



## OFFICE OF CHEMICAL SAFETY AND POLLUTION PREVENTION

WASHINGTON, D.C. 20460

August 27, 2024

### **SENT BY EMAIL**

Leah Strayer  
leah@pyxisrc.com  
LOVELAND PRODUCTS, INC.

Subject: Labeling Notification per Pesticide Registration Notice (PRN) 98-10 - Addition of Mode of Action Box  
Product Name: MALICE 2F INSECTICIDE  
Admin Number: 34704-893  
EPA Receipt Date: 08/22/2024  
Action Case Number: 00626583

Dear Leah Strayer:

The U.S. Environmental Protection Agency is in receipt of your application for notification under Pesticide Registration Notice 98-10 for the above referenced product. The EPA has conducted a review of this request for its applicability under PRN 98-10 and finds that the action requested falls within the scope of PRN 98-10.

The labeling submitted with this application has been stamped "Notification" and will be placed in our records.

Should you wish to add/retain a reference to your 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 EPA. If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements the 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 EPA find or if it is brought to our attention that a website contains statements or claims substantially differing from statements or claims made in connection with obtaining a FIFRA section 3 registration, the website will be referred to the EPA's Office of Enforcement and Compliance Assurance.

If you have questions, please contact Scott Campbell via email at [campbell.scott@epa.gov](mailto:campbell.scott@epa.gov).

Sincerely,

A handwritten signature in cursive script that reads "Scott Campbell (for)".

Venus Eagle, PM01  
IVB3, RD  
Office of Pesticide Programs



# MALICE® 2F INSECTICIDE

## NOTIFICATION

34704-893

The applicant has certified that no changes, other than those reported to the Agency have been made to the labeling. The Agency acknowledges this notification by letter dated:

08/27/2024

For uses in pest management and suppression of listed insects that may vector plant diseases and maintenance of plant health.

### ACTIVE INGREDIENT:

Imidacloprid: 1-[(6-Chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine..... 21.4%

OTHER INGREDIENTS ..... 78.6%

TOTAL 100.00%

Contains 2.0 pounds of Imidacloprid per gallon.

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

**SHAKE WELL BEFORE USING**

FIRST AID	
<b>If swallowed:</b>	<ul style="list-style-type: none"> <li>• Call a poison center or doctor immediately for treatment advice.</li> <li>• Have person sip a glass of water if able to swallow.</li> <li>• Do not induce vomiting unless told to do so by a poison control center or doctor.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul>
<b>If in eyes:</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 to 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 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>
<p>Have a 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> No specific antidote is available. Treat the patient symptomatically.</p>	

EPA REG. NO. 34704-893

EPA EST. NO. 34704-MS-001

NET CONTENTS 1.0 GAL (3.78 L)

**NOTIF V2 0824EXP-09/13 Bees**

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

Harmful if swallowed or absorbed through skin. Avoid contact with skin, eyes, or clothing.

**Applicators and other handlers must wear:**

- Long-sleeved shirt and long pants,
- Chemical-resistant gloves made of any waterproof material such as, barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinylchloride (PVC) or viton, and
- Shoes plus socks.

Follow manufacturer's instructions for cleaning/maintaining personal protective equipment (PPE). If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

**ENGINEERING CONTROLS STATEMENTS**

When handlers use closed systems or enclosed cabs in a manner that meet the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

**USER SAFETY RECOMMENDATIONS**

**User should:**

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

**ENVIRONMENTAL HAZARDS**

Do not apply directly to water, areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops/plants or weeds if bees are foraging. This product is toxic to wildlife and highly toxic to aquatic invertebrates.

This chemical demonstrates the properties and characteristics associated with chemicals detected in ground water. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

## PROTECTION OF POLLINATORS



**APPLICATION RESTRICTIONS EXIST FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER INSECT POLLINATORS. FOLLOW APPLICATION RESTRICTIONS FOUND IN THE DIRECTIONS FOR USE TO PROTECT POLLINATORS.**



**Look for the bee hazard icon the Directions for Use for each application site for specific use restrictions and instructions to protect bees and other insect pollinators.**

**This product can kill bees and other insect pollinators.**

Bees and other insect pollinators will forage on plants when they flower, shed pollen, or produce nectar.

Bees and other insect pollinators can be exposed to this pesticide from:

- Direct contact during foliar applications, or contact with residues on plant surfaces after foliar applications.
- Ingestion of residues in nectar and pollen when the pesticide is applied as a seed treatment, soil, tree injection, as well as foliar applications.

When Using This Product Take Steps To:

- Minimize exposure of this product to bees and other insect pollinators when they are foraging on pollinator attractive plants around the application site.
- Minimize drift of this product on to beehives or to off-site pollinator attractive habitat. Drift of this product onto beehives or off-site to pollinator attractive habitat can result in bee kills.

Information on protecting bees and other insect pollinators may be found at the Pesticide Environmental Stewardship website at: <http://pesticidestewardship.org/PollinatorProtection/Pages/default.aspx>.

Pesticide incidents (for example, bee kills) should immediately be reported to the state/tribal lead agency. For contact information for your state, go to: [www.aapco.org/officials.html](http://www.aapco.org/officials.html). Pesticide incidents should also be reported to the National Pesticide Information Center at: [www.npic.orst.edu](http://www.npic.orst.edu) or directly to EPA at: [beekill@epa.gov](mailto:beekill@epa.gov)

## DIRECTIONS FOR USE

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

See individual crops for specific pollinator protection application restrictions. If none exist under the specific crop, for foliar applications, follow these application directions for crops/plants that are contracted to have pollinator services, for food/feed crops and commercially grown ornamentals that are attractive to pollinators, and for non-agricultural use sites:

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**FOR CROPS UNDER CONTRACTED POLLINATION SERVICES**

Do not apply this product while bees are foraging. Do not apply this product until flowering is complete and all petals have fallen unless the following condition has been met:

If an application must be made when managed bees are at the treatment site, the beekeeper providing the pollination services must be notified no less than 48-hours prior to the time of the planned application so that the bees can be removed, covered or otherwise protected prior to spraying.



**FOR FOOD/FEED CROPS AND COMMERCIALY GROWN ORNAMENTALS NOT UNDER CONTRACT FOR POLLINATION SERVICES BUT ARE ATTRACTIVE TO POLLINATORS**

Do not apply this product while bees are foraging. Do not apply this product until flowering is complete and all petals have fallen unless one of the following conditions is met:

- The application is made to the target site after sunset
- The application is made to the target site when temperatures are below 55 °F
- The application is made in accordance with a government-initiated public health response
- The application is made in accordance with an active state-administered apiary registry program where beekeepers are notified no less than 48-hours prior to the time of the planned application so that the bees can be removed, covered or otherwise protected prior to spraying
- The application is made due to an imminent threat of significant crop loss, and a documented determination consistent with an IPM plan or predetermined economic threshold is met. Every effort should be made to notify beekeepers no less than 48-hours prior to the time of the planned application so that the bees can be removed, covered or otherwise protected prior to spraying.



**FOR NON-AGRICULTURAL USE SITES**

Do not apply Malice® 2F Insecticide while bees are foraging. Do not apply Malice 2F Insecticide to plants that are flowering. Only apply after all flower petals have fallen off.

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 pes-ticide regulation.

**AGRICULTURAL USE REQUIREMENTS**

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses 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.**

**Exception:** If the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated. PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls,
- Chemical-resistant gloves made of any waterproof material such as, barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinylchloride (PVC) or viton, and
- Shoes plus socks.

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**NON-AGRICULTURAL USE REQUIREMENTS**

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

**Keep children and pets off treated areas until dry.**

**FOLLOW THE RESTRICTIONS BELOW WHEN MIXING AND APPLYING IN THE VICINITY OF AQUATIC AREAS SUCH AS LAKES; RESERVOIRS; RIVERS; PERMANENT STREAMS; MARSHES OR NATURAL PONDS; ESTUARIES AND COMMERCIAL FISH FARM PONDS.**

**Runoff Management**

Do not cultivate within 10 feet of the aquatic areas to allow growth of a vegetative filter strip. When using Malice® 2F Insecticide on erodible soils, employ the Best Management Practices for minimizing runoff. Consult your local Natural Resources Conservation Service for recommendations in your use area.

**No-Spray Zone Requirements for Soil/Foliar Applications**

Do not apply within 25 feet of lakes; reservoirs; rivers; permanent streams, marshes or natural ponds; estuaries and commercial fish farm ponds.

**SPRAY DRIFT MANAGEMENT**

The interaction of many equipment and weather related factors determine the potential for spray drift. The applicator is responsible for considering all of these factors when making application decisions. Avoiding spray drift is the responsibility of the applicator.

**Importance of Droplet Size**

An important factor influencing drift is droplet size. Small droplets (<150 - 200 microns) drift to a greater extent than large droplets. Within typical equipment specifications, make applications to deliver the largest droplet spectrum that provides sufficient control and coverage. Formation of very small droplets may be minimized by appropriate nozzle selection.

**Wind Speed Restrictions**

Drift potential increases at wind speeds of less than 3 mph (due to inversion potential) or more than 10 mph. However, many factors, including droplet size, canopy and equipment specifications determine drift potential at any given wind speed. Do not apply when winds are greater than 15 mph and avoid gusty and windless conditions. Risk of exposure to sensitive aquatic areas can be reduced by avoiding applications when wind direction is toward the aquatic area.

**Restrictions During Temperature Inversions**

Do not make ground applications during temperature inversions. Drift potential is high during temperature inversions. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however if fog is not present, inversions can also be identified by the movement of smoke from a ground source. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical mixing.

**Mixing and Loading Requirements**

To avoid potential contamination of groundwater, the use of a properly designed and maintained containment pad for mixing and loading of any pesticide into application equipment is strongly encouraged. If containment pad is not used, maintain a minimum distance of 25 feet between mixing and loading area and potential surface groundwater conduits such as field sumps, uncased well heads, sinkholes, or field drains.

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**ENDANGERED SPECIES NOTICE**

Under the Endangered Species Act, it is a Federal Offense to use any pesticide in a manner that results in the death of a member of an endangered species. Consult your local county bulletin, County Extension Agent, or Pesticide State Lead Agency for information concerning endangered species in your area.

**RESISTANCE MANAGEMENT**

Some insects are known to develop resistance to insecticides after repeated use. As with any insecticide, the use of this product should conform to resistance management strategies established for the use area.

Malice 2F Insecticide contains a Group 4A insecticide. Insect biotypes with acquired or inherent resistance to Group 4A may eventually dominate the insect population if Group 4A insecticides are used repeatedly as the predominant method of control for targeted species.

The active ingredient in Malice 2F Insecticide belongs to the neonicotinoid chemical class. Insect pests resistant to other chemical classes have not shown cross-resistance to imidacloprid. In order to maintain susceptibility to this class of chemistry in insect species with high resistance development potential, it is recommended that for each crop season: 1) only a single, soil application of Malice 2F Insecticide be made; 2) foliar applications of products from this same class not be made following a long residual, soil application of Malice 2F Insecticide, or other neonicotinoid products.

*Other Group 4A, neonicotinoid products used as foliar treatments include: Actara®, Assail®, Calypso®, Centric®, Intruder®, Leverage®, Provado® and Trimax™.*

*Other Group 4A, neonicotinoid products used as soil treatments include: Platinum®.*

Contact your local extension specialist, certified crop advisor and/or product manufacturer for additional insect resistance management recommendations. Also, for more information on Insect Resistance Management (IRM), visit the Insecticide Resistance Action Committee (IRAC) on the web at <http://www.irac-online.org/>.

**APPLICATION INSTRUCTIONS**

Apply Malice 2F Insecticide as a directed or broadcast foliar spray using properly calibrated ground application equipment as allowed in the specific application section. For insecticidal efficacy, thorough coverage of all target foliage with runoff is necessary. To obtain thorough coverage, use adequate spray volumes, properly calibrated application equipment and a spray adjuvant if necessary. Failure to provide adequate coverage and retention of this product on leaves and fruit, if present, may result in loss of insect control or delay in onset of activity. Minimum spray volumes, unless otherwise specified on crop specific application sections, are 10.0 gallons per acre by ground. This product may be applied by chemigation (see Chemigation section) if allowed in the specific application section.

**Restrictions**

Do not apply with aerial application equipment.

Regardless of formulation or method of application, apply no more than 0.5 pound active ingredient imidacloprid per acre per year, including seed treatment, soil, and foliar uses, unless specified within a crop-specific application section for a given crop.

Apply Malice 2F Insecticide directly into the seed or root-zone of crop. Failure to place Malice 2F Insecticide into root-zone may result in loss of control or delay in onset of activity. Apply Malice 2F Insecticide with ground or chemigation equipment. Broadcast, foliar applications are only to be used for seedling flats or trays, or where product is intended to be washed from foliage to soil prior to drying on foliage.

Optimum activity of Malice 2F Insecticide results from applications to the root-zone of plants to be protected. The earlier Malice 2F Insecticide is available to a developing plant, the earlier the protection begins. Malice 2F Insecticide is continuously taken into the roots over a long period of time and the systemic nature of Malice 2F Insecticide allows movement from roots through the xylem tissue to all vegetative parts of the plant. This results in extended residual activity of Malice 2F Insecticide, the control of insects and the prevention and/or reduction of virus transmission or symptom expression, and plant health benefits. The rate of Malice 2F Insecticide applied affects the length of the plant

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protection period. Use the higher listed rate within the specified rate range when infestations occur later in crop development, or where pest pressure is continuous. Malice 2F Insecticide will generally not control insects infesting flowers, blooms or fruit. Additional crop protection may be required for insects feeding in, or on these plant parts and for insects not listed in the crop-specific, pests controlled sections of this label. Additional, specific Malice 2F Insecticide application instructions are also provided in the crop-specific sections of this label.

