

34704-857

11/13/2008

1/14



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 13 2008

Kristie Raymonds
Loveland Products, Inc.
P.O. Box 1286
Greeley, CO 80632-1286

Subject: Label Amendment: Revisions to add uses listed on your source product.
EPA Reg. No. 34704-857
Warhawk
Submissions dated May 1, 2008 and resubmission dated August 19, 2008

Dear Ms. Raymonds:

The revised labeling referenced to above, submitted in connection with the registration under the Federal Insecticide, fungicide, and Rodenticide Act (FIFRA) as amended, is accepted with the following comments:

- 1) Under Pears add the regional restriction: "For use in California, Oregon and Washington" which is on the cited product.
- 2) Under "Turfgrass" and "Tree Fruit and Tree Nuts (Trunk Spray of Pre-plant Dip)" the listing of ants must include the exclusion statement "except fire ants, carpenter ants, harvester ants and pharaoh ants".
- 3) The Agency is requiring more definitive language on labels. Therefore, a quantity or duration of watering must replace "sufficient" in "using sufficient water...." under White Grubs.
- 4) Delete "General" from "General Control of..." and "General Use Precautions" on page 2. The term "general" implies that the information is advisory and not mandatory.
- 5) Replace "various pests" with "listed pests" at the top of page 1.
- 6) Change on page 3 "should" to "must in the instructions "the applicator should take into account" and "The following steps should be taken to minimize drift". These advisory statements under the heading "Ground Boom Application" and the sub-heading "Orchard Airblast Application contradict the label statement "the following **mandatory** spray drift best management practices are required".
- 7) Under Applications Instructions and the sub-heading "Broadcast Foliar Application", change "recommended" to "specified" since the instructions are mandatory and not advisory.

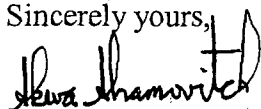
8) Under Christmas Trees "Phytotoxicity" change "recommended" to "the specified"" since the instructions are mandatory and not advisory.

9) Delete "including but not limited to" under "Legume Vegetables", Citrus Fruit" since you are listing all the crops in the corresponding groups.

A stamped copy "accepted with comments" of the label is enclosed for your records.

Please submit two (2) copies of the final printed before shipment. If you have any questions please call me at (703) 308-8328.

Sincerely yours,



Akiva Abramovitch, Ph.D.

Chemist

Insecticide-Rodenticide Branch

Registration Division (7505P)

3/14

RESTRICTED USE PESTICIDE

For retail sale to and use only by Certified Applicators or persons under their direct supervision and only those uses covered by the Certified Applicator's certification.

ACCEPTED

**with COMMENTS
In EPA Letter Dated:**

NOV 13 2008

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

34704-857



**For control of various insects infesting certain field,
fruit, nut, and vegetable crops.**

ACTIVE INGREDIENT:	
chlorpyrifos: O,O-diethyl-O-(3,5,6-trichloro-2-pyridinyl) phosphorothioate	44.9%
OTHER INGREDIENTS*	55.1%
TOTAL	100.0%

Contains 4 pounds of chlorpyrifos per gallon.
*Contains aromatic petroleum distillates.

**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 the label, find someone to explain it to you in detail.)

EPA REG. NO. 34704-857

EPA EST. NO. 34704-MS-001

NET CONTENTS 2½ GALS. (9.46 L)

IHT

EXP 09/07

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

May Be Fatal If Swallowed • Harmful If Absorbed Through Skin • Causes Moderate Eye Irritation • Prolonged Or Frequently Repeated Skin Contact May Cause Allergic Reactions In Some Individuals

Avoid contact with skin, eyes or clothing.

Personal Protective Equipment (PPE)

Some materials that are chemical-resistant to this product are barrier laminate and viton. For more information, follow instructions in Supplement Three of PR Notice 93-7. If you want more options, follow the instructions for category G on an EPA chemical resistance category selections chart.

Mixers and loaders using a mechanical transfer loading system and applicators using aerial application equipment must wear:

- Long-sleeved shirt and long pants,
- Shoes and socks.

In addition to the above, **mixers and loaders** using a mechanical transfer loading system must wear:

- Chemical-resistant gloves,
- Chemical-resistant apron,
- A NIOSH-approved dust mist filtering respirator with MSHA/NIOSH approval number prefix TC-21C or a NIOSH-approved respirator with any R, P, or HE filter

See Engineering Controls for additional requirements.

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

- Coveralls over long-sleeved shirt and long pants,
- Chemical-resistant gloves,
- Chemical-resistant apron when mixing or loading or exposed to the concentrate,
- Chemical-resistant footwear plus socks,
- Chemical-resistant headgear for overhead exposure,
- A NIOSH-approved dust mist filtering respirator with MSHA/NIOSH approval number prefix TC-21C or a NIOSH-approved respirator with any R, P, or HE filter.

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

Mixers and loaders supporting aerial applications must use a mechanical transfer system that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4)] for dermal protection, and must: Wear the per-

sonal protective equipment required above for mixers/loaders, wear protective eyewear if the system operates under pressure, and be provided and have immediately available for use in an emergency, such as broken package, spill, or equipment breakdown: coveralls, chemical resistant footwear and chemical-resistant headgear if overhead exposure.

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

Use of human flaggers is prohibited. Mechanical flagging equipment must be used.

When handlers use closed cab motorized ground application equipment in a manner that meets the requirements listed in the WPS for a agricultural pesticides [40 CFR 170.240(d)(6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

USER SAFETY RECOMMENDATIONS

Users should:

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

**FIRST AID
Organophosphate**

If swallowed:	<ul style="list-style-type: none"> • Immediately call a poison control center or doctor. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give any liquid to the person. • Do not give anything by mouth to an unconscious person.
If in eyes:	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing:	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.

