



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

August 23, 2023

Jeanette A. Covert  
Regional Regulatory Manager  
UPL NA Inc.  
630 Freedom Business Center, Suite 402  
King of Prussia, PA 19406

Subject: Registration Review Label Amendments Incorporating Mitigation from the Fish and Wildlife Services (FWS) and the National Marine Fisheries Services (NMFS) Biological Opinions on the Effects of Malathion on Endangered and Threatened Species and Designated Critical Habitat  
*Product Name:* Malathion 5 EC  
*EPA Registration Number:* 70506-400  
*Application Dates:* 7/19/2022 and 10/4/2022  
*Decision Numbers:* 589938 and 589939

Dear Jeanette A. Covert:

The Agency, in accordance with the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, has completed reviewing all the information submitted with your application to support the Registration Review of the above referenced product in connection with the FWS and NMFS' Biological Opinions on the effects of malathion on federally listed endangered and threatened species and designated critical habitat in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.). The Agency has concluded that your submission is acceptable. The label referred to above, submitted in connection with registration under FIFRA, as amended, is acceptable.

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

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one copy of the final printed labeling before you release the product for shipment with the new labeling. In accordance with 40

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EPA Reg. No. 70506-400  
Decision No. 589938 and 589939

CFR 152.130(c), you may distribute or sell this product under the previously approved labeling for 12 months from the date of this letter. After 12 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR 152.3.

If you have any questions, please contact Carolyn Smith by phone at (202) 566-2273 or via email at [smith.carolyn@epa.gov](mailto:smith.carolyn@epa.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "Kelly Sherman", with a long horizontal flourish extending to the right.

Kelly Sherman  
Chief, Risk Management Implementation Branch 3  
Pesticide Re-evaluation Division  
Office of Pesticide Programs

Enclosure

**ACCEPTED**

08/23/2023

Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 70506-400

Malathion	GROUP	<b>1B</b>	INSECTICIDE
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**MALATHION 5 EC**

**Malathion 5 EC is a water emulsifiable spray concentrate insecticide and miticide**

**ACTIVE INGREDIENT:**

Malathion: 0,0-dimethyl phosphorodithioate of diethyl mercaptosuccinate ..... 56.00%

**INERT INGREDIENTS:** ..... 44.00%

**TOTAL:** ..... 100.00%

Contains Petroleum Distillates. (Contains 5 pounds of Malathion per gal)

**KEEP OUT OF REACH OF CHILDREN  
WARNING / AVISO**

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

EPA Reg. No. 70506-400

EPA Est. No.

**FIRST AID  
Organophosphate**

<b>IF IN EYES:</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF SWALLOWED:</b>	<ul style="list-style-type: none"> <li>• Immediately call a poison control center or doctor.</li> <li>• Do not induce vomiting unless told to by a poison control center or doctor.</li> <li>• Do not give any liquid to the person.</li> <li>• Do not give anything by mouth to an unconscious person.</li> </ul>
<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"> <li>• Take off contaminated clothing.</li> <li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<b>IF INHALED:</b>	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>

**NOTE TO PHYSICIAN: Contains petroleum distillate. May pose an aspiration pneumonia hazard. This product is an organophosphate ester that inhibits cholinesterase. This product may cause cholinesterase inhibition. Atropine is antidotal. 2-PAM may be effective as an adjunct to atropine. Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For 24 hour emergency medical assistance: Call PROSAR at 1-866-303-6952 or 1-651-632-8946 if calling from outside the U.S.**

**See Additional Precautionary Statements Inside**

**Manufactured For:**

UPL NA Inc.  
630 Freedom Business Center  
Suite 402  
King of Prussia, PA 19046

ADXXXXXXXXX

Net Contents: \_\_\_\_\_

For product use information call 1-800-438-6071

## **PRECAUTIONARY STATEMENTS**

### **Hazards to Humans and Domestic Animals**

#### **WARNING**

Causes substantial but temporary eye damage. Harmful if swallowed. Harmful if absorbed through skin. Harmful if inhaled. Do not get in eyes or on clothing. Avoid contact with skin. Avoid breathing spray mist.

#### **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

Some materials that are chemical-resistant to this product are barrier laminate, butyl rubber, nitrile rubber and viton.

For all formulations and all use patterns - mixers, loaders, applicators, flaggers, and other handlers must wear:

1. Long-sleeved shirt and long pants
2. Chemical-resistant gloves
3. Shoes plus socks
4. Chemical-resistant headgear for overhead exposure
5. Protective eyewear
6. Chemical-resistant apron (dip applications)

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

#### **ENGINEERING CONTROLS**

Pilots must use an enclosed cockpit in a manner that is consistent with the WPS for Agricultural Pesticides [40 CFR 170.240(d)(6)]. Pilots must wear the PPE required on this labeling for applicators.

#### **USER SAFETY RECOMMENDATIONS**

Users should:

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

## ENVIRONMENTAL HAZARDS

This pesticide is toxic to aquatic organisms, including fish and invertebrates. This product may contaminate water through drift of spray in wind. This product has a high potential for runoff after application. Use care when applying in or to an area which is adjacent to any body of water, and do not apply when weather conditions favor drift from target area. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. A level, well maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential for contamination of water from rainfall-runoff. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate. This pesticide is highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area

### Non-Target Organism

This pesticide is toxic to fish and aquatic invertebrates. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas.

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 or weeds if bees are visiting the treatment area. In citrus, stone fruit, pome fruit and tree nuts: Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete. **Protect pollinating insects by following label directions intended to minimize drift and to reduce risk to these organisms.**

Reporting Ecological Incidents: To report ecological incidents, including mortality, injury, or harm to plants and animals, call 1-800-438-6071.

## PHYSICAL AND CHEMICAL HAZARDS

Combustible. Do not use or store near heat or open flames.

## DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation. 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.

### Endangered Species Protection Requirements:

It is a Federal offense to use any pesticide in a manner that results in an unauthorized “take” (e.g., kill or otherwise harm) of an endangered species and certain threatened species under the Endangered Species Act section 9. When using this product, you must follow the measures contained in the Endangered Species Protection Bulletin for the area in which you are applying the product. You must obtain a Bulletin no earlier than six months before using this product. To obtain Bulletins, consult <http://www.epa.gov/espp/>, call 1-844-447-3813, or email [ESPP@epa.gov](mailto:ESPP@epa.gov). You must use the Bulletin valid for the month in which you will apply the product.

Reporting Ecological Incidents: To report ecological incidents, including mortality, injury, or harm to plants and animals, call 1-800-438-6071.

Do not apply this product when soil is saturated, or when a storm event likely to produce runoff from the treated area is forecasted (by NOAA/National Weather Service, or other similar forecasting service) to occur within 48 hours following application.

### **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 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 and restricted-entry intervals. 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. The REI for each crop is listed in the Directions for Use associated with each crop.

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:

1. Coveralls
2. Shoes plus socks
3. Chemical-resistant gloves made of any waterproof material.

### **NON-AGRICULTURAL USE REQUIREMENTS**

The requirements of 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, or nurseries.

Do not enter or allow others to enter until sprays have dried.

### **PRECAUTIONS AND RESTRICTIONS**

Do not combine emulsifiable liquids with wettable powders in the same spray tank unless previous use of the materials being combined has proven them to be physically compatible.

Application may not be made around bodies of water where fish or shellfish are grown and/or harvested commercially.