Suppression, or less than complete control of certain diseases and insect pests including reduced feeding, may also result from a Malice 2F Insecticide application. Residual control of these pests/diseases may require supplemental control measures.

Malice 2F Insecticide use on crops grown for production of true seed intended for private or commercial planting is not permitted unless it is allowed under state specific 24(c) labeling.

Pre-mix Malice 2F Insecticide with water or other appropriate diluent prior to application. Keep Malice 2F Insecticide and water suspension agitated to avoid settling.

### **Mixing Instructions**

To prepare the application mixture, add a portion of the required amount of water to the tank and with agitation add Malice 2F Insecticide. Complete filling tank with balance of water needed. Maintain sufficient agitation during both mixing and application. Malice 2F Insecticide may also be used with other pesticides and/or fertilizer solutions. Please see Compatibility section below. When tank mixtures of Malice 2F Insecticide and other pesticides are involved, prepare the tank mixture as specified above and follow the Mixing Order described below.

### **Mixing Order**

When pesticide mixtures are needed, add wettable powders first, Malice 2F Insecticide and other flowable (suspension concentrate) products second, and emulsifiable concentrates last. Ensure good agitation as each component is added. Do not add an additional component until the previous is thoroughly mixed. If a fertilizer solution is added, a fertilizer/pesticide compatibility agent may be needed. Maintain constant agitation during both mixing and application to ensure uniformity of spray mixture.

### **Compatibility**

Test compatibility of the intended mixture before adding Malice 2F Insecticide to the spray or mix tank. Add proportionate amounts of each ingredient in the appropriate order, to a pint or quart jar, cap, shake for 5 minutes, and let set for 5 minutes. Poor mixing or formation of precipitates that do not readily redispense indicates an incompatible mixture, DO NOT USE. For further information, contact your local Loveland Products, Inc. representative.

## **CHEMIGATION - DIRECTIONS FOR USE**

Malice 2F Insecticide may be applied at rates specified on this label either alone or in tank mixture with other pesticides and chemi-cals registered for application through irrigation systems. The normal dilution ratio is 1:100 to 1:200, depending on the system. Always meter the product into the irrigation water during the first part of the irrigation cycle. The product may be mixed separately prior to injection. Agitation may be necessary if the mixture is allowed to stand more than 24 hours.

- **DO NOT** connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- Apply this product only through micro-irrigation (individual spaghetti tube), drip irrigation, overhead irrigation, and ebb and flood or hand held or motorized calibrated irrigation equipment and only as specified in the use directions. **DO NOT apply this product through any other type of irrigation system.** Crop injury or lack of effectiveness can result from non-uniform distribution of treated water.
- Be sure to remove scale, pesticide residue and other foreign matter from the tank and entire irrigation system prior to application.
- If you have any questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.



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**Types of Irrigation Systems**

Chemigation applications of Malice 2F Insecticide may only be made to crops through chemigation systems as specified in crop-specific Application sections and only through low-pressure systems unless specifically instructed for a given crop. Do not apply Malice 2F Insecticide through any other type of irrigation system.

**Uniform Water Distribution and System Calibration**

The irrigation system must provide uniform distribution of treated water. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water. The system must be calibrated to uniformly apply the rates specified. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.

**Chemigation Monitoring**

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.

**Drift**

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

**Required System Safety Devices**

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, auto-matic, 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.

**Using Water from Public Water Systems**

Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back flow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe. The pesticide injection pipeline must contain a functional automatic quick-closing check valve to prevent the flow of fluid back toward the injection. The pesticide injection pipeline must 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 or in cases where there is no water pump, 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.

**ROTATIONAL CROPS\***

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Treated areas may be replanted with any crop specified on a Malice 2F Insecticide label, or any crop for which a tolerance exists for the active ingredient, as soon as practical following the last application. For crops not listed on a

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Malice 2F Insecticide label, or for crops for which no tolerances for the active ingredient have been established, a 12-month plant-back interval must be observed.

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**IMMEDIATE PLANT-BACK**

All crops on this label plus the following crops not on this label: barley, canola, corn (field, pop & sweet), rapeseed, sorghum, sugar beet and wheat.

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**30-DAY PLANT-BACK**

Cereals (including buckwheat, millet, oats, rice, rye, and triticale), soybeans and safflower

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**10-MONTH PLANT-BACK**

Onion and bulb vegetables

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**12-MONTH PLANT-BACK**

All Other Crops

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\*Cover crops for soil building or erosion control may be planted any time, but do not graze or harvest for food or feed.

**HERBS**

Angelica, Balm (lemon balm), Basil (fresh and dried), Borage, Burnet, Camomile, Catnip, Chervil (dried), Chinese chive, Chive, Clary, Coriander (cilantro or Chinese parsley leaves), Costmary, Culantro (leaf), Curry (leaf), Dillweed, Horehound, Hyssop, Lavender, Lemongrass, Lovage (leaf), Marigold, Marjoram, Nasturtium, Parsley (dried), Pennyroyal, Rosemary, Rue, Sage, Savory (summer and winter), Sweet bay (bay leaf) Tansy Tarragon, Thyme, Wintergreen, Woodruff Wormwood.

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<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Aphids	16.0 to 24.0
Flea beetles	
Leafhoppers	
Whiteflies	

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<b>Pests/Diseases Suppressed#</b>	
Thrips (foliage-feeding thrips only)	16.0 to 24.0

**Restrictions:**

Pre-Harvest Interval (PHI): **14 days**

Maximum Malice 2F Insecticide allowed per crop season: **24.0 fl ozs/acre** (0.38 lb AI/acre)

#Controls pests that may vector plant diseases.

**Instructions**

Apply specified dosage in one of the following methods:

1. In-furrow spray during planting directed on or below seed;
2. In-furrow spray or transplant-water drench during setting or transplanting;
3. Shankd-into or below eventual seed-line;
4. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.

Not all crops and/or varieties listed above have been tested for phytotoxic effects. Without specific knowledge about a particular crop and variety, Loveland Products, Inc. strongly recommends that only small areas or numbers of plants of each be treated and evaluated prior to commercial use.

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**FIELD CROPS**  
**Application Instructions - Malice 2F Insecticide**

**COTTON**

<b>Pests Controlled</b>	<b>Rate Fl Ozs/1000 row-feet</b>	<b>Rate Fl Ozs/Acre</b>
Cotton aphid		
Plant bugs	1.3	17.0 to 21.1
Thrips		(Depending on row-spacing)
Whiteflies		

**Restrictions**

Maximum Malice 2F Insecticide allowed per year: **21.1 fl ozs/acre** (0.33 lb AI/acre)

Regardless of formulation or method of application, apply no more than 0.5 pound active ingredient of Malice 2F Insecticide, Provado, Trimax or Leverage per acre per year, including seed treatment as Gaucho®, soil and foliar uses. Do not apply more than a total of 6 applications of the active ingredient per year. Do not graze treated fields after any application of Malice 2F Insecticide. Please see Resistance Management section of this label.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. In-furrow spray during planting directed on or below seed;
2. In a narrow band directly below the eventual seed row in a bedding operation 7 or fewer days before planting;
3. Chemigation into root-zone through low-pressure drip or trickle irrigation.

**POTATO**

<b>Pests Controlled</b>	<b>Rate Fl Ozs/1000 row-feet</b>	<b>Rate Fl Ozs/Acre</b>
Aphids		
Colorado potato beetle		
Flea beetles	0.9 to 1.3	13.0 to 20.0
Leafhoppers		
Potato psyllid		

**Pests/Diseases Suppressed#**

Symptoms of:

Potato leaf roll virus (PLRV)		
Potato yellows	0.9 to 1.3	13.0 to 20.0
Net necrosis (PLRV)		
Wireworms (with in-furrow spray at-planting)		

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**Restrictions**

Maximum Malice 2F Insecticide allowed per year: **20.0 fl ozs/acre** (0.31 lb AI/acre)

#Controls pests that may vector plant diseases.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. In-furrow spray during planting directed on seed pieces or seed potatoes;
2. Subsurface side-dress on both sides on the row covered with 3 or more inches of soil;
3. Narrow band spray at ground cracking directly over the row during hilling covered with 3 or more inches of soil;
4. Narrow band directly below the eventual seed row in a bedding operation 7 or fewer days before planting. For effective pest control or suppression, Malice 2F Insecticide applications must be placed below soil-surface and in contact with seed piece or within root-zone. For potatoes grown on highly permeable soils with shallow water table, at-plant applications of Malice 2F Insecticide may be made in a 2- to -4 inch band (width of planter shoe opening) and completely covered.

**POTATO\***

**(Seed Piece Treatment)**

<b>Pests Controlled</b>	<b>Rate Fl Oz/100 lbs seed</b>	<b>Rate Fl Ozs/Acre**</b>
Aphids		
Colorado potato beetle		
Flea beetles	0.4 to 0.8	8.0 to 16.0
Leafhoppers		
Potato psyllid		
Wireworms (seed-piece protection)		
<b>Pests/Diseases Suppressed#</b>		
Symptoms of:		
Potato leaf roll virus (PLRV)		
Potato yellows	0.8	16.0
Net necrosis (PLRV)		

**Restrictions**

Maximum Malice 2F Insecticide allowed per year: **16.0 fl ozs/acre** (0.25 lb AI/acre)

Do not use treated seed-pieces for food, feed or fodder. Do not apply any subsequent application of Malice 2F Insecticide (in-furrow), Gaucho, Leverage or Provado following a Malice 2F Insecticide seed-piece treatment.

#Controls pests that may vector plant diseases.

**Instructions**

Apply specified dosage as a diluted spray onto seed-pieces using a shielded spray system. Dilute with 3 parts water, or less, to 1 part Malice 2F Insecticide. Agitate or stir spray solution as needed. Fungicidal or inert absorbent dusts may be applied after Malice 2F Insecticide application. Apply only in areas with adequate ventilation or in areas that are equipped to remove spray mist or dust. Plant seed-pieces as soon as possible after treating avoiding prolonged exposure of Malice 2F Insecticide treated seed-pieces to sunlight and in accordance with the directions of your local Extension specialist.

Consult your local Loveland Products, Inc. representative or crop protection product dealer for information relevant to your area.

\*Use not permitted in CA unless otherwise directed by state-specific 24(c) labeling.

\*\*Based on a seeding rate of 2000 pounds per acre.

**MALICE® 2F INSECTICIDE**  
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**TOBACCO**

Pests Controlled	Rate Fl Ozs/1000 plants (as seedling tray drench)	Rate Fl Ozs/1000 plants (in-furrow or transplant-water)
Aphids		
Flea beetles	1.0	1.4
Mole crickets		
Whiteflies	1.4 to 2.8	1.8 to 2.8
Wireworms		
<b>Pests/Diseases Suppressed#</b>		
Cutworms		
Symptoms of: Tomato spotted wilt virus (TSWV)	1.4 to 2.8	1.8 to 2.8

**Restrictions**

Pre-Harvest Interval (PHI): **14 days**

Maximum Malice 2F Insecticide allowed per year: **32.0 fl ozs/acre** (0.50 lb AI/acre)

#Controls pests that may vector plant diseases.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. Uniform, broadcast foliar spray to seedlings in trays (tray drench) not more than 7 days prior to transplanting followed immediately by overhead irrigation to wash Malice 2F Insecticide from foliage into potting media. Failure to wash Malice 2F Insecticide from foliage may result in reduction in pest control. Transplants must be handled carefully during setting to avoid dislodging treated potted media from roots.
2. In-furrow spray or transplant-water drench during setting.
3. Chemigation into root-zone through low-pressure drip, trickle, micro sprinkler or equivalent equipment.

**Note:** Proper tray drench applications of Malice 2F Insecticide have been shown to be the most efficacious method of application. However, the specified rate of Malice 2F Insecticide may be applied as a combination of the tray drench in the planthouse and/or transplant-water drench in field. Adverse growing conditions may cause a delay in uptake of Malice 2F Insecticide into the plant and a delay in control.

**VEGETABLE and SMALL FRUIT CROPS**  
**Application Directions - Malice 2F Insecticide**

**Restrictions**

Not for use on crops grown for seed unless allowed by state-specific 24(c) labeling.

**CUCURBIT VEGETABLES**

Including: Chayote (fruit), Chinese waxgourd (Chinese preserving melon), Citron melon, Cuban pumpkin, Cucumber, Gherkin, Gourd (edible, includes hyotan, cucuzza, hechima, Chinese okra), *Momordica* spp. (includes balsam apple, balsam pear, bitter melon, Chinese cucumber), Muskmelon (hybrids and/or cultivars of *Cucumis melo* including true cantaloupe, cantaloupe, casaba, Crenshaw melon, golden pershaw melon, honeydew melon, honey balls, mango melon, Persian melon, pineapple melon, Santa Claus melon, snake melon, and Winter melon), Pumpkin, Squash (includes summer squash types such as: butternut squash, calabaza, crookneck squash, Hubbard squash, scallop squash, straightneck squash, vegetable marrow and zucchini, and winter squash types such as acorn squash and spaghetti squash), Watermelon (includes hybrids and/or varieties of *Citrullus lanatus*)

**Field application instructions. See details below for additional planthouse instructions.**

Pests Controlled	Rate Fl Ozs/Acre
Aphids	
Cucumber beetles	

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Leafhoppers	16.0 to 24.0
Thrips (foliage-feeding thrips only)	
Whiteflies	

**Pests/Diseases Suppressed#**

Bacterial wilt (as vectored by various cucumber beetles)	
Leaf silvering resulting from whitefly feeding	16.0 to 24.0

**Restrictions**

Pre-Harvest Interval (PHI): **21 days**

Maximum Malice 2F Insecticide allowed per crop season: **24.0 fl ozs/acre** (0.38) lb AI/acre

#Controls pests that may vector plant diseases.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. In-furrow spray directed on or below seed;
3. Narrow (2" or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1 1/2" with sufficient irrigation within 24 hours of application;
4. Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting;
5. Post-seeding drench, transplant-water drench, or hill drench;
6. Subsurface side-dress on both sides of each row. Malice 2F Insecticide must be incorporated into root zone.

