to cherry tomatoes or other varieties which produce fruit < 1" in diameter.

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**TURNIPS**

(only in FL, GA, IL, IN, OK, SC, TX, and WA)

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Aphids * Beet armyworm Cabbage looper Corn earworm Cutworms Diamondback moth European corn borer Fall armyworm Green cloverworm Imported cabbageworm Leafhoppers Leafminer Southern armyworm Southern white butterfly Tobacco budworm Vegetable leafminer	2.0 to 6.0 oz product/A (0.05 to 0.15 lb permethrin AI/A)	3	3 days	1 day	Apply with ground equipment only with at least 10 gal/A finished spray.  <b>For aerial use in Indiana, and Texas only:</b> Apply in at least 1.0 gal/A finished spray.  Apply when insects first appear and repeat as needed to provide control.

**USE RESTRICTIONS**

\* Suppression only.  
Apply no more than 0.45 lb permethrin AI/A/season.  
Do not graze treated areas or feed crop refuse to livestock.

**WALNUTS**

Insects Controlled	Application Rate	Maximum number of applications	Minimum re-treatment interval	Pre-harvest interval	Method of application
Codling Moth Navel Orangeworm Walnut Husk Fly	8.0 to 10.0 oz product/A (0.20 to 0.25 lb permethrin AI/A)	3	10 days	1 day	Apply with ground equipment in at least 100 gal/A finished spray as a diluted spray, in at least 25.0 gal/A finished spray as a concentrated spray or by aircraft in at least 10.0 gal/A finished spray.

**USE RESTRICTIONS**

Apply no more than 0.75 lb permethrin AI/A/season.  
Do not graze livestock in treated areas.  
Do not feed cover crops from treated areas to livestock.

**PREMISES SPRAY**

For agricultural use only.  
Spray directly to walls and ceiling as residual surface treatment only.

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**Use Restrictions**

Do not treat manure or litter. Do not contaminate feed and water. Do not apply directly to livestock or poultry. Do not enter or allow others to enter until sprays have dried. Close milk bulk tank lids to prevent contamination from spray and from dead or falling insects. Remove or cover milking utensils before application. Wash teats of animals before milking.

Application Site	Insects Controlled	Method of Application	Dilution rate	Application Rate
Barns Dairies Feedlots Livestock Houses Poultry Houses Stables Swine Houses	House Flies Stable Flies Other Manure-Breeding Flies  Also aids in the reduction of: Cockroaches Mosquitoes Spiders	Sprayer	4.0 oz to 12.5 gal water	1.0 gal/750 ft <sup>2</sup> of surface

Apply when insects first appear and repeat at 2-week intervals as needed to provide control.

The use of any residual fly spray should be supplemental with proper manure management and general sanitation to reduce or eliminate fly breeding site.

**RATE CONVERSION CHART**

Lb Permethrin/A	Oz product/A
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

**STORAGE AND DISPOSAL**

Do not contaminate other pesticides, fertilizers, water, food, or feed by storage or 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 HANDLING: 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). If not recycled, then puncture and dispose of in a sanitary landfill, or incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke. Triple rinse or pressure rinse container (or equivalent) promptly after emptying.

**[For packages up to 5 gallons: 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 1/4 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

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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 packages greater than 5 gallons and less than 56 gallons: Triple rinse as follows:** Empty the remaining contents into application equipment or a mix tank. Fill the container  $\frac{1}{4}$  full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **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 packages greater than 56 gallons:** To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. For refillable containers: Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Offer for recycling or reconditioning, if available, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.]

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

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

**BEFORE BUYING OR USING THIS PRODUCT**, read the entire Directions for Use and the following Conditions of Sale and Limitation of Warranty and Liability. By buying or using this product, the buyer or user accepts the following Conditions of Sale and Limitation of Warranty and Liability, which no employee or agent of LOVELAND PRODUCTS, INC. or the seller is authorized to vary in any way.

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