All ULV formulations must be packaged in closed mixing and loading systems.

Do not apply this product through any type of irrigation system.

For proper mixing, fill the spray tank at least 3/4 full with water before Malathion 5 EC formulation is added. Mechanical agitation or recirculation through the pump by-pass to the tank is usually sufficient for maintaining a good dispersion. Rinse empty container with water and drain into spray tank - repeat twice more. Consult your State Experiment Station as to the timing of applications.

Use on cull piles (including cull dumps, cull piles, fruit dumps, cull fruit and vegetable dumps) is prohibited.

## Resistance-Management Recommendations

For resistance management, Malathion 5 EC contains a Group 1B insecticide. Any insect population may contain individuals naturally resistant to Malathion 5 EC and other Group 1B insecticides. The resistant individuals may dominate the insect population if this group of insecticides are used repeatedly in the same fields. Appropriate resistance-management strategies should be followed.

To delay insecticide resistance, take the following steps:

- Rotate the use of Malathion 5 EC or other Group 1B insecticides within a growing season, or among growing seasons, with different groups that control the same pests.
- Use tank mixtures with insecticides from a different group that are equally effective on the target pest when such use is permitted. Do not rely on the same mixture repeatedly for the same pest population. Consider any known cross-resistance issues (for the targeted pests) between the individual components of a mixture. In addition, consider the following recommendations provided by the Insecticide Resistance Action Committee (IRAC):
  - Individual insecticides selected for use in mixtures should be highly effective and be applied at the rates at which they are individually registered for use against the target species.
  - Mixtures with components having the same IRAC mode of action classification are not recommended for insect resistance management. ○ When using mixtures, consider any known cross-resistance issues between the individual components for the targeted pest(s).
  - Mixtures become less effective if resistance is already developing to one or both active ingredients, but they may still provide pest management benefits.
  - The insect resistance management benefits of an insecticide mixture are greatest if the two components have similar periods of residual insecticidal activity. Mixtures of insecticides with unequal periods of residual insecticide activity may offer an insect resistance management benefit only for the period where both insecticides are active.
- Adopt an integrated pest management program for insecticide/acaricides use that includes scouting, uses historical information related to pesticide use, crop rotation, record keeping, and which considers cultural, biological and other chemical control practices.
- Monitor after application for unexpected target pest survival. If the level of survival suggests the presence of resistance, consult with your local university specialist or certified pest control advisor.
- Contact your local extension specialist or certified crop advisors for any additional pesticide resistance-management and/or IPM recommendations for the specific site and pest problems in your area.



## **MANDATORY SPRAY DRIFT MANAGEMENT**

### **Non-Ultra Low Volume (ULV) Aerial Applications:**

- Do not release spray at a height greater than 10 ft above the ground or vegetative canopy, unless a greater application height is necessary for pilot safety.
- Applicators must select nozzle and pressure that deliver medium or coarser droplets in accordance with American Society of Agricultural & Biological Engineers Standard (ASABE S641).
- If the windspeed is 10 miles per hour or less, applicators must use  $\frac{3}{4}$  swath displacement upwind at the downwind edge of the field. When the windspeed is between 11-15 miles per hour, applicators must use a full swath displacement upwind at the downwind edge of the field.
- Do not apply when wind speeds exceed 15 mph at the application site. If the windspeed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters.
- Do not apply during temperature inversions.

### **Ultra Low Volume (ULV) Aerial Applications:**

- Do not release spray at a height greater than 10 ft above the ground or vegetative canopy, unless a greater application height is necessary for pilot safety.
- Applicators must select nozzle and pressure that deliver fine or coarser droplets in accordance with American Society of Agricultural & Biological Engineers Standard (ASABE S641).
- Applicators must use a full swath displacement upwind at the downwind edge of the field.
- Do not apply when wind speeds exceed 15 mph at the application site. If the windspeed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters.
- Do not apply during temperature inversions.

### **Airblast applications:**

- Sprays must be directed into the canopy.
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- User must turn off outward pointing nozzles at row ends and when spraying outer row.
- Do not apply during temperature inversions.

### **Ground Boom Applications:**

- Do not release spray at a height greater than 4 feet above the ground or crop canopy.
- Applicators must select nozzle and pressure that deliver medium or coarser droplets in accordance with American Society of Agricultural & Biological Engineers Standard 572 (ASABE S572).
- Do not apply when wind speeds exceed 10 mph at the application site.
- Do not apply during temperature inversions.



## **Buffer Zones For Aerial Application**

### **Non-ULV Aerial Application**

Do not apply within 50 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, wetlands, ponds, estuaries, and commercial fish ponds). You must follow the instructions for additional buffer distances beyond the 50 feet, as applicable, per the Endangered Species Protection Bulletin for the area in which you are applying the product. You must obtain a Bulletin no earlier than six months before using this product. To obtain Bulletins, consult <http://www.epa.gov/espp/>, call 1-844-447-3813, or email [ESPP@epa.gov](mailto:ESPP@epa.gov).

### **ULV Aerial Application**

Do not apply within 100 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, wetlands, ponds, estuaries, and commercial fish ponds). This 100-foot buffer is in addition to the full swath displacement upwind that applicators must use at the downwind edge of the field.

## **Buffer Zones For Ground Application**

### **Non-ULV Ground Application**

Do not apply within 25 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, wetlands, ponds, estuaries, and commercial fish ponds). You must follow the instructions for additional buffer distances beyond the 25 feet, as applicable, per the Endangered Species Protection Bulletin for the area in which you are applying the product. You must obtain a Bulletin no earlier than six months before using this product. To obtain Bulletins, consult <http://www.epa.gov/espp/>, call 1-844-447-3813, or email [ESPP@epa.gov](mailto:ESPP@epa.gov).

### **ULV Ground Application**

Do not apply within 50 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, wetlands, ponds, estuaries, and commercial fish ponds). This 50-foot buffer is in addition to the full swath displacement upwind that applicators must use at the downwind edge of the field. Applications made by mosquito control districts and other public health officials are exempt from this requirement.

## **SPRAY DRIFT REQUIREMENTS:**

Observe the following requirements when spraying in the vicinity of aquatic areas such as, but not limited to lakes; reservoirs; rivers; permanent streams; natural ponds; estuaries and commercial fish ponds.

### **Droplet size**

Use the largest droplet size consistent with acceptable efficacy. Formation of very small droplets may be minimized by appropriate nozzle selection, by orienting nozzles away from the air stream as much as possible, and by avoiding excessive spray boom pressure.

For groundboom and aerial applications, use only medium or coarser spray nozzles according to ASAE (S572) definition for standard nozzles, or a volume mean diameter (VMD) of 300 microns or greater for spinning atomizer nozzles. In conditions of low humidity and high temperatures, applicators should use a coarser droplet size.

### **Wind Direction and Speed**

Make aerial or ground applications when the wind velocity favors on target product deposition (approximately 3 to 10 mph). Do not apply when wind velocity exceeds 15 mph. Avoid applications when wind gusts approach 15 mph. For all non-aerial applications, wind speed must be measured adjacent to the application site on the upwind side, immediately prior to application.

### **Temperature Inversion**

Do not make aerial or ground applications into areas of temperature inversions.

Inversions are characterized by stable air and increasing temperatures with increasing distance above the ground. Mist or fog may indicate the presence of an inversion in humid areas. Where permissible by local regulations, the applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface.