**Planthouse Application Instructions**

<b>Pests Controlled</b>	<b>Rate</b> <b>Fl Oz/1000 Plants</b>
Aphids	
Whiteflies	0.1

**Restrictions**

Maximum amount of Malice 2F Insecticide applied in the planthouse: **0.1 fl oz** (0.00156 lb AI) **per 1000 plants.**

Maximum number Malice 2F Insecticide applications in planthouse: **1**

**Instructions**

Apply specified dosage to seedlings in trays in the planthouse, targeting soil media (tray drench), not more than 7 days prior to trans-planting, in one of the following manners:

1. Uniform, broadcast high-volume foliar spray, followed immediately by sufficient overhead irrigation to wash Malice 2F Insecticide from foliage into potting media without loss of gravitational liquid from the bottom of the tray. Failure to wash Malice 2F Insecticide from foliage may result in reduced pest control;
2. Injection into overhead irrigation system, using adequate volume to thoroughly saturate soil media without loss of gravitational solution from the bottom of the tray.

The application made in the planthouse will only provide short-term protection and is not intended as a substitution for a field application. An additional field application must be made within 2 weeks following transplanting to provide continuous protection. **DO NOT** apply higher rates or increased number of applications in planthouse. Transplants must be handled carefully during setting to avoid dislodging treated potting media from roots.

Not all varieties of cucurbit vegetables have been tested for tolerance to Malice 2F Insecticide applied to seedling flats. Therefore, treat a small number of plants and confirm tolerance for 7 days prior to treating entire planthouse.

**GREENHOUSE VEGETABLES**

(Mature plants in production greenhouses)

Cucumber, Tomato, only

**MALICE<sup>®</sup> 2F INSECTICIDE**  
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<b>Pests Controlled</b>	<b>Rate</b> <b>Fl Ozs/1000 plants</b>
Aphids	
Whiteflies	1.4

**Restrictions**

Pre-Harvest Interval (PHI): **0 days**

Maximum number of Malice 2F Insecticide applications per crop season: **1**

**Instructions**

Apply specified dosage in a minimum of 16.0 gallons of water for tomatoes and 21.0 gallons of water for cucumbers using soil drenches, micro-irrigation, drip irrigation, or hand-held or motorized calibrated irrigation equipment. Do not apply to immature plants since phytotoxicity may occur.

Apply when infestation pressure surpasses threshold and beneficials are not able to maintain pest populations below damage thresholds. Repellency of bumble bee pollinators and negative effects on some beneficials (*Orius* sp.) can occur when Malice 2F Insecticide is applied.

Many varieties of vegetables have been tested for tolerance to Malice 2F Insecticide and show good safety. However, certain varieties may show more sensitivity to Malice 2F Insecticide. Therefore, treat a few plants before treating the whole greenhouse.

**FRUITING VEGETABLES**

Including: Eggplant, Ground cherry, Okra, Pepper (including bell, chili, cooking, pimento and sweet) Tomato, Pepinos, Tomatillo

**Field application instructions. See details below for additional planthouse instructions.**

<b>Pests Controlled</b>	<b>Rate</b> <b>Fl Ozs/Acre</b>
Aphids	
Colorado potato beetle	Okra and Pepper
Flea beetles	16.0 to 32.0
Leafhoppers	
Thrips (foliage-feeding thrips, only)	Other Crops
Whiteflies	16.0 to 24.0
<b>Pests/Diseases Suppressed#</b>	
Symptoms of:	Okra and Peper
Tomato mottle virus	16.0 to 32.0
Tomato spotted wilt virus	Other Crops
Tomato yellow leaf curl virus	16.0 to 24.0

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**Restrictions**

Pre-Harvest Interval (PHI): **21 days**

Maximum Malice 2F Insecticide allowed on pepper and okra crops per crop season: **32.0 fl ozs/acre** (0.50 lb AI/acre)

Maximum Malice 2F Insecticide allowed on other fruiting crops per crop season: **24.0 fl ozs/acre** (0.38 lb AI/acre)

#Controls pests that may vector plant diseases.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. In-furrow spray directed on or below seed;
3. Narrow (2" or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1 1/2" with sufficient irrigation within 24 hours of application;
4. Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting;
5. Post-seeding drench, transplant-water drench, or hill drench;
6. Subsurface side-dress on both sides of each row. Malice 2F Insecticide must be incorporated into root zone.

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**Planthouse Application Instructions**

**Pests Controlled**

**Rate**  
**Fl Oz/1000 plants**

Aphids

Whiteflies

0.1

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**Restrictions**

Maximum amount of Malice 2F Insecticide applied in the planthouse: **0.1 fl oz** (0.00156 lb AI) per 1000 plants.

Maximum number Malice 2F Insecticide applications in planthouse: **1**

**Instructions**

Apply specified dosage to seedlings in trays in the planthouse, targeting soil media (tray drench), not more than 7 days prior to transplanting, in one of the following manners:

1. Uniform, broadcast high-volume foliar spray, followed immediately by sufficient overhead irrigation to wash Malice 2F Insecticide from foliage into potting media without loss of gravitational liquid from the bottom of the tray. Failure to wash Malice 2F Insecticide from foliage may result in reduced pest control;
2. Injection into overhead irrigation system, using adequate volume to thoroughly saturate soil media without loss of gravitational solution from the bottom of the tray.

The application made in the planthouse will only provide short-term protection and is not intended as a substitution for a field application. An additional field application must be made within 2 weeks following transplanting to provide continuous protection.

DO NOT apply higher rates or increased number of applications in planthouse. Transplants must be handled carefully during setting to avoid dislodging treated potted media from roots.

Not all varieties of fruiting vegetables have been tested for tolerance to Malice 2F Insecticide applied to seedling flats. Therefore treat a small number of plants and confirm tolerance for 7 days prior to treating entire planthouse.

Use not permitted in CA unless otherwise directed by state-specific 24(c) labeling.

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**HEAD and STEM BRASSICA VEGETABLES**

Including: Broccoli, Broccoli raab (*rapini*), Brussels sprouts, Cabbage, Cauliflower, Cavalo broccoli, Chinese (*gai lon*) broccoli, Chinese (*bok choy*) cabbage, Chinese (*napa*) cabbage, Chinese mustard (*gai choy*) cabbage, Collards, Kale, Kohlrabi, Mizuna, Mustard greens, Mustard spinach, Rape greens, Turnip tops (leaves)

**AND**

**LEAFY VEGETABLES**

Including: Amaranth (leafy amaranth, Chinese spinach, tampala), Arugula (Roquette), Chervil, Chrysanthemum (edible



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leaved and garland), Cilantro, Corn salad, Cress (garden), Cress (upland, yellow rocket, winter cress), Dandelion, Dock (sorrel), Endive (escarole), Lettuce (head and leaf), Orach, Parsley, Purslane (garden and winter), Raddicchio (red chicory), Spinach (including New Zealand and vine (Malabar spinach, Indian Spinach)), Watercress (commercial production only, applications must not be made to native cress growing in streams or other bodies of water), Watercress (upland)

<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre (on 36 inch rows)</b>
Aphids	
Whiteflies	10.0 to 24.0

**Restrictions**

Pre-Harvest Interval (PHI): **21 days**

Maximum Malice 2F Insecticide allowed per crop season: **24.0 fl ozs/acre** (0.38 lb AI/acre)

Not for use on crops grown for seed unless allowed by state-specific 24(c) labeling.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. In-furrow spray directed on or below seed;
3. Narrow (2" or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1 1/2" with sufficient irrigation within 24 hours of application;
4. Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting;
5. Post-seeding drench, transplant-water drench, or hill drench;
6. Subsurface side-dress on both sides of each row. Malice 2F Insecticide must be incorporated into root zone.

**LEAFY PETIOLE VEGETABLES**

Including: Cardoon, Celery, Celtnuce, Chinese celery (fresh leaves and stalk only), Florence fennel (including sweet anise, sweet fennel, Finocchio), Rhubarb, Swiss chard

<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Aphids	
Leafhoppers	10.0 to 24.0
Whiteflies	

**Restrictions**

Pre-Harvest Interval (PHI): **45 days**

Maximum Malice 2F Insecticide allowed per crop season: **24.0 fl ozs/acre** (0.38 lb AI/acre)

**Instructions**

Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. In-furrow spray directed on or below seed;
3. Narrow (2" or less) surface band spray over seed-line during planting incorporated to a depth of 1 to 1 1/2" with sufficient irrigation within 24 hours of application;
4. Narrow band spray directly below eventual seed row in bedding operation 14 or fewer days before planting;
5. Post-seeding drench, transplant-water drench, or hill drench;
6. Subsurface side-dress on both sides of each row. Malice 2F Insecticide must be incorporated into root zone.

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**LEGUME VEGETABLES except soybean, dry**

**Edible Podded and Succulent Shelled Pea and Bean and Dried Shelled Pea and Bean**

Bean (*Lupinus* spp., includes grain lupin, sweet lupin, white lupin, and white sweet lupin)  
 Bean (*Phaseolus* spp., includes field bean, kidney bean, lima bean, navy bean, pinto bean, runner bean, snap bean, tepary bean, wax bean)  
 Bean (*Vigna* spp., includes adzuki bean, asparagus bean, blackeyed pea, catjang, Chinese longbean, cowpea, Crowder pea, moth bean, mung bean, rice bean, Southern pea, urd bean, yardlong bean)  
 Pea (*Pisum* spp., includes dwarf pea, edible-pod pea, English pea, field pea, garden pea, green pea, snow pea, sugar snap pea)  
 Other Beans and Peas [Broad bean (fava), Chickpea (garbanzo bean), Guar, Jackbean, Lablab bean (hyacinth bean), Lentil, Pigeon pea, Soybean (immature seed), Sword bean]

<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Aphids	
Leafhoppers	
Thrips (foliage feeding thrips, only)	16.0 to 24.0
Whiteflies	

<b>Pests/Diseases Suppressed#</b>	<b>Rate Fl Ozs/Acre</b>
Symptoms of:	
Bean common mosaic virus (BCMV)	
Bean golden mosaic virus (BGMV)	16.0 to 24.0
Beet curly top hybrigeminivirus (BCTV)	

**Restrictions**  
 Pre-Harvest Interval (PHI): **21 days**  
 Maximum Malice 2F Insecticide allowed per crop season: **24.0 fl ozs/acre** (0.38 AI/acre)  
 #Controls pests that may vector plant diseases.

- Instructions**  
 Apply specified dosage of Malice 2F Insecticide in one of the following methods:
1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.
  2. In-furrow spray at planting directed on or below seed;
  3. In a narrow (2" or less) surface band over seed-line during planting incorporated to a depth of 1 to 1 1/2" with sufficient irrigation within 24 hours following application;
  4. In a narrow band directly below the eventual seed row in a bedding operation 7 or fewer days before planting;
  5. As a post-seeding drench, transplant drench, or hill drench.

**ROOT VEGETABLES**

Including: Beet (garden)<sup>1</sup>, Burdock (edible)<sup>1</sup>, Carrot<sup>1</sup>, Celeriac<sup>1</sup>, Chervil (turnip-rooted)<sup>1</sup>, Chicory<sup>1</sup>, Ginseng, Horseradish, Parsley (turnip-rooted), Parsnip<sup>1</sup>, Radish<sup>1</sup>, Oriental radish (diakon)<sup>1</sup>, Rutabaga<sup>1</sup>, Salsify (oyster plant), Salsify (black)<sup>1</sup>, Salsify (Spanish), Skirret and Turnip<sup>1</sup>.

<b>PESTS CONTROLLED</b>	<b>Rate Fl Ozs/1000 row-feet</b>	<b>Rate Fl Ozs/Acre</b>
Aphids		
Flea beetles	0.7 to 1.7	10.0 to 24.0
Leafhoppers		
Whiteflies		

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**Restrictions**

Pre-Harvest Interval (PHI): **21 days**

Maximum Malice 2F Insecticide allowed per crop season: **24.0 fl ozs/acre** (0.38 lb AI/acre)

Maximum Malice 2F Insecticide applications per crop season: **1**

**Instructions**

Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. Chemigation into root-zone through low pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. In-furrow spray (rate specified per 1000 row-feet) or, shanked-in 1 to 2 inches below seed depth during planting;
3. In a narrow (2 inches or less) band directly (1 to 2 inches) below the eventual seed row in a bedding operation 14 or fewer days before planting.

**Note:** The rate applied affects the length of control. Use higher listed rates where infestations occur later in crop development, or where pest pressure is continuous. Malice 2F Insecticide rates less than 0.7 fluid ounce per 1000 row-feet will not provide adequate residual pest control. Malice 2F Insecticide treated crops grown on very high organic matter soils (muck) may also require additional pest management control.

<sup>1</sup>Tops or greens from these crops may be utilized for food or feed.

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**TUBEROUS and CORM VEGETABLES**

Including: Arracacha, Arrowroot, Artichoke (Chinese and Jerusalem), Canna (edible, Queensland arrowroot), Cassava (bitter & sweet)<sup>1</sup>, Chayote (root), Chufa, Dasheen (taro) <sup>1</sup>, Ginger, Leren, Sweetpotato, Tanier (cocoyam) <sup>1</sup>, Turmeric, Yam bean (jicama, manioc pea), Yam (true) <sup>1</sup> (For application instructions on potato see Field Crops section)

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<b>Pests Controlled</b>	<b>Rate Fl Ozs/1000 row-feet</b>	<b>Rate Fl Ozs/Acre</b>
Aphids		
Flea beetles	0.7 to 1.7	10.0 to 24.0
Leafhoppers		
Whiteflies		

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**Restrictions**

Pre-Harvest Interval (PHI) from planting application: **3 days** (leaves); **125 days** (corms)

Maximum Malice 2F Insecticide allowed per crop season: **24.0 fl ozs/acre** (0.38 lb AI/acre)

Maximum Malice 2F Insecticide applications per crop season: **1**

**Instructions**

Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. In-furrow spray (rate specified/1000 row-feet) over planting material (hulis) or shanked-in 1 to 2 inches below hulis depth at planting;
2. Side-dress not more than 0.6 fluid ounce per 1000 row-feet no later than 45 days after planting. Observe same PHI as above.

**Important:** The rate applied affects the length of control. Use higher listed rates where infestations occur later in crop development, or where pest pressure is continuous. Malice 2F Insecticide rates less than 0.7 fluid ounce per 1000 row-feet may not provide adequate residual pest control. Malice 2F Insecticide treated crops grown on very high organic matter soils (muck) may also require additional pest management control.

<sup>1</sup>Tops or greens from these crops may be utilized for food or feed.

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**MALICE® 2F INSECTICIDE**  
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**STRAWBERRY<sup>1</sup>**

Annual And Perennial Crops	Rate
Pests Controlled	Fl Ozs/A
Aphids	
Whiteflies	24.0 to 32.0
<b>Restrictions</b>	
Pre-Harvest Interval (PHI): <b>14 days</b>	
Maximum Malice 2F Insecticide allowed per crop season: <b>32.0 fl ozs/acre</b> (0.50 lb AI/acre)	
Do not apply immediately prior to bud opening or during bloom or when bees are foraging.	
<b>Instructions</b>	
Apply specified dosage of Malice 2F Insecticide in one of the following methods:	
1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment after plants are established or on perennial crops in early spring prior to bud opening;	
2. As a plant material or plant hole treatment just prior to, or during transplanting.	
The rate applied affects the length of control. Use higher listed rates where infestations may occur later in crop development or where pest exposure is continuous.	
<sup>1</sup> Malice 2F Insecticide can not be used pre and post harvest on the same crop with any other imidacloprid treatment.	

**SUGAR BEET**

(for use only in CA)

Pests Controlled	Rate
Pests/Diseases Suppressed#	Fl Ozs/Acre
Aphids	
Flea beetles	6.0 to 12.0
Leafhoppers	
Whiteflies	
<b>Restrictions</b>	
Maximum Malice 2F Insecticide allowed per year: <b>12.0 fl ozs/acre</b> (0.18 lb AI/acre)	
Maximum imidacloprid allowed per year: <b>0.18 lb AI/acre</b> (from any formulation) on any row spacing	
#Controls pests that may vector plant diseases.	
<b>Instructions</b>	
Apply specified dosage of Malice 2F Insecticide in the following method:	
1. Apply specified dosage in sufficient carrier volume to insure uniform application. Apply directly below each seed furrow either during the bedding operation immediately prior to planting or at the time of planting.	
The lower listed rate may be applied to aid establishment of stands in whitefly areas, or for early season control of the other pests listed.	

**MALICE® 2F INSECTICIDE**  
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**Malice 2F Insecticide Conversion Chart for Linear Application**

Rate Fl Ozs/Acre	Rate Fl Ozs/1000 Row-feet Based on <i>average</i> row spacing (in inches):							
	10	15	20	25	30	35	40	45
10	<i>0.19</i>	<i>0.29</i>	<i>0.38</i>	<i>0.48</i>	<i>0.57</i>	<i>0.67</i>	0.76	0.86
12	<i>0.23</i>	<i>0.34</i>	<i>0.46</i>	<i>0.57</i>	<i>0.69</i>	0.80	0.92	1.03
14	<i>0.27</i>	<i>0.40</i>	<i>0.54</i>	<i>0.67</i>	0.80	0.94	1.07	1.21
16	<i>0.31</i>	<i>0.46</i>	<i>0.61</i>	<i>0.77</i>	0.92	1.07	1.22	1.38
18	<i>0.34</i>	<i>0.52</i>	<i>0.69</i>	0.86	1.03	1.21	1.38	1.55
20	<i>0.38</i>	<i>0.57</i>	0.76	0.96	1.15	1.34	1.53	1.72
22	<i>0.42</i>	<i>0.63</i>	0.84	1.05	1.26	1.47	1.68	1.89
24	<i>0.46</i>	<i>0.69</i>	0.92	1.15	1.38	1.61	1.84	2.07
26	<i>0.50</i>	0.75	0.99	1.24	1.49	1.74	1.99	2.24
28	<i>0.54</i>	0.80	1.07	1.34	1.61	1.87	2.14	2.41
30	<i>0.57</i>	0.86	1.15	1.43	1.72	2.01	2.29	2.58
32	<i>0.61</i>	0.92	1.22	1.52	1.84	2.14	2.45	2.75

**Important:** The Malice 2F Insecticide rate applied affects the length of control and to a considerable extent, the degree of control or effect. Row-spacing X Malice 2F Insecticide rate combinations in italics may not provide adequate residual pest control and are not suitable for long-term, residual control. Use higher listed labeled rates where infestations may occur later in crop development or where pest pressure is continuous. Loveland Products, Inc. offers no warranty for use of Malice 2F Insecticide at rates below 0.7 fluid ounce per 1000 row-feet.

**TREE, BUSH and VINE CROPS**  
Application Directions – Malice 2F Insecticide

**BANANA AND PLANTAIN**

Pests Controlled	Rate Fl Ozs/Acre
Aphids	16.0 to 32.0
Leafhoppers	
Pests/Diseases Suppressed#	
Scales	16.0 to 32.0
<b>Restrictions</b>	
Pre-Harvest Interval (PHI): <b>0 day</b>	
Maximum Malice 2F Insecticide allowed per year: <b>32.0 fl ozs/acre</b> (0.5 lb AI/acre)	
#Control pests that may vector plant diseases.	
<b>Instructions</b>	
Apply specified dosage of this product in the following method:	
1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.	

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**BUSHBERRY**

Including: Blueberry, Currant, Elderberry, Gooseberry, Huckleberry, Juneberry, Ligonberry, Salal

<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Japanese beetle (adults, feeding on foliage)	16.0 to 32.0
White grub complex (grubs of Asiatic garden beetle, European and Masked chafer, Japanese beetle and Oriental beetle)	

**Restrictions**

Pre-Harvest Interval (PHI): **7 days**

Maximum Malice 2F Insecticide allowed per year: **32.0 fl ozs/acre** (0.50 lb AI/acre)

Do not apply pre-bloom or during bloom or when bees are foraging.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. 18-inch band on each side of the row followed with 0.25 inch of irrigation immediately after application.

For optimal grub control, apply Malice 2F Insecticide to control 1<sup>st</sup> or 2<sup>nd</sup> instar larvae. Application may be made post-bloom up to 7 days prior to harvest, or post-harvest until October 1. For optimum control of Japanese beetle larvae, make applications from June 1 to July 15. Do not apply during bloom.

Application to grass covered rows, row middles, drive lanes, headlands, and other grassy areas in and around the berry field will control resident grub populations. Applications directed to the root-zone will help protect berry plant roots from grub feeding.

Apply Malice 2F Insecticide to moist soil. If necessary, apply 1 hour of irrigation water immediately before application of Malice 2F Insecticide. To facilitate movement of Malice 2F Insecticide into the soil and root zone, 1/2 to 1 inch of irrigation water or rainfall must be applied or received within 24 hours of application.

**CITRUS (Containerized)**

Including: Calamondin, Citrus citron, Citrus hybrids (includes chironja, tangelo, and tangor). Grapefruit, Kumquat, Lemon, Lime, Mandarin (tangerine), Pummelo, Orange (sweet and sour), Tangelo, Satsuma mandarin, and other cultivars and/or hybrids of these.

<b>Pests Controlled</b>	<b>Rate mL/ft<sup>3</sup> Container Media</b>
Aphids	0.75
Asian citrus psyllid	
Black fly	
Citrus leafminer	
Leafhoppers/Sharpshooters	
Mealybugs	
Scales	
Whiteflies	1.25 to 2.50
Citrus root weevil (larval complex)	
<b>Pests/Diseases Suppressed#</b>	
Citrus thrips	2.50

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**Restrictions**

Pre-Harvest Interval (PHI): **0 days**

Maximum Malice 2F Insecticide allowed per crop season: **2.5 mL/ft<sup>3</sup> container media**

Do not apply pre-bloom or during bloom or when bees are foraging.

**Instructions**

Determine volume of container and calculate dosage necessary to treat container. Apply calculated dosage of Malice 2F Insecticide per container as a soil drench or through low-pressure drip or trickle irrigation water. Use sufficient carrier volume to ensure thorough uniform distribution throughout the media without loss of gravitational water from the container. For optimal results, treatment should be made at planting prior to insect infestation. Retreat if necessary. For control of larvae of the citrus root weevil complex, application should be made prior to neonate larvae entering potting media. Utilize higher listed dosage for heavy infestations.

#Controls pests that may vector plant diseases.

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**CITRUS (Field)**

Including: Calamondin, Citrus, Citron, Citrus hybrids (includes chironja, tangelo, and tangor), Grapefruit, Kumquat, Lemon, Lime, Mandarin (tangerine), Pummelo, Orange (sweet and sour). Tangelo. Satsuma mandarin, and other cultivars and/or hybrids of these.

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<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Aphids	
Asian citrus psyllid	
Black fly	
Citrus leafminer	16.0 to 32.0
Leafhoppers/Sharpshooters	
Mealybugs	
Scales	
Termites (FL only)	
Whiteflies	
<b>Pests/Diseases Suppressed#</b>	
Symptoms of:	
Citrus tristeza virus CTV through vector control	
Citrus yellows	32.0
Thrips (foliage feeding thrips only)	

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**Restrictions**

Pre-Harvest Interval (PHI): **0 day**

Maximum Malice 2F Insecticide allowed per year: **32.0 fl ozs/acre** (0.50 lb AI/acre)

#Controls pests that may vector plant diseases.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment. For optimum results, apply to newly planted trees or those previously trained to drip, trickle or micro-sprinkler irrigation. To break soil surface tension, lightly pre-wet soil prior to applications of Malice 2F Insecticide. Chemigation application can be made separate to normal irrigation but followed by 10 to 20 minutes of additional watering to move Malice 2F Insecticide into root zone. Allow 24 hours before initiating subsequent irrigations;
2. Soil surface band spray on both sides of the tree. Overlap bands at the base of the tree to create a continuous band within the drip-line area of the tree, to be followed immediately with light sprinkler irrigation sufficient to move the product into the upper portion of the root-zone. This method is suitable for very coarse soils with 0.75% organic matter or less;
3. Drench to base of tree not exceeding one-quart total solution per tree immediately around trunk of tree and extending outward covering the entire fibrous root system of the tree. Only suitable for trees up to 8 feet tall;
4. For control of existing termite infestations, apply specified dosage in 1.0 to 4.0 quarts of total solution volume, depending on size of tree, as a drench application to the basal portion of the tree trunk and surrounding soil in the immediate vicinity of the tree trunk.

**COFFEE**

<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Aphids	16.0 to 32.0
Leafhoppers	
Leafminer	
<b>Pests/Diseases Suppressed#</b>	
Scales	16.0 to 32.0

**Restrictions**

Pre-Harvest Interval (PHI): **7 days**

Maximum Malice 2F Insecticide allowed per year: **32.0 fl ozs/acre** (0.5 lb AI/acre)

Do not apply pre-bloom or during bloom or when bees are foraging.

#Controls pests that may vector plant diseases.

**Instructions**

Apply specified dosage in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.
2. Subsurface side-dress shanked into the root-zone on both sides of the plants followed by irrigation;
3. Basal, soil drench in sufficient water to insure incorporation into the root-zone followed by irrigation.

**CRANBERRY**

<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Rootgrubs (Scarabaeidae)	
Rootworms (Chrysomelidae)	16.0 to 32.0



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**Restrictions**

Pre-Harvest Interval (PHI): **30 days**

Maximum Malice 2F Insecticide allowed per year: **32.0 fl ozs/acre** (0.50 lb AI/acre)

Do not apply pre-bloom or during bloom or when bees are foraging.

**Instructions**

Apply Malice 2F Insecticide to moist soil. Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. As a soil spray (ground application) directed to the root and crown area using a minimum of 20.0 gallons of water per acre;
2. As a chemigation application with 600 to 1000 gallons water.

Immediately upon application, Malice 2F Insecticide must be incorporated into root-zone by 0.1 to 0.3 inch water per acre, either with the chemigation application or through irrigation/rainfall if not applied through chemigation. Inadequate incorporation within 24 hours of application may result in reduced control.

**Rootgrubs and Rootworms**

Best control may be achieved when application is made post-bloom immediately after bees are removed. Applications should target early instar larvae.

Malice 2F Insecticide has not been tested for crop response in tank mixes with other registered fungicides or insecticides. If tank mixing is desired, premix a sample of the Malice 2F Insecticide and the desired fungicide or insecticide partner at labeled rates and apply to a small area. Evaluate crop response within 48 hours and for at least 2 weeks prior to utilizing the tank mix on larger acreage. If crop injury results from the premix test, do not apply the tank mix to larger acreage.