In conditions of low humidity and high temperatures, applicators should use a coarser droplet size.

### **Additional Requirements for Ground Applications**

Spray should be released at the lowest height consistent with pest control and flight safety. Applications more than 10 feet above the crop canopy should be avoided. For groundboom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy.

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

### **Additional Requirements for Aerial Applications**

For aerial applications, the spray boom should be mounted on the aircraft as to minimize drift caused by wingtip or rotor vortices. The minimum practical boom length should be used and must not exceed 75% of wing span or 90% rotor diameter.

Aerial applicators must consider flight speed and nozzle orientation in determining droplet size.

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

### STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal. Do not store under conditions which might adversely affect the container or its ability to function properly.

**PESTICIDE STORAGE:** Malathion 5 EC should be stored in the original unopened container in a secure, dry place. Do not contaminate with other pesticides or fertilizers. This product should never be heated above 55°C (131°F), and should not be stored for long periods of time at a temperature in excess of 25°C (77°F). Do not store at temperatures below freezing, as such low temperatures may be harmful to this product.

**PESTICIDE DISPOSAL:** To avoid wastes, use all materials in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by State or local governments or by industry).

**CONTAINER DISPOSAL:** Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling if available, or dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident call CHEMTREC at 1-800-424-9300 or 1-703-527-3887 if calling from outside of the U.S.

Following best management practices can help reduce risk to terrestrial pollinators. Examples of best management practices include applying pesticides in the evening and at night when pollinators are not foraging and checking to confirm hive locations before spraying. For additional resources on pollinator best management practices, visit <https://www.epa.gov/pollinator-protection/find-best-management-practices-protect-pollinators>.

Managed pollinator protection plans are developed by states/tribes to promote communication between growers, landowners, farmers, beekeepers, pesticide users, and other pest management professionals to reduce exposure of bees to pesticides. If available, visit state plans for additional information on how to protect pollinators.

How to Report Bee Kills. It is recommended that users contact both the state lead agency and the U.S. Environmental Protection Agency to report bee kills due to pesticide application. Bee kills can be reported to EPA at [beekill@epa.gov](mailto:beekill@epa.gov). To contact your state lead agency, see the current listing of state pesticide regulatory agencies at the National Pesticide Information Center's website: [http://npic.orst.edu/reg/state\\_agencies.html](http://npic.orst.edu/reg/state_agencies.html).

## APPLICATION INSTRUCTIONS

### VEGETABLES

Apply in a minimum of 30 gal by ground equipment or 5 gal by air equipment unless otherwise specified. Best results are obtained with uniform coverage. Use higher listed rate when foliage is heavy or infestation is severe.

#### NOTE:

Pre-Harvest interval days are indicated as **(PHI)** after each **crop**.

Restricted Entry Interval hours are indicated as **(REI)** after each **crop**.

#### **BEANS ULV AERIAL APPLICATION ONLY IN CLOSED MIXING AND LOADING SYSTEMS:**

**(Green Beans, Lima Beans, Navy Beans, Red Kidney Beans, Snap Beans, Wax Beans, Cowpeas and Blackeyed Peas):**

**(PHI 1) (REI 12)**

Aphids, Bean leaf beetles, Blister beetles, Cucumber beetles, Potato leafhoppers, Lygus bugs - 1 pt per A in 2 gal of water.

Japanese beetle, Mexican bean beetle - 1 pt per A in 2 gal of water. Red Spider mites - 1 pt per A in 2 gal of water.

Do not feed or graze forage, hay or straw to livestock. The maximum application rate is 0.61 lb ai (16 fl oz of formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

#### **DRY BEANS ULV AERIAL APPLICATION ONLY IN CLOSED MIXING AND LOADING SYSTEMS-**

**(California, Oregon, Washington and Idaho only): (PHI 1) (REI 12)**

Lygus bugs - 1 pt per A, 1 pt per A (air) in 2 gal of water.

Do not feed or graze forage, hay or straw to livestock. The maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

#### **BEETS (Garden and Table) DO NOT APPLY TO SUGAR BEETS:**

**(PHI 7) (REI 12)**

Aphids - 1.5 to 2 pt per A.

The maximum application rate is 1.25 lb ai (32 fl oz. of formulated product) per acre; the maximum applications per year is 2, and the minimum retreatment interval is 7 days.

#### **BROCCOLI: (PHI 2) (REI 48)**

Aphids, Cabbage looper, Imported Cabbageworm - 1 to 2 pt per acre. The maximum application rate is 1.25 lb ai (32 fl oz. of formulated product) per acre; the maximum number of applications per year is 2; and the minimum treatment interval is 7 days.

#### **BRUSSELS SPROUTS: (PHI 2) (REI 48)**

Aphids - 1 to 2 pt per A. The maximum application rate is 1.25 lb ai (32 fl oz. of formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**CABBAGE: (PHI 7) (REI 48)**

Aphids, Cabbage looper, Imported cabbageworm - 1 to 2 pt per acre.

Diamondback moth, webworm - 2 pt per acre. For control of caterpillars on summer and fall plantings, begin when true leaves appear. On other plantings, and for control of other insects, begin when insects appear.

The maximum application rate is 1.25 lb ai (32 fl oz. of formulated product) per acre; the maximum number of applications per year is 3; the the minimum retreatment interval is 7 days.

**CAULIFLOWER: (PHI 2) (REI 48)**

Diamondback moth - 1 to 2 pt. Aphids - 1 to 2 pt

The maximum application rate is 1.25 lb ai (32 fl oz. of formulated product) per acre; the maximum number of applications per year is 2, and the minimum retreatment interval is 7 days.

**CELERY: (PHI 7) (REI 24)**

Aphids, Spider mites - 1.5 pt per A. To be applied to fresh leaves and stalks only. Do not use on crops grown for seed and oil. The maximum application rate is 1.5 lb ai (38 fl oz of formulated product) per acre; the maximum applications per year is 2; and the minimum retreatment interval is 7 days.

**COLLARDS: (PHI 7) (REI 12)**

Aphids - 1.5 pt per A.

Harlequin cabbage bug - 1 pt per A.

For control of caterpillars on summer and fall plantings, begin when true leaves appear. On other plantings, and for control of other insects, begin when insects appear.

The maximum application rate is 1 lb ai (25 fl oz of formulated product) per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.

**CUCUMBERS: (PHI 1) (REI 24)**

Aphids, Pickleworms, Spider mites - 1.5 to 2 pt per A. Squash vine borer - 2.75 pt per A.

Cucumber beetle, Leaf miner - 2 pt per A. Do not apply to cucumbers unless plants are dry. The maximum application rate is 1.75 lb ai (44 fl oz of formulated product) per acre Maximum number of applications per year is 2, and the minimum retreatment interval is 7 days.

**DANDELION, PARSLEY, PARSNIP: (PHI 7) (REI 24)**

Aphids - 1.5 to 2 pt per A.

The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre; the maximum number of applications per year for Dandelion and Parsley is 2 – the number of applications per year for Parsnip is 2; and the minimum retreatment interval is 7 days.

**SWISS CHARD: (PHI 14) (REI12)**

Aphids – 1.5 pt

The maximum application rate is 1 lb ai (25 fl oz of formulated product) per acre; the maximum number of applications per year is 2, and the minimum retreatment interval is 7 days.