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**GRAPE**

Including: American bunch grape, Muscadine grape and Vinifera grape

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<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Mealybugs	
Leafhoppers/Sharpshooters	16.0 to 32.0
<i>Phylloxera</i> * spp.	
<b>Pests/Diseases Suppressed#</b>	
Pierce's disease	24.0 to 32.0

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**Restrictions**

Pre-Harvest Interval (PHI): **30 days**

Maximum Malice 2F Insecticide allowed per year: **32.0 fl ozs/acre** (0.50 lb AI/acre)

#Controls pests that may vector plant diseases.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. Subsurface side-dress shanked into the root-zone on both sides of the plants followed by irrigation;
3. Hill drench in sufficient water to insure incorporation into the root-zone followed by irrigation.

For optimum results, make application(s) between bud-break and the pea-berry stage.

\*Repeated and regular use of Malice 2F Insecticide over several, consecutive growing seasons controls existing *Phylloxera* infestations over time or prevents *Phylloxera* from becoming established.

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**HOP**

<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Aphids	19.2

**Restrictions**

Pre-Harvest Interval (PHI): **60 days**

Maximum Malice 2F Insecticide allowed per year: **19.2 fl ozs/acre** (0.3 lb AI/acre)

Use not permitted in California unless otherwise directed by state-specific 24(c) labeling.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. Subsurface side-dress shanked into the root-zone on both sides of the plants followed by irrigation;
3. Hill drench in sufficient water to insure incorporation into the root-zone followed by irrigation.

**POME FRUIT**

Including: Apple, Crabapple, Loquat, Mayhaw, Pear (including Oriental pear), Quince

<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Aphids (including woolly apple aphid)	16.0 to 24.0
Leafhoppers	

**Restrictions**

Pre-Harvest Interval (PHI): **21 days**

Maximum Malice 2F Insecticide allowed per year: **24.0 fl ozs/acre** (0.38 lb AI/acre)

Do not apply pre-bloom or during bloom or when bees are foraging.

Use not permitted in California unless otherwise directed by state-specific 24(c) labeling.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in the following method:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.

**POMEGRANATE**

<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Aphids	16.0 to 32.0
Leafhoppers/Sharpshooters	
Whiteflies	

**Restrictions**

Pre-Harvest Interval (PHI): **0 day**

Maximum Malice 2F Insecticide allowed per year: **32.0 fl ozs/acre** (0.5 lb AI/acre)

Do not apply pre-bloom or during bloom or when bees are foraging.

**Instructions**

Apply specified dosage of this product in the following method:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.

**STONE FRUIT**

Including: Apricot, Cherry (including sweet and tart), Nectarine, Peach, Plum (including Chickasaw, Damson, and Japanese), Plumcot, Prune (fresh and dried)

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<b>In-field, Soil Application</b>	
<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Aphids (including woolly apple aphid) Leafhoppers	16.0 to 24.0

**Restrictions**

Pre-Harvest Interval (PHI): **21 days**

Maximum Malice 2F Insecticide allowed per year: **24.0 fl ozs/acre** (0.38 lb AI/acre)

Do not apply pre-bloom or during bloom or when bees are foraging.

Use not permitted in California unless otherwise directed by state-specific 24(c) labeling.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in the following method:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.

<b>Pre-Plant, Root Dip Application</b>	
<b>Pests Controlled</b>	<b>Rate Fl Ozs/10.0 gals root-dip solution</b>
Black peach aphid (infesting roots)	2.0
Mix Malice 2F Insecticide at 2.0 fluid ounces per 10.0 gallons of water. Thoroughly wet bare-root transplant to slightly above the graft union by soaking roots in the Malice 2F Insecticide solution for up to 5 minutes. Allow solution to dry on roots and transplant trees as soon as possible following treatment.	

**TROPICAL FRUIT**

Including: Acerola, Atemoya, Avocado, Birida, Black sapote, Canistel, Cherimoya, Custard apple, Feijoa, Guava, Jaboticaba, Llama, Longan, Lychee, Mamey sapote, Mango, Papaya, Passionfruit, Persimmon, Pulasan, Rambutan, Sapodilla, Soursop, Spanish lime, Star apple. Starfruit. Sugar apple. Wax jambu

<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Aphids Leafhoppers Whiteflies	24.0 to 32.0
<b>Pests/Diseases Suppressed#</b>	
Scales	32.0

**Restrictions**

Pre-Harvest Interval (PHI): **6 days**

Maximum Malice 2F Insecticide allowed per application: **32.0 fl ozs/acre** (0.50 lb AI/acre)

Do not apply pre-bloom or during bloom or when bees are foraging.

Use not permitted in California unless otherwise directed by state-specific 24(c) labeling.

#Controls pests that may vector plant diseases.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in the following method:

1. Chemigation through low-pressure drip, trickle, micro-sprinkler or equivalent equipment.

**TREE NUTS (except Almond)**

Beechnut, Brazil nut, Butternut, Cashew, Chestnut, Chinquapin, Filbert, Hickory nut, Macadamia nut, Pecan, Pistachio, Walnut (black and English)

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<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Aphids	16.0 to 32.0
Leafhoppers/Sharpshooters	
Mealybugs	
Spittlebugs	
Termites	
Whiteflies	
<b>Pests/Diseases Suppressed#</b>	
Pecan scab (from reduction in honeydew deposition)	24.0 to 32.0
Thrips (foliage-feeding thrips only)	32.0

**Restrictions**

Pre-Harvest Interval (PHI): **7 days**

Maximum Malice 2F Insecticide allowed per year: **32.0 fl ozs/acre** (0.50 lb AI/acre)

Do not apply pre-bloom or during bloom or when bees are foraging.

#Controls pests that may vector plant diseases.

**Instructions**

Apply specified dosage prior to or at onset of pest infestation in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment. Pre-wet soil prior to applications of this product and allow soil to dry following application and prior to subsequent irrigation;
2. Emitter or spot application in a minimum of 4.0 fluid ounces of mixture per emitter site;
3. Shank or subsurface side-dress, injected to a depth just above or just within the root zone and between the trunk and drip line of the tree canopy. Apply product in a minimum of 10.0 gallons per acre using multiple shanks on both sides of trees. Ensure product placement is below sod or orchard floor debris. Follow with irrigation over entire treated area within 48 hours to promote uptake by root system.
4. For control of termites, apply specified dosage to slightly moist soil as a high-volume drench to the basal portion of the tree trunk and surrounding soil in the immediate vicinity of the tree trunk. Utilize sufficient carrier volume to penetrate the soil to a depth of 18 to 24 inches to obtain optimum control. Allow soil to dry following treatment and prior to applying any irrigation.

Use the higher listed rates when applied by shank or subsurface side-dress, used on larger trees, soils are high in clay content, high plant populations exist, and/or where extended control is desired. Under some conditions, control may not occur for 14 or more days or until two (2) irrigations have been made. Applications made later in the season may result in reduced efficacy.

**OTHER SITES**

**CHRISTMAS TREE**

<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
White grub complex (damage from grubs of Asiatic garden beetle, European and Masked chafer, Japanese beetle and Oriental beetle)	16.0 to 32.0

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**Restrictions**

Maximum Malice 2F Insecticide allowed per year: **32.0 fl ozs/acre** (0.5 lb AI/acre)

**Instructions**

Soil incorporation and movement of this product to the root-zone is required for activity. This product can be incorporated most readily when applied to moist soil. Apply specified dosage in one of the following methods:

1. Chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment;
2. 18-inch band on each side of the row (small trees) to full broadcast application (large trees) followed by rainfall or 0.25 to 1 inch of irrigation within 12 hours after application.

For optimal grub control, apply this product during adult flight activity, or up to mid-July, when first instar larvae are present.

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**POPLAR/COTTONWOOD**

(Includes members of the genus *Populus* grown for pulp or timber)

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<b>Pests Controlled</b>	<b>Rate Fl Ozs/Acre</b>
Aphids	
Cottonwood leaf beetle	16.0 to 32.0
<b>Pests/Diseases Suppressed#</b>	
<i>Phylloxera popularia</i>	16.0 to 32.0

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**Restrictions**

Maximum Malice 2F Insecticide allowed at-plant per year: **32.0 fl ozs/acre** (0.50 lb AI/acre)

Do not apply pre-bloom or during bloom or when bees are foraging.

Use not permitted in California unless otherwise directed by state-specific 24(c) labeling.

#Controls pests that may vector plant diseases.

**Instructions**

Apply specified dosage of Malice 2F Insecticide in the following method:

1. Chemigation through low-pressure drip irrigation.

For Cottonwood leaf beetle, protection against damage will occur when application is made early, when the beetles first begin feeding. Larger trees may require earlier treatment as a result of slower uptake.

For *Phylloxera*, apply early in the year, from break of dormancy through May.

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**APPLICATION TO TURFGRASS**

Use Malice 2F Insecticide for the control of listed soil inhabiting pests of turfgrass, including Northern & Southern masked chafers, *Cyclocephala borealis*, *C. immaculata*, and/or *C. lurida*; Asiatic garden beetle, *Maladera castanea*; European chafer, *Rhizotrogus majalis*; Green June beetle, *Cotinis nitida*; May or June beetle, *Phyllophaga* spp.; Japanese beetle, *Popillia japonica*; Oriental beetle, *Anomala orientalis*; Billbugs, *Sphenophorus* spp.; Annual bluegrass weevil, *Listronotus* spp.; Black turfgrass ataenius, *Ataenius spretulus* and *Aphodius* spp.; European crane fly, *Tipula paludosa*; and mole crickets, *Scapteriscus* spp. Use this product for suppression of cutworms and chinch bugs. Use as directed on turfgrass on residential lawns, business and office complexes, shopping complexes, multi-family residential complexes, golf courses, airports, cemeteries, parks, playgrounds, and athletic fields.

The active ingredient in this product has sufficient residual activity so that applications can be made preceding the egg laying activity of the target pests. Base the need for an application on historical monitoring of the site, previous records or experiences, current season adult trapping or other methods. Make applications prior to egg hatch of the target pests, followed by sufficient irrigation or rainfall to move the active ingredient through the thatch.

**RESTRICTIONS**

- **DO NOT** make applications when turfgrass areas are waterlogged or the soil is saturated with water. Adequate distribution of the active ingredient cannot be achieved when these conditions exist.

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- The treated turf area must be in such a condition that the rainfall or irrigation will penetrate vertically in the soil profile.
- Applications cannot exceed a total of 1.6 pints (0.4 lb AI) per acre per year.
- **DO NOT** apply this product in a way that will contact people or pets.
- **DO NOT** allow children or pets to enter treated areas until sprays have dried.

**Application Methods**

Apply this product in sufficient water to provide adequate distribution in the treated area. The use of accurately calibrated equipment normally used for the application of turfgrass insecticides is required. Use equipment which will produce a uniform, coarse droplet spray, using a low pressure setting to eliminate off target drift. Check calibration periodically to ensure that equipment is working properly.

**TURF GRASS**

<b>PEST</b>	<b>USE RATE</b>	<b>APPLICATION INSTRUCTIONS</b>
<b>Larvae of:</b>	1.25 to 1.6 pts/A	For control of grubs, billbugs, annual bluegrass weevil, and European crane fly make application prior to egg hatch of the target pest. Read " <b>Application Methods</b> " section for Application to Turfgrass.
Annual bluegrass weevil	OR	
Asiatic garden beetle	0.46 to 0.6 fl oz	
Billbugs	(14.0 to 17.0 mL)/	
Black turfgrass ataenius	1000 sq ft	
Cutworms (suppression)		
European chafer		
European crane fly		
Green June beetle		
Japanese beetle		
Northern masked chafer		
Oriental beetle		
<i>Phyllophaga</i> spp.		
Southern masked chafer		
Chinchbugs (suppression)	1.6 pts/A	For suppression of chinchbugs, make application prior to or during the hatching of the first instar nymphs. For control of mole crickets, make application prior to or during the peak egg hatch period. When adults or large nymphs are present and actively tunneling, accompany the application of this product with a remedial insecticide. Follow the most restrictive label instructions when tank mixing.
Mole crickets	OR	
	0.6 fl oz (17.0 mL)/ 1000 sq ft	

Consult your local turf, state Agricultural Experiment Station, or State Extension Service Specialists for more specific information regarding timing of application.

**RESTRICTIONS:**

- **DO NOT** apply more than 25.6 fl ozs (1.6 pts) (0.4 lb AI) per acre per year.
- **DO NOT** mow turf or lawn area until after sufficient irrigation or rainfall has occurred so that uniformity of application will not be affected.
- Irrigation or rainfall must occur within 24 hours after application to move the active ingredient through the thatch.

**APPLICATION TO LANDSCAPE ORNAMENTALS**

Use this product on ornamentals in and around the perimeter of commercial and residential landscapes and interior plantscapes. It is a systemic product and will be translocated upward into the plant system from root uptake. Apply this product to areas where the growing portion of the target plant can absorb the active ingredient. The addition of a

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nitrogen containing fertilizer, where applicable, into the solution has been shown to enhance the uptake of the active ingredient. Application can be made by foliar application or soil applications; including soil injection, drenches, and broadcast sprays. Foliar applications offer locally systemic activity against insect pests.

When making soil applications to plants with woody stems, systemic activity will be delayed until the active ingredient is translocated throughout the plant. In some cases, this translocation delay could take 60 days or longer. For this reason, make applications prior to anticipated pest infestation to achieve control.

Outdoor applications cannot exceed a total of 25.6 fluid ounces (1.6 pints) (0.4 pound of active ingredient) per acre per year.

**Ant Management Programs**

Use this product to control aphids, scale insects, mealybugs and other sucking pests on ornamentals to limit the honeydew available as a food source for ant populations. Applications can then be supplemented with residual sprays, bait placements or other ant control tactics to further reduce the pest population.

**Application Methods**

Mix product with the required amount of water and apply as desired dependent upon the selected use pattern. When making foliar applications on hard-to-wet foliage such as holly, pine, or ivy, the addition of a spreader/sticker will improve coverage. If concentrate or mist type spray equipment is used, apply an equivalent amount of product on the area sprayed, as would be used in a dilute application. This insecticide has been found to be compatible with commonly used fungicides, miticides, liquid fertilizers, and other commonly used insecticides. The physical compatibility of this product may vary with different sources of pesticide products and local cultural practices. Prepare, on a small scale (pint or quart jar), any tank mixture which has not been previously tested by using the proper proportions of pesticides and water to ensure the physical compatibility of the mixture.

**RESTRICTION: DO NOT** apply through any irrigation system.

- DO NOT apply this product in a way that will contact people or pets.
- DO NOT allow children or pets to enter treated areas until sprays have dried.

**ORNAMENTAL TREES, SHRUBS, EVERGREENS, FLOWERS, FOLIAGE PLANTS, GROUNDCOVERS, INTERIOR PLANTSCAPES** (in and around the perimeter of industrial and commercial buildings and residential areas)

**FOLIAR APPLICATIONS**

PEST	USE RATE	APPLICATION INSTRUCTIONS
Adelgids	1.7 fl ozs (50.0 mL)	Start treatments prior to establishment of high pest populations and reapply on an as needed basis. For resistance management purposes, do not follow an imidacloprid foliar application with a soil application in the same crop.
Aphids	/100 gals of water	
Asian longhorned beetle		
Japanese beetles (adults)		
Lace bugs		
Leaf beetles (including Elm and Viburnum leaf beetles)		
Leafhoppers (including Glassy-winged sharpshooter)		
Leafminers		
Mealy bugs		
Sawfly larvae		
Thrips (suppression)		
Whiteflies		

**BROADCAST APPLICATIONS**

PEST	USE RATE	APPLICATION INSTRUCTIONS
White grub larvae (such as Japanese beetle larvae, chafers, <i>Phyllophaga</i> spp., Asiatic garden beetle; Oriental beetle)	0.46 to 0.6 fl oz (14.0 to 18.0 mL) /1000 sq ft	Mix required amount of product in sufficient water to uniformly and accurately cover the area being treated. <b>DO NOT</b> use less than 2.0 gals of water/1000 sq ft. Irrigate thoroughly to incorporate this insecticide into the upper soil

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profile. Refer to use directions (found below)  
specific for Flowers and Ground Covers.

**RESTRICTIONS**

- **DO NOT** apply more than 25.6 fl ozs (1.6 pts) (0.4 lbs AI) per acre per year.
- **DO NOT** harvest or consume fruits or nuts from trees that have been treated within 1 year of application.
- **DO NOT** apply through any irrigation system
- **DO NOT** apply this product by any application method, to linden, basswood or other *Tillia* species in the State of Oregon.

**ORNAMENTAL TREES, SHRUBS, FLOWERS AND GROWDCOVERS** (in and around the perimeter of industrial and commercial buildings and residential areas, and state, national, and private wooded and forested areas for the insect pests listed below.)

PEST	USE RATE	APPLICATION SITE
	<b>TREES</b>	
Adelgids Alder borer Aphids Armored scales (suppression) Asian longhorned beetle Black vine weevil larvae Bronze birch borer Emerald ash borer Eucalyptus longhorned borer Flatheaded borers (including Bronze birch and Alder) Japanese beetles Lace bugs Leaf beetles (including Elm and Viburnum leaf beetles) Leafhoppers (including Glassy-winged sharpshooter) Leafminers Mealybugs Pine tip moth larvae Psyllids Royal palm bugs Sawfly larvae* Soft scales Thrips (suppression) White grub larvae Whiteflies	<p><b>For TREES:</b>                      Use the following rates as a function of tree diameter at breast height (DBH):                      Apply 0.1 to 0.4 fl oz (3.0 to 12.0 mL)/inch of trunk diameter (DBH)                      You may use the higher listed rate (0.3 to 0.4 fl oz) only for trees &gt;15 inches (DBH) to control:                      Alder borer, Asian longhorned beetle, Bronze birch borer, Emerald ash borer, and Eucalyptus longhorned borer  <b>RESTRICTION: DO NOT</b> apply more than 25.6 fl ozs (0.4 lb AI)/A/year.                      Diameter at Breast Height (DBH) is measured at 4.5 ft from the ground.</p>	<p><b>Soil Injection: GRID SYSTEM:</b> Holes must be spaced on 2.5 ft centers, in a grid pattern, extending to the drip line of the tree.  <b>CIRCLE SYSTEM:</b> Apply in holes evenly spaced in circles (use more than one circle dependent upon the size of the tree) beneath the drip line of the tree extending in from that line.  <b>BASAL SYSTEM:</b> Space injection holes evenly around the base of the tree trunk no more than 6 to 12 inches out from the base. Mix required dosage in sufficient water to inject an equal amount of solution in each hole.                      Maintain a low pressure and use sufficient solution for distribution of the liquid into the treatment zone. Keep the treated area moist for 7 to 10 days. <b>DO NOT</b> use less than 4 holes/tree.  <b>NEW YORK SPECIFIC RESTRICTION: No Soil Injection Applications Allowed in Nassau or Suffolk Counties of New York.</b>  <b>Soil Drench:</b> Uniformly apply the dosage in no less than 10.0 gals of water/1000 sq ft as a drench around the base of the tree, directed to the root zone. Remove plastic or any other barrier that will stop solution from reaching the root zone.  <b>For Control of Specified Borers:</b>                      Application to trees already heavily infested may not prevent the eventual loss of the trees due to existing pest damage and tree stress.  <b>Basal Drench using Slow Release Irrigation Bags (such as Tregator® 15, 20, or 50 Gallon capacity):</b> Follow manufacturer's instructions for installation and setup of drip irrigation</p>



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		water bag. Fill bag to 1/4 capacity with irrigation water. Add the specified rate of this product for the tree diameter to which the bag is attached. Add remaining volume of water needed to fill bag.
<b>PEST</b>	<b>USE RATE</b>	<b>APPLICATION SITE</b>
	<b>SHRUBS</b>	
Adelgids Alder borer Aphids Armored scales (suppression) Black vine weevil larvae Bronze birch borer Eucalyptus longhorned borer Flatheaded borers (including Bronze birch and Alder) Japanese beetles Lace bugs Leaf beetles (including Elm and Viburnum leaf beetles) Leafhoppers (including Glassy-winged sharpshooter) Leafminers Mealybugs Pine tip moth larvae Psyllids Royal palm bugs Sawfly larvae* Soft scales Thrips (suppression) White grub larvae Whiteflies	0.1 to 0.2 fl oz (3.0 to 6.0 mL)/ft of shrub height	<p><b>Soil Injection:</b> Apply to individual plants using dosage indicated. Mix required dosage in sufficient water to inject an equal amount of solution in each hole. Maintain a low pressure and use sufficient solution for distribution of the liquid into the treatment zone. Keep the treated area moist for 7 to 10 days. <b>DO NOT</b> use less than 4 holes/shrub.</p> <p><b>NEW YORK SPECIFIC RESTRICTION: No Soil Injection Applications Allowed in Nassau or Suffolk Counties of New York.</b></p> <p><b>Soil Drench:</b> Uniformly apply the dosage in no less than 10.0 gals of water/1000 sq ft as a drench around the base of the tree, directed to the root zone. Remove plastic or any other barrier that will stop solution from reaching the root zone.</p> <p><b>Basal Drench using Slow Release Irrigation Bags (such as Treegator 15, 20, or 50 Gallon capacity):</b> Follow manufacturer's instructions for installation and setup of drip irrigation water bag. Fill bag to 1/4 capacity with irrigation water. Add the specified rate of this product for the shrub height to which the bag is attached. Add remaining volume of water needed to fill bag.</p>
	<b>FLOWERS &amp; GROUNDCOVERS</b>	
	0.46 to 0.6 fl oz (14.0 to 17.0 mL)/1000 SQ ft	Apply as a broadcast treatment before or after planting, prior to bloom or after all flower petals have fallen off for established plants. Irrigate immediately following application to established plants.
<b>APPLICATION INSTRUCTIONS</b>		
*Pine sawfly larvae feed on mature foliage beginning in early spring. Make treatments in the fall before pine sawfly emergence in spring to allow adequate time for imidacloprid translocation into mature foliage.		
<p><b>RESTRICTIONS:</b></p> <ul style="list-style-type: none"> <li>• <b>DO NOT</b> apply more than 25.6 fl ozs (1.6 pts) (0.4 lb AI) per acre per year.</li> <li>• <b>DO NOT</b> harvest or consume fruits or nuts from trees that have been treated within 1 year of application.</li> <li>• <b>DO NOT</b> apply through any irrigation system.</li> <li>• <b>DO NOT</b> apply this product by any application method, to linden, basswood or other <i>Tillia</i> species in the State of Oregon.</li> </ul>		

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**POME FRUITS: Apple, Crabapple, Loquat, Mayhaw, Pear, Pear (oriental), Quince** (around perimeter of industrial and commercial buildings and on residential areas)

PEST	USE RATE	
Aphids (except Woolly apple aphid)	1.5 fl ozs (45.0 mL) /100 gals of water	6.0 fl ozs/A <sup>1</sup>
Leafhoppers (including Glassy-winged sharpshooter)		
Leafminer		
Mealybugs*		
San Jose scale*		

**APPLICATION INSTRUCTIONS**

Apply specified dosage as foliar spray as needed after petal-fall is complete.  
 For control of Rosy apple aphid, apply prior to leafrolling caused by the pest.  
 For first generation leafminer control, make first application as soon as petal-fall is complete. Greatest leafminer control will result from the earliest possible application. For second and succeeding generations of leafminer, optimal control is obtained from applications made early in the adult flight against egg and early instar larvae. A second application may be required 10 days later if severe pressure continues or if generations are overlapping. A single application may result in suppression only. This product will not control late stage larvae.  
 For San Jose Scale, time applications to the crawler stage. Treat each generation.  
 For late season (preharvest) control of leafhopper species, apply this product while most leafhoppers are in the nymphal stage. For control of mealybugs, insure good spray coverage of the trunk and scaffolding limbs or other resting sites of the mealybugs.

<sup>1</sup>The amount of this product required per acre will depend on tree size and volume of foliage present. The rate per acre is based on a standard of 400 gallons of dilute spray solution per acre for large trees.

**RESTRICTIONS:**

- DO NOT apply more than 25.6 fl ozs per acre per year.
- DO NOT apply more than 6.0 fl ozs per acre in a single application.
- DO NOT make more than 4 applications per year.
- Allow 10 or more days between applications.
- Allow at least 7 days between last application and harvest.

\*Not for use in California for control on pears.

**PECANS\*** (around perimeter of industrial and commercial buildings and on residential areas)

PEST	USE RATE	
Black margined aphid	1.5 fl ozs (45.0 mL)	6.0 fl oz/A <sup>1</sup>
Pecan leaf phylloxera	/100 gals of water	
Pecan spittlebut		
Pecan stem phylloxera		
Yellow pecan aphid		

**APPLICATION INSTRUCTIONS**

Make foliar applications as pests begin to build before populations become extreme. Two applications at a 10- to 14-day interval may be required to achieve control. Scout and retreat if needed. Thorough uniform coverage of foliage is necessary for control. Addition of an organosilicone-based spray adjuvant at a rate not to exceed the adjuvant manufacturer's specified use rate may improve coverage.

<sup>1</sup>The amount of this product required per acre will depend on tree size and volume of foliage present. The rate per acre is based on a standard of 400 gallons of dilute spray solution per acre for large trees.

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**RESTRICTIONS:**

- Pre-Harvest Interval (PHI): **7 days**
- **DO NOT** apply more than a total of 18.0 fl ozs of this product per acre per year.
- DO NOT make more than 3 applications per year.
- Allow 10 or more days between applications.
- DO NOT apply through any irrigation system.

\*Use on pecans not permitted in California unless otherwise directed by state-specific 24(c) labeling.

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**GRAPES:** (around perimeter of industrial and commercial buildings and on residential areas)

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<b>PEST</b>	<b>USE RATE</b>	
Leafhoppers (including Glassy-winged sharpshooter) Mealybugs*	1.5 fl ozs (45 mL) /100 gals of water	3.0 fl oz/A <sup>1</sup>

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**APPLICATION INSTRUCTIONS**

<sup>1</sup>Apply specified dosage as a foliar spray using 200 gallons of water per acre.

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**RESTRICTIONS:**

- **DO NOT** apply more than a total of 6.0 fl ozs of this product per acre per year.
  - Allow at least 14 days between applications.
  - Applications may be applied up to and including day of harvest.
  - **DO NOT** apply through any irrigation system.
- 

**CITRUS: Citrus and Citrus hybrids, Orange (sweet and sour), Calamondin, Grapefruit, Kumquat, Lemon, Lime, Pummelo, Tangerine, Tangelo** (around perimeter of industrial and commercial buildings and on residential areas)

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<b>PEST</b>	<b>USE RATE</b>	
Aphids Asian citrus psyllid Black fly Citrus leafminer Leafhoppers/Sharpshooters Mealybugs Scales Termites (Fl only) Whiteflies	1.5 fl ozs (45.0 mL) /100 gals of water	6.0 fl oz/A <sup>1</sup>

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**APPLICATION INSTRUCTIONS**

Apply specified dosage as foliar spray as needed after petal-fall is complete.

For first generation leafminer control, make first application as soon as petal-fall is complete. Greatest leafminer control will result from the earliest possible application. For second and succeeding generations of leafminer, optimal control is obtained from applications made early in the adult flight against egg and early instar larvae. A second application may be required 10 days later if severe pressure continues or if generations are overlapping. A single application may result in suppression only. This product will not control late stage larvae.