**WATERCRESS: (PHI 3) (REI 24)**

Aphids - 1.5 to 2 pt per A.

The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre, OR the REI is 12 hours and the maximum application rate is 1 lb ai (25 fl oz formulated product) per acre.

The maximum number of applications per year is 5; and the minimum retreatment interval is 3 days. Do not apply when water is on the field. Do not irrigate until 24 hours after application.

**EGGPLANT: (PHI 3) (REI 12)**

Aphids, Spider mites - 1 pt per A.

Lacebugs - 2.5 pt per A.

The maximum application rate is 1.56 lb ai (40 fl oz formulated product) per acre; the maximum number of applications per year is 4; and the minimum retreatment interval is 5 days.

**ENDIVE: (PHI 7) (REI 24)**

Aphids, Spider mites - 1.5 to 2 pt per A.

The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**GARLIC, SHALLOTS: (PHI 3) (REI 24)**

Aphids, Thrips - 1.5 to 2 pt per A.

The maximum application rate is 1.56 lb ai (40 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**HOPS: (PHI 10) (REI 12)**

Aphids, Spider mites - 1 pt per A.

The maximum application rate is 0.63 lb ai (16 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**KALE: (PHI 7) (REI 12)**

Aphids, Cabbage looper, Imported cabbageworm - 1.5 pt per A.

Webworm, Diamondback moth - 1.5 pt per A. For control of caterpillars on summer and fall plantings, begin when true leaves appear. On other plantings, and for control of other insects, begin when insects appear.

The maximum application rate is 1 lb ai (25 fl oz formulated product) per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 5 days.

**KOHLRABI: (PHI 3) (REI 24)**

Aphids - 1 to 2 pt per A.

Cabbage looper, Diamondback moth, Imported cabbageworm, Webworm - 2 pt per A.

The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**LEEKs: (PHI 3) (REI 24)**

Aphids - 1 to 2 pt per A.

Onion maggot flies - 2.5 pt per A.

Thrips - 2.5 pt per A.

The maximum application rate is 1.56 lb ai (40 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**HEAD LETTUCE: (PHI 14) (REI 24)****LEAF LETTUCE: (PHI 14) (REI 24)**

Aphids, Leafhoppers, Spider mites - 2 pt per A.

Cabbage looper - 3 pt per A.

The maximum application rate is 1.88 lb ai (48 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 5 days for leaf lettuce and 6 days for head lettuce.

**MUSHROOMS: (PHI 1) (REI 12)**

Mites, Phorid and Sciarid flies - 2.5 pt in 130 gal of water; or, 2 tablespoons in 3 gal of water per 1,000 sq ft of bed. Make thorough applications as soon after picking as possible. The maximum application rate is 1.7 lb ai (43 fl oz formulated product) per A; the maximum number of applications per year is 4; and the minimum retreatment interval is 3 days.

**MUSTARD GREENS: (PHI 7) (REI 12)**

Aphids, Cabbage Looper, Imported cabbageworm, Flea beetles - 1.5 pt per A. For control of caterpillars on summer and fall plantings, begin when true leaves appear. On other planting, and for control of other insects, begin when insects appear. The maximum application rate is 1 lb ai (25 fl oz formulated product) per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 5 days.

**OKRA: (PHI 1) (REI 12)**

Aphids - 1.5 pt per A.

Japanese beetle - 1 pt 14 oz per A. Make no application after pods start to form. The maximum application rate is 1.2 lb ai (30 fl oz formulated product) per acre; the maximum number of applications per year is 4; and the minimum retreatment interval is 7 days.

**ONIONS: (PHI 3) (REI 12)**

Onion maggots - 1.5 to 2.5 pt per A.

Onion thrips - 1.5 to 2 pt per A. The maximum application rate is 1.56 lb ai (40 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**PEAS: (PHI 3) (REI 12)**

Aphids - 1.5 pt per A.

Grasshoppers - 1.5 pt per A.

Leafhoppers - 1.5 pt per A.

The maximum application rate is 1.0 lb ai (25 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days. Do not use on pea vine and hay.

**PEPPERMINT, SPEARMINT: (PHI 7) (REI 12)**

Aphids, Flea beetles, Leafhoppers, Spider mites - 1.5 pt per A.

The maximum application rate is 0.84 lb ai (24 fl oz formulated product) per acre; the maximum number of applications per year is 2. The minimum retreatment interval is 7 days.



**PEPPERS: (PHI 3) (REI 12)**

Aphids - 1 to 2.5 pt per A.

Pepper maggots - 2.5 pt per A. The maximum application rate is 1.56 lb ai (40 fl oz formulated product) per A; the maximum number of applications per year is 2; and the minimum retreatment interval is 5 days.

**WHITE POTATOES: (PHI 0) (REI 12)**

Aphids, Grasshoppers, Leafhoppers - 2 pt per A.

False chinch bugs - 1.5 pt per A.

Mealybugs - 2 to 2.5 pt per A. The maximum application rate is 1.56 lb ai (40 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**RADISH, (PHI 7) (REI 12)**

Aphids - 1.5 pt per A. The maximum application rate is 1 lb ai (25 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**HORSERADISH: (PHI 7) (REI 24)**

Aphids – 1.5 to 2 pt per A. The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**RICE:**

Rice leaf miner - 2 pt per A. Make first application shortly after the first rice blades appear on the surface of the water.

Rice stink bugs - 15 fl oz per A. Apply by air in 2 gal of water per A during the early milk and dough stage of growing rice.

Broadcast use only over intermittently flooded areas. Application may not be made around bodies of water where fish or shellfish are grown and/or harvested. A 24-hour holding time is required before floodwaters may be released after treatment to rice.

The maximum Non-ULV application rate is: 1.25 lb ai (32 fl oz formulated product) per acre; the maximum number of applications per year is 2, the minimum retreatment interval is 7 days; the PHI is 7 days; the REI is 12 hours

ULV Application Only in a Closed Mixing and Loading System: The maximum ULV rate is: 0.61 lb ai (15 fl oz formulated product) per acre; the maximum number of applications per year is 2; the minimum retreatment interval is 7 days; the PHI is 7 days; the REI is 12 hours.

**RUTABAGA: (PHI 7) (REI 12)**

Aphids - 1.5 pt per A. The maximum application rate is 1 lb ai (25 fl oz formulated product) per A; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**SPINACH: (PHI 7) (REI 12)**

Aphids - 1.5 pt per A. The maximum application rate is 1 lb ai (25 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**SQUASH, Summer: (PHI 1) (REI 24)**

Aphids, Leaf miners, Spider mites, Pickleworm - 2 pt per A. Cucumber Beetles, Squash vine borer - 2.75 pt per A. Do not apply to squash unless plants are dry. The maximum application rate is 1.75 lb ai (44 fl oz formulated product) per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.

**SQUASH, Winter: (PHI 1) (REI 12)**

Aphids, Leaf miners, Spider mites, Pickleworm, Cucumber Beetles, Squash vine borer – 1.5 pt per A. Do not apply to squash unless plants are dry. The maximum application rate is 1.0 lb ai (25 fl oz formulated product) per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.

**STRAWBERRIES: (PHI 3) (REI 12)**

Aphids, Spider mites - 1.5 pt per A.

Field crickets, Lygus bugs, Spittlebugs, Thrips - 1.5 to 3 pt per A.