For late season (preharvest) control of leafhopper species, apply this product while most leafhoppers are in the nymphal stage. For control of mealybugs, insure good spray coverage of the trunk and scaffolding limbs or other resting sites of the mealybugs.

<sup>1</sup>The amount of this product required per acre will depend on tree size and volume of foliage present. The rate per acre is based on a standard of 400 gallons of dilute spray solution per acre for large trees.

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**RESTRICTIONS:**

- **DO NOT** apply more than 32.0 fl ozs (0.5 lb AI) per acre per year.
  - **DO NOT** apply more than 6.0 fl ozs per acre in a single application.
  - **DO NOT** make more than 5 applications per year.
  - Allow 10 or more days between applications.
  - Allow at least 7 days between last application and harvest.
  - **DO NOT** apply through any irrigation system.
  - **DO NOT** apply pre-bloom or during bloom or when bees are foraging.
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**AVOCADO:** (around perimeter of industrial and commercial buildings and on residential areas)

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<b>PEST</b>	<b>USE RATE</b>	
Aphids	1.5 fl ozs (45.0 mL)	6.0 fl oz/A <sup>1</sup>
Avocado lacebug	/100 gals of water	
Leafhoppers		
Whiteflies		

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**APPLICATION INSTRUCTIONS**

<sup>1</sup>The amount of this product required per acre will depend on tree size and volume of foliage present. The rate per acre is based on a standard of 400 gallons of dilute spray solution per acre for large trees.

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**RESTRICTIONS:**

- **DO NOT** apply more than a total of 6.0 fl ozs of this product per acre per year.
  - Allow at least 14 days between applications.
  - Allow at least 7 days between application and harvest.
  - **DO NOT** apply through any irrigation system.
  - **DO NOT** apply pre-bloom or during bloom or when bees are foraging.
- 

**APPLICATION TO GRASSY AREAS IN NURSERIES**

This product can be used for the control of listed soil inhabiting pests of grassy areas of nurseries, including Northern and Southern masked chafers, *Cyclocephala borealis*, *C. immaculata*, and/or *C. lurida*; Asiatic garden beetle, *Maladera castanea*; European chafer, *Rhizotrogus majalis*-, Green June beetle, *Cotinis nitida*; May or June beetle, *Phyllophaga* spp.; Japanese beetle, *Popillia japonica*; Oriental beetle, *Anomala orientalis*; Billbugs, *Spherophorus* spp.; Annual bluegrass weevil, *Hyperodes* spp.; Black turfgrass atenius, *Ataenius spretulus* and *Aphodius* spp. and mole crickets, *Scapteriscus* spp. This product can also be used for suppression of cut-worms and chinch bugs. This product can be used as directed on nursery grass in sites such as under or around field or container grown plants, on roadways or other grassy areas in or around nurseries.

The active ingredient in this product has sufficient residual activity so that applications can be made preceding the egg laying activity of the target pests. The need for an application can be based on historical monitoring of the site, previous records or experiences, current season adult trapping or other methods. When applications are made prior to egg hatch of the target pests, sufficient irrigation or rainfall is needed within 24 hours to allow the movement of the active ingredient through the thatch.

**RESTRICTIONS:**

- **DO NOT** use this product on commercial sod farms.
- **DO NOT** make application when grassy areas are waterlogged or the soil is saturated with water.
- Adequate distribution of the active ingredient cannot be achieved when these conditions exist.
- The treated grassy area must be in such a condition that the rainfall or irrigation will penetrate vertically in the soil profile.
- Application cannot exceed a total of 25.6 fl ozs (1.6 pts) (0.4 lb AI) per acre per year.
- **DO NOT** apply this product in a way that will contact people or pets.
- **DO NOT** allow children or pets to enter treated areas until sprays have dried.

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**Application Equipment for Use on Grassy Areas in Nurseries**

Apply this product in sufficient water to provide adequate distribution in the treated area. The use of accurately calibrated equipment normally used for the application of soil insecticides is required. Use equipment which will produce a uniform, coarse droplet spray, using a low pressure setting to eliminate off target drift. Check calibration periodically to ensure that equipment is working properly.

**GRASSY AREAS OF FIELD AND FOREST NURSERIES**

<b>PEST</b>	<b>USE RATE</b>
<b>Larvae of:</b>	19.2 to 25.6 fl ozs/A (1.25 to 1.6 pt/A)
Annual bluegrass weevil	OR
Asiatic garden beetle	0.46 to 0.6 fl oz (14.0 to 17.0 mL)/1000 sq ft
Billbugs	
Black turfgrass ataenius	
Cutworms (suppression)	
European chafer	
European crane fly	
Green June beetle	
Japanese beetle	
Northern masked chafer	
Oriental beetle	
<i>Phyllophaga</i> spp.	
Southern masked chafer	
Chinchbugs (suppression)	25.6 fl ozs/A (1.6 pts/A)
Mole crickets	OR
	0.6 fl oz (17.0 mL/1000 sq ft)

**APPLICATION INSTRUCTIONS**

For control of grubs, billbugs and annual bluegrass-weevil, make application prior to egg hatch of the target pest. Read "**APPLICATION EQUIPMENT**" section of this label.

For suppression of chinchbugs, make application prior to or during the hatching of the first instar nymphs. For control of mole crickets make application prior to or during the peak egg hatch period. When adults or large nymphs are present and actively tunneling, accompany the application of this product with a remedial insecticide. Follow the most restrictive label instructions when tank-mixing. Consult your local turf, state Agricultural Experiment Station, or State Extension Service Specialists for more specific information regarding timing of application.

**Restrictions**

- **DO NOT** apply more than 25.6 fl ozs (1.6 pts) (0.4 lb AI) per acre per year.
- Irrigation or rainfall must occur within 24 hours after application to move the active ingredient through the thatch.
- **DO NOT** mow turf or lawn area until after sufficient irrigation or rainfall has occurred.

**APPLICATION TO ORNAMENTALS AND VEGETABLE PLANTS**  
**(Nurseries, Greenhouses, Interior Landscapes)**

This product is for insect control on ornamental and commercial vegetable plants in nurseries and greenhouses and interior landscapes. This product is a systemic product and will be translocated upward into the plant system. To assure optimum effectiveness, the product must be placed where the growing portion of the target plant can absorb the active ingredient. The addition of a nitrogen containing fertilizer, where applicable, into the solution may enhance the uptake of the active ingredient. Application can be made by foliar application or soil applications; including soil injection, drenches, and broadcast sprays.

When making soil applications to plants with woody stems, systemic activity will be delayed until the active ingredient is translocated throughout the plant. Make application prior to anticipated pest infestation.

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**RESTRICTION:** Outdoor applications cannot exceed a total of 25.6 fluid ounces (1.6 pints) (0.4 pound of active ingredient) per acre per year, except for things grown in pots, containers, flats or on benches. **DO NOT** apply this product by any application method, to linden, basswood or other *Tilia* species in the State of Oregon.

**Bark Media:** Media with 30% or more bark content may confer a shorter period of protection when treated with this product.

**Resistance:** Some insects are known to develop resistance to insecticides after repeated use. Because the development of resistance cannot be predicted, the use of this product must conform to resistance management strategies established for the use area.

Consult your local or state pest management authorities for details.

**Application Equipment for Ornamentals and Vegetable Plants**

Mix product with the required amount of water and apply as specified for the selected use pattern.

When making foliar applications on hard-to-wet foliage such as holly, pine, or ivy, the addition of a spreader/sticker will improve coverage. If concentrate or mist type spray equipment is used, apply an equivalent amount of product on the area sprayed, as would be used in a dilute application.

This product has been found to be compatible with commonly used fungicides, miticides, liquid fertilizers, and other commonly used insecticides. The physical compatibility of this product may vary with different sources of pesticide products and local cultural practices. For any tank mixture that has not been previously tested, prepare on a small scale (pint or quart jar), using the proper proportions of pesticides and water to ensure the physical compatibility of the mixture.

**FOLIAR & BROADCAST APPLICATIONS: ORNAMENTAL TREES (including non-bearing fruit & nut trees), SHRUBS, EVERGREENS, FLOWERS, FOLIAGE PLANTS, GROWDCOVERS, INTERIOR PLANTSCAPES, VEGETABLE PLANTS\*** (around field-grown nursery and container stock, indoor and outdoor ornamentals (including both greenhouse and interior plantscapes) and ornamentals grown in flats, benches or beds)

**FOLIAR APPLICATIONS**

PEST	USE RATE	APPLICATION INSTRUCTIONS
Adelgids	1.7 fl ozs (50.0 mL)	Start treatments prior to establishment of high pest populations and reapply on an as needed basis. For resistance management purposes, <b>DO NOT</b> make an imidacloprid foliar application following a soil application in the same crop.
Aphids	/100 gals of water	
Japanese beetles (adults)		
Lace bugs		
Leaf beetles (including Elm and Viburnum leaf beetles)		
Leafhoppers (including Glassy-winged sharpshooter)		
Leafminers		
Mealybugs		
Sawfly larvae		
Thrips (suppression)		
Whiteflies		

**BROADCAST APPLICATIONS**

PEST	USE RATE	APPLICATION INSTRUCTIONS
White grub larvae (such as Japanese beetle larvae, chafers, <i>Phyllophaga</i> spp., Asiatic garden beetle, Oriental beetle)	0.46 to 0.6 fl oz (14.0 to 17.0 mL) /1000 sq ft	Mix required amount of product in sufficient water to uniformly and accurately cover the area being treated. <b>DO NOT</b> use less than 2.0 gals of water/1000 sq ft. Irrigate thoroughly to incorporate this insecticide into the upper soil profile. Refer to

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specific use directions (found below). for Flowers  
and Ground Covers.

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**RESTRICTIONS:**

\*Only for use on the following vegetable plants intended for resale: Broccoli, Chinese Broccoli, Broccoli Raab, Brussels Sprouts, Cabbage, Chinese Cabbage, Cauliflower, Collards, Eggplant, Ground Cherry, Kale, Kohlrabi, Lettuce, Mustard Greens, Pepinos, Peppers, Potatoes, Rape Greens, Sorghum, Sugarbeets, Tomatillo, and Tomato.

Outdoor applications cannot exceed a total of 25.6 fl ozs (1.6 pts) (0.4 lbs AI) per acre per year, except for things grown in pots, containers, flats or on benches.

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**SOIL APPLICATIONS: NURSERY, GREENHOUSE AND INTERIORESCAPE PLANTS**

PEST	USE RATE	APPLICATION SITE
Adelgids Alder borer Aphids Armored scales (suppression) Black vine weevil larvae Bronze birch borer Eucalyptus longhorned borer Flatheaded borers (including Bronze birch and Alder) Japanese beetles Lace bugs Leaf beetles (including Elm and Viburnum leaf beetles) Leafhoppers (including Glassy-winged sharpshooter) Leafminers Mealybugs Pine tip moth larvae Psyllids Royal palm bugs Sawfly larvae* Soft scales Thrips (suppression) White grub larvae Whiteflies	<p><b>TREES</b></p> <p><b>For TREES:</b>                      Use the following rates as a function of tree diameter at breast height (DBH):                      Apply 0.1 to 0.4 fl oz (3.0 to 6.0 mL)/in of trunk diameter (DBH). You may use the higher listed rate (0.3 to 0.4 fl oz) only for trees &gt;15 in (DBH) to control: Eucalyptus longhorned borer, Bronze birch borer, and Alder borer  <b>RESTRICTION: DO NOT</b> apply more than 25.6 fl ozs (0.4 lb AI)/ A/year.                      Diameter at Breast Height (DBH) is measured at 4.5 ft from the ground.</p>	<p><b>Soil Injection: GRID SYSTEM:</b> Holes must be spaced on 2.5 ft centers, in a grid pattern, extending to the drip line of the tree. <b>CIRCLE SYSTEM:</b> Apply in holes evenly spaced in circles, (use more than one circle dependent upon the size of the tree) beneath the drip line of the tree extending in from that line. <b>BASAL SYSTEM:</b> Space injection holes evenly around the base of the tree trunk no more than 6 to 12 inches out from the base.</p> <p>Mix required dosage in sufficient water to inject an equal amount of solution in each hole. Maintain a low pressure and use sufficient solution for distribution of the liquid into the treatment zone. Keep the treated area moist for 7 to 10 days. <b>DO NOT</b> use less than 4 holes/tree.</p> <p><b>NEW YORK SPECIFIC RESTRICTION: No Soil Injection Applications Allowed in Nassau or Suffolk Counties of New York.</b></p> <p><b>Soil Drench:</b> Uniformly apply the dosage in no less than 10.0 gals of water/1000 sq ft as a drench around the base of the tree, directed to the root zone. Remove plastic or any other barrier that will stop solution from reaching the root zone.</p> <p><b>For Control of Specified Borers:</b> Application to trees already heavily infested may not prevent the eventual loss of the trees due to existing pest damage and tree stress.</p> <p><b>Basal Soil Drench using Slow Release Irrigation Bags (such as Treegator® 15, 20, or 50 Gallon capacity):</b> Follow manufacturer's instructions for installation and setup of drip irrigation water bag. Fill bag to 1/4 capacity with irrigation water. Add the specified rate of this product for the tree diameter to which the bag is attached. Add remaining volume of water needed to fill bag.</p>
	<p><b>SHRUBS</b></p> <p>0.1 to 0.2 fl oz (3.0 to 6.0 mL)/ft of shrub height</p>	<p><b>Soil Injection:</b> Apply to individual plants using dosage indicated.</p> <p>Mix required dosage in sufficient water to inject an equal amount of solution in each hole. Maintain a low pressure and use sufficient solution for distribution of the liquid into the treatment zone. Keep the treated area moist for 7 to 10 days. <b>DO NOT</b> use less than 4 holes/shrub.</p> <p><b>NEW YORK SPECIFIC RESTRICTION: No Soil</b></p>



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		<p><b>Injection Applications Allowed in Nassau or Suffolk Counties of New York.</b></p> <p><b>Soil Drench:</b> Uniformly apply the dosage in no less than 10.0 gals of water/1000 sq ft as a drench around the base of the tree, directed to the root zone. Remove plastic or any other barrier that will stop solution from reaching the root zone.</p> <p><b>Basal Soil Drench Using Slow Release Irrigation Bags (such as Treegator 15, 20, or 50 Gallon capacity):</b> Follow manufacturer's instructions for installation and setup of drip irrigation water bag. Fill bag to 1/4 capacity with irrigation water. Add the specified rate of this product for the shrub height to which the bag is attached. Add remaining volume of water needed to fill bag.</p>
<b>FLOWERS &amp; GROUNDCOVERS</b>		
	0.46 to 0.6 fl oz (14.0 to 17.0 mL) /1000 sq ft	Apply as a broadcast treatment before or after planting, prior to bloom or after all flower petals have fallen off for established plants. Irrigate immediately following application to established plants.