Potato leafhopper, Strawberry leafroller, Strawberry root weevil, Whiteflies - 1.5 to 2.5 pt per A. The maximum application rate is 2.0 lb ai (51 fl oz formulated product) per acre; the maximum number of applications per year is 4; and the minimum retreatment interval is 7 days.

**SWEET CORN: (PHI 3 days for detasseling and 12 hours for all other activities.)**

(REI 72 hrs for detassling, 12 hrs for other activities)

Japanese beetle - 1.5 pt per A. Injury may occur in the whorl or the silks. The maximum application rate is 1.0 lb ai non-ULV aerial and groundboom; 0.61 lb ai/A for ULV aerial (25 fl oz formulated product) per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 5 days.

**SWEET POTATOES: (PHI 0) (REI 12)**

Leafhoppers - 1.5 to 2 pt per A.

Morninglory leaf miner - 2.5 pt per A.

The maximum application rate is 1.56 lb ai (40 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**TOMATOES: (PHI 1) (REI 12)**

Aphids - 1.5 pt per A.

Drosophila - 2.5 pt per A.

Spider mites - 1.5 pt per A. NOTE: Do not apply within 1 day of harvest for spider mite control.

The maximum application rate is 1.56 lb ai (40 fl oz formulated product) per acre; the maximum number of applications per year is 4; and the minimum retreatment interval is 5 days.

**TURNIP (ROOTS): (PHI 1) (REI 12)**

Aphids, Cabbage looper, Imported cabbageworm - 1 to 2 pt per A. For control of caterpillars on summer and fall plantings, begin when true leaves appear. On other plantings, and for control of listed insects, begin when insects appear. The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**TURNIP (GREENS): (PHI 1) (REI 12)**

Aphids, Cabbage looper, Imported cabbageworm – 1 to 2 pt per A. For control of caterpillars on summer and fall plantings, begin when true leaves appear. On other plantings, and for control of listed insects, begin when insects appear. The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 5 days.

**FRUIT AND NUTS**

**NOTE:** Pre-Harvest Interval **days** indicated as **(PHI)** after each **crop**.  
Restricted entry interval **hours** are listed as **(REI)** after each **crop**.

**APRICOTS: (PHI6) (REI 12)**

Aphids, Codling moth, European fruit lecanium, Orange tortrix, Soft brown scale, Terrapin scale - 1.5 to 2 pt per 100 gal, (2 pt 6 oz. per A). The maximum application rate is 1.5 lb ai (38 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

**AVOCADO: (PHI 7) (REI 48)**

Greenhouse thrips, Latania scale, Omnivorous looper, Orange tortrix, Soft brown scale - 1.5 pt per 100 gal, (4.5 pt per A).

The maximum application rate is 4.7 lb ai (7.5 pt formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 30 days.

**BLACKBERRY, BOYSENBERRY, DEWBERRY, LOGANBERRY, RASPBERRY:(PHI 1) (REI 12)**

Aphids, rose scale chafers, Japanese beetle, Leafhoppers, Mites, Thrips - 1.5 pt per 100 gal, (3 pt per A). The maximum application rate is 2.0 lb ai (51 fl oz formulated product) per acre; the maximum number of applications per year is 3, and the minimum retreatment interval is 7 days.

**BLUEBERRIES: (PHI 1) (REI 12)**

Blueberry maggots - 1 pt per 100 gal plus 1.5 quarts Staley's Sauce Base No. 7 (protein hydrolysate bait). Apply in 100 gal of water per A.

Cherry fruitworm - 1 pt per 100 gal, (2 pt per A). .

Cranberry fruitworm - 1 pt per 100 gal, (2 pt per A). Make first application at egg hatch and repeat applications every 5 days.

Japanese beetle - 0.75 pt per 100 gal, (1.5 pt per A). Make application when first berries turn blue and repeat at 10 day intervals. The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 5 days.

**CHERRY: (PHI 3 for non-ULV aerial and airblast; 1 for ULV aerial) (REI 12)**

Black cherry aphid, Fruit-tree leafroller - 1.5 pt per 100 gal, (2.75 pt per A).

Cherry fruit fly, Japanese beetle - 1 pt per 100 gal, (2.75 pt per A).

Do not apply more than 7 pounds of actual Malathion 5 EC per acre per year to cherry trees. Injury may occur on certain varieties of sweet cherries.

The maximum application rate is non-ULV aerial and airblast is 1.75 lb ai/A; ULV aerial is 1.22 lb ai/A (45 fl oz formulated product) per acre; the maximum number of applications per year is 4 for ULV

aerial (sweet cherry) and non-ULV aerial and airblast (sweet and tart cherry); 6 for ULV aerial (tart cherry); and the minimum retreatment interval is 7 days.

Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

**CITRUS (Grapefruit, Lemon, Lime, Orange, Tangerine, Tangelo): (PHI 7) (REI 72)**

**The maximum application rate in CA** is EITHER 7.5 lb ai (12 pt formulated product) per acre and the maximum number of applications per year is 1, OR the Restricted-Entry Interval is 12 hours, the maximum application rate is 1.5 lb ai (38 fl oz formulated product) per acre; the maximum number of applications per year is 3, and the minimum retreatment interval is 30 days.

**The maximum application rate in all other states (not including Florida)** is EITHER 4.5 lb ai (7 pt formulated product) per acre with a maximum number of applications per year of 1; OR the Restricted-Entry Interval is 12 hours, the maximum application rate is 1.5 lb ai (38 fl oz formulated product) per acre; the maximum number of applications per year is 3, and the minimum retreatment interval is 30 days.

Black scale (single and off-brooded), California red scale, Citricola scale, Purple scale, Soft brown scale, Yellow scale - 1 to 1.5 pt/100 gal. Do not apply when trees are in bloom.

Citrus red mites, Thrips - 2.33 pt/A. Apply in 200 gal of water per acre. Do not apply when trees are in bloom. Florida purple scale, Florida red scale - 2 pt per 100 gal.

Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

**CURRENTS: (PHI 1) (REI 12)**

Japanese beetles - 1.5 pt per 100 gal, (2 pt per A). Rose chafers, Mites - 1 pt per 100 gal, (2 pt per A). The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre; the maximum number of applications per year is 2. The minimum retreatment interval is 7 days.

**FIGS: (PHI 5) (REI 24)**

Dried fruit beetles, Vinegar flies— - 3 pt per A plus 1 to 2 gal unsulfured molasses.

The maximum application rate is 2.0 lb ai (51 fl oz formulated product) per acre; OR the Restricted-Entry Interval is 12 hours and the maximum application rate is 1.5 lb ai (38 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 5 days.

**GOOSEBERRIES: (PHI 3) (REI 12)**

Japanese beetle— 1.5 pt per 100 gal, (2 pt per A). Rose chafers, Mite— - 1 pt per 100 gal, (2 pt per A). The maximum application rate is 2.0 lb ai (51 fl oz formulated product) per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.

**GRAPES: (PHI 3) (REI 72 hrs for girdling and tying, 24 hrs for all other activities)**

GRAPES (Raisin, Table, Wine):

Leafhoppers, Spider mites - 1.5 pt per 100 gal, (3 pt per A).

European fruit lecanium - 1.5 pt per 100 gal. Make full coverage applications when newly hatched nymphs are migrating over vines, usually shortly after bloom.

Mealybugs - 1.5 pt per A. Apply in 50 to 100 gal. The rates for use on grapes are based on a standard of 200 gal per A dilute spray. Injury may occur on grapes of Almeria, Cardinal, Italia and Ribier varieties when sprays containing Malathion 5 EC are applied after clusters appear.

**GRAPE VINES (Overwintering on nursery stock only):**

Grape phylloxera - 3 pt per 200 gal. Remove excess soil from the roots and dip in the Malathion 5 EC solution. Submerge the entire root system for 5 minutes. Keep the solution agitated at all times.

The maximum application rate is 1.88 lb ai (48 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 3 days.

**GUAVA: (PHI 2) (REI 12)**

Drosophilia - 1 to 1.25 pt per A in sufficient water to provide thorough coverage of foliage. The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre; the maximum number of applications per year is 13; and the minimum retreatment interval is 3 days.

**KUMQUAT: (PHI 7) (REI 48)**

Black scale (single and off-brooded), California red scale, Citricola scale, Purple scale, Soft brown scale, Yellow scale – 1 to 1.5 pt per 100 gal. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

Citrus red mites, Thrip– - 2.5 pt per A. Apply in 200 gal of water per acre. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

Florida purple scale, Florida red scale - 2 pt per 100 gal.

The maximum application rate is 4.5 lb ai (7 pt of formulated product) per A; the maximum number of applications per year is 1; and the minimum retreatment interval is 7 days.

**MACADAMIA NUTS: (PHI 1) (REI 12)**

Green stink bugs - 1.5 pt per 100 gal. Apply when insects start to feed on the nuts and repeat up to 6 times. Do not apply more than 5.64 pounds total of actual Malathion 5 EC per acre per year to macadamia nut trees. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete. The maximum application rate is 0.94 lb ai (24 fl oz formulated product) per acre; the maximum number of applications per year is 6; and the minimum retreatment interval is 7 days.

**MANGO: (PHI 1) (REI 12)**

Drosophilia - 1 to 1.25 pt per A in sufficient water to provide thorough coverage of foliage.

The maximum application rate is 0.94 lb ai (24 fl oz formulated product) per acre; the maximum number of applications per year is 13; and the minimum retreatment interval is 7 days. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

**NECTARINES: (PHI 7) (REI 24)**

Spider mites - 1 to 2 pt per 100 gal, (3 to 4.5 pt per A). Plum curculio - 2 pt per 100 gal, (4.5 pt per A). Malathion 5 EC may cause fruit spotting on nectarines.

The maximum application rate is 3.0 lb ai (4.5 pt formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

**PASSION FRUIT: (PHI 3) (REI 12)**

Drosophilia - 1 to 1.25 pt per A in sufficient water to provide thorough coverage of foliage.

The maximum application rate is 1.0 lb ai (25 fl oz formulated product) per acre; the maximum number of applications per year is 13; and the minimum retreatment interval is 7 days.

**PAPAYA: (PHI 1) (REI 12)**

Aphids, Mealybugs - 1.5 to 2 pt per 100 gal.

The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre; the maximum number of applications per year is 8; and the minimum retreatment interval is 3 days.

**PEACHES: (PHI 7) (REI 24)**

Black cherry aphid, Black peach aphid, European red mite, Green peach aphid, Rusty plum aphid, Japanese beetle, Spider Mites - 1 pt per 100 gal, (3 pt per A).

Oriental fruit moth, Plum curculio - 2 pt per 100 gal (4.75 pt per A) Cottony peach scale, European fruit lecanium, Terrapin scale - 2 pt per 100 gal. Make full coverage applications at completion of hatching. Do not apply more than 9 pounds of actual Malathion 5 EC per acre per year to peach trees. The maximum application rate is 3.0 lb ai (4.75 pt formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 11 days. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

**PECANS: (PHI 7) (REI 24)**

Aphids, Spider mites, Walnut aphid - 1.5 to 2 pt per 100 gal, (4 pt per A).

European red mite - 1.25 pt per 100 gal, (4 pt per A). Apply when buds begin to develop. Pecan nut casebearer, Walnut husk fly - 1.25 pt per 100 gal, (4 pt per A). Apply after first generation eggs begin to hatch. The maximum application rate is 2.5 lb ai (4 pt formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

**WALNUTS: (PHI 7) (REI 24)**

Aphids, European red mite - 0.5 pt per 100 gal, (1.5 to 3 pt per A).

Walnut husk fly - 0.5 pt per 100 gal, (1.5 to 3 pt per A). Apply with conventional sprayer. For bait sprays, combine a feeding stimulant such as Nulure or Staley's Sauce Base No. 2 or No. 7 (protein hydrolysate baits) at the rate of 2 qt per A with Malathion 5 EC. Apply in 500 gal of water per acre with air-carrier type sprayer. The maximum application rate for Malathion 5 EC is 2.5 lb ai (4 pt formulated product) per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days. Do not apply this product within 3 days prior to bloom, during bloom, or until petal fall is complete.

**FIELD CROPS AND PASTURE AND RANGE GRASSES**

Apply in a minimum of 30 gal by ground equipment or 5 gal by air equipment unless otherwise specified. Best results are obtained with uniform coverage. Use higher listed rate when foliage is heavy or infestation is severe.

**NOTE:** Pre-Harvest Interval **days** indicated as **(PHI)** after each **crop**.

Restricted-Entry Interval **hours** indicated as **(REI)** after each **crop**.

**ALFALFA: (PHI 0) (REI 12)**

Alfalfa weevil larvae, Aphids, Grasshoppers, Lygus bugs, Potato leafhoppers, Spider mites, Spittlebugs, Stink bugs - 1.5 to 2 pt per A.

Armyworms - 2 pt per A.

Clover leaf weevil - 1.5 pt per A.

Vetch bruchid – 1.5 – 2 pt per A. Apply to alfalfa in bloom only in the evening or early morning when bees are not working in the field and/or are not hanging on outside of hives.



The maximum application rate is 1.25 lb ai for non-ULV aerial and ground boom; 0.61 for ULV aerial (32 fl oz formulated product) per acre; the maximum number of applications per year is 2 per cutting; and 2 applications per year; and the minimum retreatment interval is 14 days.

**CLOVER: (PHI 0) (REI 12)**

Alfalfa weevil larvae, Aphids, Grasshoppers, Lygus bugs, Potato leafhoppers, Spider mites, Spittlebugs - 1.5 pt per A. Do not apply to clover in bloom. The maximum application rate is 1.25 lb ai for non-ULV aerial and ground boom; 0.61 for ULV aerial (32 fl oz formulated product) per acre; the maximum number of applications per year is 2 per cutting; and 4 applications per year; the minimum retreatment interval is 14 days.

**CORN (Field): (PHI 7) (REI 72 hrs for detassling, and 12 hours for all other activities)**

Aphids, Corn earworm, Corn rootworm adults, Grasshoppers, Sap beetle, Thrips - 1.5 pt per A. Armyworms - 1.5 pt per A. For control of corn earworm and sap beetles, begin treatments when 10% of the ears show silk. Repeat applications at 7 day intervals until 2 applications have been made. Do not apply within 5 days of forage use. Injury may occur in the whorl and silk stages with Malathion 5 EC, especially at low dilution rates.