**APPLICATION INSTRUCTIONS**

\*Pine sawfly larvae feed on mature foliage beginning in early spring. Make treatments in the fall before pine sawfly emergence in spring to allow adequate time for imidacloprid translocation into mature foliage.

**RESTRICTIONS:**

- Outdoor applications cannot exceed a total of 25.6 fl ozs (1.6 pts) (0.4 lbs AI) per acre per year, except for things grown in pots, containers, flats or on benches.

**SOIL APPLICATIONS: FIELD AND FOREST NURSERIES**

<b>PESTS</b>	<b>FL OZS/1000 FT OF ROW</b>	<b>FL OZS/1000 SQ FT</b>
For control of: White grub larvae <sup>1</sup> (such as Japanese beetle, Masked chafers, European chafer, Oriental beetle, Asiatic garden beetle)	1.7 fl oz (50.0 mL)	0.6 fl oz (17.0 mL) 25.6 fl ozs/A

**APPLICATION METHODS**

Apply as a uniform band on either side of the row using a band width six (6) inches wider than the actual root ball diameter to be dug. **DO NOT** allow bands in adjacent rows to overlap.

**APPLICATION INSTRUCTIONS**

Mowing of the vegetation in the area to be treated to a height of 3 inches or less prior to application will improve the consistency of control.

Apply May through July. Time the treatment so that rainfall or irrigation occurs within 24 hours following the application.

<sup>1</sup>For grub control in areas of turf, apply as a broadcast application using 0.46 to 0.60 fl oz (14.0 to 17.0 mL)/ 1,000 sq ft (19.6 to 25.6 fl ozs/acre).

**RESTRICTIONS:**

**DO NOT** use less than 2.0 gallons of spray volume per 1000 sq ft (85 GPA).

**DO NOT** exceed 25.6 fl ozs per acre per year (1.6 pts) (0.4 lbs AI/acre).

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**EBB & FLOOD APPLICATIONS**

This product may be applied through Ebb and Flood applications to Ornamental and Vegetable Plants (intended for resale only) grown in containers. To assure accurate uptake, prior to treatment, bring a minimum of 10 plants up to a known field capacity and allow to dry out for one or two days. Re-wet these plants to determine how much water on average each plant will absorb to bring it back at field capacity. Use the volume absorbed per plant (keeping pot sizes uniform) multiplied by the number of pots being treated. Add to this volume a required minimum to flood your smallest treatment area. This will minimize the return back to the storage tank. Re-use the returned volume with subsequent irrigation or nutrients on the same plants.

<b>EBB &amp; FLOOD APPLICATIONS: ORNAMENTAL AND VEGETABLE PLANTS GROWN IN CONTAINERS</b>			
<b>PEST</b>	<b>Container Size (inches)</b>	<b>Herbaceous species including vegetable plant (1 or 2 plants/pot)</b>	<b>Woody perennials, Herbaceous species including vegetable plants (3 or more/pot)</b>
<b>mL/100 plants</b>			
Adelgids	2	1.6	2.5
Aphids	3	2.5	3.7
Armored scales (suppression)	4	3.3	5.0
	5	4.2	6.3
Fungus gnats (larvae only) <sup>1</sup>	6	5.0	7.7
	7	5.9	9.1
Japanese beetles (adults)	8	6.6	10.0
Lacebugs	9	7.4	11.1
Leaf Beetles (including Elm and Viburnum)	10	8.3	12.5
	11	9.0	14.3
Leafhoppers/Sharpshooters	12	10.0	16.7
Leafminers			
Mealybugs			
Psyllids			
Root mealybugs <sup>2</sup>			
Root weevil complex: (such as Apopka, Black vine, Citrus root) <sup>3</sup>			
Soft scales			
Thrips (suppression) <sup>4</sup>			
Whiteflies			
White grub larvae (such as Japanese beetle, Masked chafers, European chafer, Oriental beetle, Asiatic garden beetle)			

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**APPLICATION INSTRUCTIONS**

<sup>1</sup>**Fungus gnat larvae** in the soil will be controlled by drench or incorporation. **No adult Fungus gnat control.** Other foliar insect control is achieved by the uptake of this product from a healthy root system translocating the active ingredient up into the plant.

<sup>2</sup>**Root mealybug** control will require a thorough drenching of containerized media. Coverage is essential for control while minimizing the amount of leachate. Rate: 2.0 fl ozs (60.0 ml) in 150 gallons of water.

<sup>3</sup>**Citrus root weevil:** For use on non-bearing citrus nursery stock.

<sup>4</sup>**Thrips** suppression on foliage only. Thrips in buds and flowers will not be suppressed.

**RESTRICTION:**

Only for use on the following vegetable plants intended for resale: Broccoli, Chinese broccoli, Broccoli raab, Brussels sprouts, Cabbage, Chinese cabbage, Cauliflower, Collards, Eggplant, Ground cherry, Kale, Kohlrabi, Lettuce, Mustard greens, Pepinos, Peppers, Potatoes, Rape greens, Sorghum, Sugarbeets, Tomatillo, and Tomato.

**DRENCH & IRRIGATION APPLICATIONS**

This product may be applied through Drench and Flood applications. See instructions above "**For Application Through Irrigation Systems.**" Apply only to greenhouse and nursery grown ornamentals, vegetable plants (intended for resale only), and interiorscape plants using soil drenches, micro irrigation, drip irrigation, overhead irrigation, ebb and flood irrigation, or hand-held or motorized calibrated irrigation equipment.

**DRENCH & IRRIGATION APPLICATIONS: ORNAMENTAL AND VEGETABLE PLANTS GROWN IN SMALL CONTAINERS, IN FLATS, ON BENCHES, OR IN BEDS**

PEST	CONTAINERIZED PLANTS (small containers)		
	Container Size (inches)	Herbaceous species including vegetable plants (1 or 2 plants/pot)	Woody perennials, Herbaceous species including vegetable plants (3 or more/pot)
		# of Containers treated with 2.0 fl ozs (60.0 mL)	
Adelgids	2	3000	2000
Aphids	3	2000	1350
Fungus gnats (larvae only) <sup>1</sup>	4	1500	1000
	5	1200	800
Japanese beetles (adults)	6	1000	650
	7	850	550
Lacebugs	8	750	500
Leaf Beetles (including Elm and Viburnum leaf beetles)	9	675	450
	10	600	400
	11	550	350
Leafhoppers (including Glassy-winged Sharpshooter)	12	500	300
Leafminers			
Mealybugs			
Psyllids			
Root mealybugs <sup>2</sup>			
Root weevil complex: (such as Apopka, Black vine, Citrus)			

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root weevils) <sup>3</sup> Soft scales Thrips (suppression) <sup>4</sup> Whiteflies White grub larvae (such as Japanese beetle, Masked chafer, European chafer, Oriental beetle, Asiatic garden beetle)			
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**APPLICATION METHODS**

Use sufficient volume to wet most of the potting medium without loss of liquid from the bottom of the container. Apply according to label directions. Follow application with moderate irrigation. Irrigate carefully during the next 10 days in order to prevent loss of active ingredient due to leaching.

**PLANTS IN FLATS, ON BENCHES, OR IN BEDS**

0.67 fl oz (20.0 mL)/1000 sq ft

**APPLICATION METHODS**

Mix required amount in sufficient water to uniformly cover the area being treated. **DO NOT** use less than 2.0 gallons of mixture per 1000 square feet. Apply as a broadcast treatment and incorporate into the medium before planting or apply after plants are established. Lightly water the treated areas if application is made to established plants. Allow no leaching or runoff for 10 days after application.

**APPLICATION INSTRUCTIONS**

<sup>1</sup>**Fungus gnat larvae** in the soil will be controlled by drench or incorporation. **No adult Fungus gnat control.** Other foliar insect control is achieved by the uptake of this product from a healthy root system translocating the active ingredient up into the plant.

<sup>2</sup>**Root mealybug** control will require a thorough drenching of containerized media. Coverage is essential for control while minimizing the amount of leachate. Rate: 2.0 fl ozs (60.0 mL) in 150 gallons of water.

<sup>3</sup>**Citrus root weevil:** For use on non-bearing citrus nursery stock.

<sup>4</sup>**Thrips** suppression on foliage only. Thrips in buds and flowers will not be suppressed.

**RESTRICTIONS:**

- Outdoor applications cannot exceed a total of 25.6 fl ozs (1.6 pts) (0.4 lb of AI) per acre per year, except for things grown in pots, containers, flats or on benches.
- Only for use on the following vegetable plants intended for resale: Broccoli, Chinese broccoli, Broccoli raab, Brussels sprouts, Cabbage, Chinese cabbage, Cauliflower, Collards, Eggplant, Ground cherry, Kale, Kohlrabi, Lettuce, Mustard greens, Pepinos, Peppers, Potatoes, Rape greens, Sorghum, Sugarbeets, Tomatillo, and Tomato.

**DRENCH AND IRRIGATION APPLICATIONS: ORNAMENTAL AND  
 VEGETABLE PLANTS GROWN IN LARGE CONTAINERS**

**Application instructions:** Use 2.0 fl ozs (60.0 mL) of product in an appropriate amount of water to prevent leaching. 2.0 fl ozs (60.0 ml) will treat the number of containers specified below, based on container size.

Pests	Container Size (gals)	# of Containers treated with 2.0 fl ozs (60.0 mL)
Adelgids	1	340 to 244
Aphids	2	280 to 210
Fungus gnats	3	220 to 185
(larvae only) <sup>1</sup>	5	160 to 110
Japanese beetles (adults)	7	100 to 75

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Lacebugs	10	60 to 45
Leaf Beetles (including Elm and Viburnum leaf beetles)	15 20	40 to 30 20 to 15
Leafhoppers (including Glassy-winged sharpshooter)		
Leafminers		
Mealybugs		
Psyllids		
Root mealybugs <sup>2</sup>		
Root weevil complex: (such as Apopka, Black vine, Citrus root) <sup>3</sup>		
Soft scales		
Thrips (suppression) <sup>4</sup>		
Whiteflies		
White grub larvae (such as Japanese beetle, Masked chafers, European chafer, Oriental beetle, Asiatic garden beetle)		

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**APPLICATION METHODS**

Apply in sufficient water to wet the potting medium. Make applications prior to egg hatch of the target pest. Irrigate moderately after application to move the active ingredient into the root zone.

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**APPLICATION INSTRUCTIONS**

<sup>1</sup>**Fungus gnat larvae** in the soil will be controlled by drench or incorporation. **No adult Fungus gnat control.** Other foliar insect control is achieved by the uptake of this product from a healthy root system translocating the active ingredient up into the plant.

<sup>2</sup>**Root mealybug** control will require a thorough drenching of containerized media. Coverage is essential for control while minimizing the amount of leachate. Rate: 2.0 fl ozs (60.0 mL) in 150 gallons of water.

<sup>3</sup>**Citrus root weevil:** For use on non-bearing citrus nursery stock.

<sup>4</sup>**Thrips** suppression on foliage only. Thrips in buds and flowers will not be suppressed.

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**RESTRICTION:**

Only for use on the following vegetable plants intended for resale: Broccoli, Chinese broccoli, Broccoli raab, Brussels sprouts, Cabbage, Chinese cabbage, Cauliflower, Collards, Eggplant, Ground cherry, Kale, Kohlrabi, Lettuce, Mustard greens, Pepinos, Peppers, Potatoes, Rape greens, Sorghum, Sugarbeets, Tomatillo, and Tomato

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**RESTRICTIONS FOR ALL USES**

- **DO NOT** graze treated areas or use clippings from treated areas for feed or forage.
  - Prevent runoff or puddling of irrigation water following application.
  - **DO NOT** apply this product to soils which are water logged or saturated, which will not allow penetration into the root zone of the plants.
  - **DO NOT** apply this product in a way that will contact people or pets.
  - **DO NOT** allow children or pets to enter treated areas until sprays have dried.
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### STORAGE AND DISPOSAL

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

**PESTICIDE STORAGE:** Store in a cool, dry place and in such a manner as to prevent cross contamination with other pesticides, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area. Handle and open container in a manner as to prevent spillage. If the container is leaking, invert to prevent leakage. If container is leaking or material spilled for any reason or cause, carefully dam up spilled material to prevent runoff. Refer to Precautionary Statements on label for hazards associated with the handling of this material. Do not walk through spilled material. Absorb spilled material with absorbing type compounds and dispose of as directed for pesticides below. In spill or leak incidents, keep unauthorized people away.

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

**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). 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.

**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 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 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. 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.

**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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