The maximum application rate is 1.0 lb ai for non-ULV aerial and ground boom; 0.61 for ULV aerial (25 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**COTTON: (PHI 7) (REI 48)**

Brown cotton leafworm, Cotton aphid, Cotton leafworm, Cotton leafperforator, Desert spider mite, Leafhoppers, Lygus bugs, Thrips, Whiteflies -1.5 to 2 pt per A.

Boll weevil - 2 to 4 pt per A.

Cotton fleahoppers - 1 to 1.5 pt per A. Consult local agricultural authorities for exact time of application.

Fall armyworms, Garden webworms, Grasshoppers - 1.5 to 3 pt. Lygus bugs, Thrips - 1 to 4 pt per A. The maximum application rate is 1.22 lb ai for ULV aerial non-BWEP (8 pt formulated product) per acre; 2.5 lb ai/A for non-ULV aerial and groundboom non-BWEP (16 pt formulated product) per acre; 0.61 lb to 1.22 lb ai for ULV aerial and groundboom BWEP (4 to 8 pt formulated product) per acre; the maximum number of applications per year is 2 for non-BWEP and 25 for BWEP. Minimum application interval is 7 days for non-BWEP and 3 days for BWEP. PHI is 7 days for non-BWEP and 0 days for BWEP. REI is 2 days for non-BWEP and 24 hours for BWEP.

**USDA Rate Specification on Cotton for BWE Program. For use only under the US Boll Weevil Eradication Program.**

**Applications made for Boll Weevil Eradication:**

Treatment supervisors and applicators must be aware of all sensitive areas near cotton fields, including: schools, hospitals, nursing homes, churches, occupied dwellings, parks, recreation areas, bodies of water, and potential habitat for threatened and endangered species.

For aerial applications, spray equipment must be adjusted so that the volume median diameter is 100 microns (DV 0.5=100um) or greater. The effects of flight speed, nozzle angle and type, and pump pressure on the droplet size spectrum must be considered.



For aerial applications, the spray boom should be mounted on the aircraft as to minimize drift caused by wingtip or rotor vortices. The minimum practical boom length should be used and outmost nozzles must not be placed beyond 75% of the wingspan or rotor diameter.

Spray should be released at the lowest height consistent with pest control and flight safety. Applications more than 10 feet above the crop canopy should be avoided.

Global positioning systems (GPS) should be used to guide pilots and to monitor each application.

Ground equipment should utilize a controlled air flow to facilitate particle size and spray deposition, and should be used at a vehicle speed of 4 to 10 mph. Spray equipment must be adjusted so that the volume median diameter is 100 microns ( $D_v 0.5=100\mu\text{m}$ ) or greater.

Ground equipment should be used to treat field edges when possible, covering areas that cannot be treated effectively with aircraft because of obstructions which may affect applicator safety, or where there is boll weevil over-wintering habitat adjacent to the treatment area, or if there are adjacent sensitive areas.

Do not apply when wind velocity exceeds 10 mph. Treatments should be applied when winds are calm, or moving away from adjacent sensitive areas.

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

Do not make aerial or ground applications into temperature inversions. Inversions are characterized by stable air and increasing temperatures with height above the ground. Mist or fog may indicate the presence of an inversion in humid areas. The applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface.

Applications will not be made when people are in or near infested cotton fields or, to the degree possible, when people are present in or near adjacent sensitive areas.

Application will not be made when rainfall is imminent.

Before beginning treatment, program personnel shall notify all registered apiarists in or near the treatment area of the date and approximate time of treatment.

**FLAX: (PHI 52)(REI 12)**

Grasshoppers - Apply 13 oz per A. Do not graze or feed forage to livestock.

The maximum application rate is 0.5 lb ai (13 fl oz formulated product) per acre; the maximum number of applications per year is 3; and the minimum retreatment interval is 7 days.

**GRASSES (Barnyardgrass, Canarygrass, Fescue, Orchardgrass, Red top, Timothy, Yellow foxtail): (PHI 0) (REI 12)**

Cereal leaf beetle - 1 to 1.5 pt per A. May be applied on the day of grazing. The maximum application rate is 1.25 lb ai for non-ULV aerial and groundboom and 0.92 lb ai/A for ULV aerial (32 fl oz formulated product) per acre the maximum number of applications per year is 1cutting and 4 per year.

**LESPEDEZA: (PHI 0) (REI 12)**

Grasshoppers - 1.5 to 2 pt per A. The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre; the maximum number of applications is 1 per cutting and 2 per year; and the minimum retreatment interval is 14 days. Do not apply to lespedeza in bloom.

**LUPINE ULV APPLICATION ONLY IN A CLOSED MIXING AND LOADING SYSTEM: (PHI 1) (REI 12)**

Grasshoppers - 1.5 to 2 pt per A.

The maximum application rate is 0.61 lb ai (16 fl oz formulated product) per acre; the maximum number of applications per year is 1.

**PASTURE AND RANGELAND: FOR ULV APPLICATION ONLY IN A CLOSED MIXING AND LOADING SYSTEM. (PHI 12) (REI 0)****ULV Ground Application**

- Do not apply within 50 feet of aquatic habitats (such as, but not limited to, lakes, reservoirs, rivers, streams, wetlands, ponds, estuaries, and commercial fish ponds). Applications made by mosquito control districts and other public health officials are exempt from this requirement.

Aphids, Grasshoppers, Leafhoppers - 1 pt 7 oz per acre in 2 gal of water OR 1 pt 7 oz in 1 gal of diesel fuel oil per acre.

Armyworms - 1 pt 7 oz per acre in 2 gal of water OR 1 pt 7 oz in 1 gal of diesel fuel oil per A. The maximum application rate is 0.92 lb ai (23 fl oz formulated product) per acre; the maximum number of applications per year is 1 per cutting, the minimum application interval is 7 days.

Pasture: Limit use to 2 applications per year and a 30-day retreatment interval. Rangeland: Outside of government programs, Limit use to spot treatment only for grasshoppers and mosquito/fly control.

**GRASS, FORAGE, HAY (PHI 0) (REI 12)**

Aphids, Grasshoppers, Leafhoppers – 1 pt 7 oz per acre or 1 pt in 1 gal of diesel fuel oil per acre

Armyworms- 1 pt 7 oz per acre OR 1 pt 7 oz in 1 gal of diesel fuel oil per acre. The maximum application rate is 1.25 lb for non-ULV aerial and groundboom; 0.92 lb ai/A for ULV aerial of ai (32 fl oz formulated product) per acre; the maximum number of applications per year is 1 per cutting and 4 per year; the minimum retreatment interval is 14-day.

**POPCORN: (PHI 5) (REI 72 hrs for detassling, and 12 hrs for all other activities)**

Aphids, Corn rootworms, Grasshoppers, spider mites, thrips, Corn earworm - 1.5 pt per A.

Armyworms - 1.5 pt per A.

CAUTION: Injury may occur in whorl and silk stages with Malathion 5 EC, especially at low dilution rates. The maximum application rate is 1.0 lb ai (25 fl oz formulated product) per acre; the maximum number of applications per year is 2, and the minimum retreatment interval is 5 days.

**SALSIFY: (PHI 7) (REI 24)**

Aphids, Diamondback Moth, Flea beetle, Leafhoppers, Spider mites, Thrips - 1.5 to 2 pt per A. The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**SMALL GRAINS**

Apply in a minimum of 30 gal by ground equipment or 5 gal by air equipment unless otherwise specified. Best results are obtained with uniform coverage. Use higher listed rate when foliage is heavy or infestation is severe.

**BARLEY: (PHI 7) (REI 12)**

Cereal leaf beetle - 1 to 1.5 pt per A.

English grain aphids, Grasshoppers, Greenbugs - 1.5 pt per A. Winter grain mite - 2 pt per A. Do not apply within 7 days of forage use. The maximum application rate is 1.25 lb ai for non-ULV aerial and groundboom; 0.61 lb ai/A for ULV aerial (32 fl oz formulated product) per acre; the maximum number of applications per year is 2; and the minimum retreatment interval is 7 days.

**OATS and WHEAT: (PHI 7) (REI 12)**

Cereal leaf beetle - 1 to 1.5 pt per A.

English grain aphids, Grasshoppers, Greenbugs - 1.5 pt per A. Winter grain mite - 1 pt 10 oz per A. Do not apply within 7 days of forage use. The maximum application rate is 1.0 lb ai for non-ULV aerial and groundboom and 0.61 lb ai/A for ULV aerial (25 fl oz formulated product) per acre; the maximum number of applications per year for wheat and oat is 2; and the minimum retreatment interval is 7 days.

**RYE: (PHI 7) (REI 12)**

Cereal leaf beetle - 1 to 1.5 pt per A.

English grain aphids, Grasshoppers, Greenbugs – 1.5 pt per A. Winter grain mite - 1 pt 10 oz per A. Do not apply within 7 days of forage use. The maximum application rate is 1.0 lb ai ai for non-ULV aerial and groundboom and 0.61 lb ai/A for ULV aerial (25 fl oz formulated product) per acre; the maximum number of applications per year is non-ULV aerial and groundboom is 2; aerial ULV is 1 and the minimum retreatment interval is 7 days for non-ULV aerial and groundboom.

**GRAIN SORGHUM: (PHI 7) (REI 12)**

Greenbugs - 1.5 pt per A.

Do not feed or graze forage, hay or straw to livestock.

The maximum application rate is 1.0 lb ai ai for non-ULV aerial and groundboom and 0.61 lb ai/A for ULV aerial (25 fl oz formulated product) per acre; the maximum applications per year is 2; and the minimum retreatment interval is 7 days.

**VETCH: (PHI 0) (REI 12)**

Omniverous leaf tier, Pea aphid, Vetch bruchid - 1.5 to 2 pt per A. May be applied on the day of grazing. The maximum application rate is 1.25 lb ai (32 fl oz formulated product) per acre; the maximum applications per year is 1 per cutting and 2 per year; and the minimum retreatment interval is 14 days.

**GRAIN STORAGE (GRAIN ELEVATORS/SILOS)**

**BEFORE STORING GRAINS (CORN, BARLEY, OATS, RYE, WHEAT) (REI 12):** Before applying spray, clean elevators, thoroughly. Remove and burn all sweepings and debris. For a residual wall, floor and machinery spray in grain elevators before loading grain, make a thorough application to walls, floors and ceilings. Spray all surfaces to the point of runoff, making sure the spray is driven into joints, cracks and crevices where insects may be concealed. Mix 5.0 lb active ingredient (8 pt formulated product) in 25 gal of water. Maximum application rate is 0.4762 lb ai (12 fl oz formulated product) per 1,000 sq ft. Maximum number of applications per year is 1 per storage period.

## OUTDOOR ORNAMENTALS

### **ORNAMENTAL HERBACEOUS PLANTS, SHADE TREES, ORNAMENTAL WOODY SHRUBS AND VINES (REI 12):**

Injury may occur on Ferns, Hickory, Viburnum, Lantana, Crassula and Canaerti Juniper following the use of Malathion 5 EC, slight injury has also been reported on Boston, Pteris, and Maidenhair Ferns, Petunias, Small-Leaf Spirea, White Pine and Maples. Under extreme heat, drought and disease conditions the emulsifiable concentrates may cause slight damage to Elms.

The maximum single application rate is 2.5 lb ai (64 oz of formulated product) per 100 gal. The maximum number of applications per year is 2. The minimum retreatment interval is 10 days.

**Aphids, Spider mites:** 1.5 pt per 100 gal.

**Bagworms, Birch leaf miner, Boxwood leaf miner:** 2 pt per 100 gal.

**European pine shoot moth, Four-lined leaf bug, Japanese beetle adult, Potato leafhopper, Rose leafhopper, Tarnished plant bug,**

**Thrips:** 1.5 pt per 100 gal.

**Lacebug:** 1 pt per 100 gal.

**Mealybugs, Whiteflies:** 1.5 pt per 100 gal.

**Oak Kermes:** 2 pt per 100 gal. Apply when scale crawlers have settled on foliage.

**Tent caterpillar:** 2 pt per 100 gal.

**Oystershell scale:** 1 pt per 100 gal. Apply when scale crawlers have settled on foliage.

**Euonymus scale, Scurfy scale:** 1.5 pt per 100 gal.

**Azalea scale, Magnolia scale, Pineleaf scale:** 2 pt per 100 gal.

**Fletcher scale:** 2 pt per 100 gal. Apply when scale crawlers have settled on foliage.

**Florida red scale, Juniper scale:** 2 pt per 100 gal. Apply when scale crawlers have settled on foliage.

**Black scale crawlers, Soft brown scale:** 2.25 pt per 100 gal.

**Monterey pine scale:** 2.5 pt per 100 gal.

**Pine needle scale:** 4 pt per 100 gal.

**Wax scale:** 4 pt per 100 gal.

**OUTDOOR GARDENS (spot treatment only)**

**(CUCUMBERS, EGGPLANT, ENDIVE, HEAD LETTUCE, LEAF LETTUCE, ONIONS, PEPPERS, TOMATO, ORNAMENTAL HERBACEOUS PLANTS, ORNAMENTAL NON-FLOWERING PLANTS, ORNAMENTAL WOODY SHRUBS AND VINES)**

Millipedes, Sowbugs, Springtails - 1 teaspoon per gal. Apply to 150 sq ft of soil surface or where insects congregate. The maximum number of applications per year is 2. The minimum retreatment interval is 10 days.

**LAWNS (SPOT TREATMENT ONLY)**

**Ant mounds:** Do not Use for Fire Ants, Harvester Ants, Pharaoh Ants or Carpenter Ants.- 1.5 pt per 100 gal. Spray ant hills thoroughly so that they are well soaked. For other small ants in flower beds, lawns, around trees, spray lightly in the infested areas. Repeat in 10 to 15 days if ants return.

**Ground pearls (SPOT TREATMENT ONLY):** - 1.5 pt per 100 gal. Make full coverage to soil surface when ground pearl nymphs are in the pink, "crawler" or active stage and immediately wash into soil with additional water.

**Warranty and Disclaimer Statement**

The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Such risks may arise from weather conditions, soil factors, off-target movement, unconventional farming techniques, the presence of other materials, the manner of use or application, or other unknown factors, all of which are beyond the control of UPL NA Inc., and can cause crop injury, injury to non-target crops or plants, ineffectiveness of the product, or other unintended consequences. All such risks shall be assumed by the user or buyer. UPL NA Inc. warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks described above, when used in accordance with the Directions for Use under normal conditions. This warranty does not extend to the use of this product contrary to label instructions or under conditions not reasonably foreseeable to UPL NA Inc. and is subject to the inherent risks described above.

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