NOTE TO PHYSICIAN: Chlorpyrifos is a cholinesterase inhibitor. Treat symptomatically. If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration.

NOTE TO PHYSICIAN: Contains petroleum distillate - vomiting may cause aspiration pneumonia.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

**FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL:
1-800-301-7976.**

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish, aquatic invertebrates, small mammals and birds. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment washwaters or rinsate. 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 actively visiting the treatment area.

PHYSICAL OR CHEMICAL HAZARDS

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

DIRECTIONS FOR USE

Restricted Use Pesticide

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

Read all Directions for Use carefully before applying.

4/14

WARHAWK®
EPA REG. NO. 34704-857

This product cannot be reformulated or repackaged into other end-use products.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For

any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

Warhawk® insecticide is an emulsifiable concentrate for use in listed crops. Target pests and application rates are provided in the accompanying tables.

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 entry into treated areas during the restricted entry interval (REI). The REI for each crop is listed in the directions for use associated with each crop.

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.

Certified crop advisors or persons entering under their direct supervision under certain circumstances may be exempt from the early reentry requirements pursuant to 40 CFR Part 170.

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

- Coveralls over long-sleeved shirt and long pants,
- Chemical-resistant gloves made out of any waterproof material,
- Chemical-resistant footwear plus socks,
- Chemical-resistant headgear for overhead exposure.

Notify workers of the application by warning them orally and by posting warning signs at entrances to treated areas.

GENERAL USE PRECAUTIONS

Insect control may be reduced at low spray volumes under high temperature and wind conditions.

Some reduction in insect control may occur under unusually cool conditions.

Flood irrigation: To avoid contamination of irrigation tail waters, do not flood irrigate within 24 hours following a soil surface or foliar application of Warhawk.

Insecticide Resistance Management (IRM)

Warhawk contains a Group 1B insecticide. Insect/mite biotypes with acquired resistance to Group 1B may eventually dominate the insect/mite population if Group 1B insecticides are used repeatedly in the same field or in successive years as the primary method of control for targeted species. This may result in partial or total loss of control of those species by Warhawk or other Group 1B insecticides.

To delay development of insecticide resistance, the following practices are recommended:

- Avoid consecutive use of insecticides with the same mode of action (same insecticide group) on the same insect species.
- Use tank mixtures or premix products containing insecticides with different modes of action (different insecticide groups) provided the products are registered for the intended use.
- Base insecticide use on comprehensive Integrated Pest Management (IPM) programs.
- Monitor treated insect populations in the field for loss of effectiveness.
- Contact your local extension specialist, certified crop advisor, and/or manufacturer for insecticide resistance management and/or IPM recommendations for the specific site and resistant pest problems.

SPRAY DRIFT MANAGEMENT

Do not allow spray to drift from the application site and contact people, structures people occupy at any time and the associated property, parks and recreation areas, non-target crops, aquatic and wetland sites, woodlands, pastures, rangelands, or animals.

Avoiding spray drift at the application site is the responsibility of the applicator. 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 decision to apply this product.

Observe the following precautions when spraying Warhawk adjacent to permanent bodies of water such as rivers, natural ponds, lakes, streams, reservoirs, marshes, estuaries, and commercial fish ponds.

The following treatment setbacks or buffer zones must be utilized for applications around the above listed aquatic areas with the following application equipment:

Application Method	Required Setback (Buffer Zone) (feet)
ground boom	25
chemigation	25
orchard airblast	50
aerial (fixed wing or helicopter)	150

Making applications when wind is blowing away from sensitive areas is the most effective way to reduce the potential for adverse effects.

The following spray drift **best management practices** are recommended to avoid off-target drift movement from applications.

Aerial Application

1. The boom width must not exceed 75% of the wingspan or 90% of the rotor blade.
2. Nozzles must always point backward, parallel with the air stream, and never be pointed downward more than 45 degrees.
3. Nozzles must produce a medium or coarser droplet size (255-340 microns volume median diameter) per ASE Standard 572 under application conditions. Airspeed, pressure, and nozzle angle can all effect droplet size. See manufacturer's catalog or USDA/NAAA Applicator's Guide for spray size quality ratings.
4. Applications must not be made at a height greater than 10 feet above the top of the target plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.
5. Use upwind swath displacement and apply only when wind speed is 3 to 10 mph as measured by an anemometer. Do not apply product when wind speed exceeds 10 mph.
6. If application includes a no-spray zone, do not release spray at a height greater than 10 feet above the ground or crop canopy.

Where states have more stringent regulations, they must be observed.

The applicator should be familiar with and take into account the information covered in the Aerial Drift Reduction Advisory.

Aerial Drift Reduction Advisory

This section is advisory in nature and does not supercede the mandatory label requirements.

Information on Droplet Size: The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent adverse effects from drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

Controlling Droplet Size:

- Volume - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- Pressure - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- Number of nozzles - Use the minimum number of nozzles that provide uniform coverage.
- Nozzle orientation - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- Nozzle type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Length: For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

Application Height: Applications should not be made at a height greater than 10 feet above the top of the target plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment: When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator should compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

Wind: Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 1.5 mph due to variable wind direction and high inversion potential. **Note:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions: Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which

causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures 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 or an aircraft smoke generator. 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 air mixing.

Sensitive Areas: The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

Ground Boom Application

The following mandatory spray drift best management practices are required to reduce the likelihood of off-target drift movement from ground applications.

1. Choose only nozzles and pressures that produce a medium or coarse droplet size (255-400 microns volume median diameter), per ASAE Standard 572. See manufacturer's catalog or USDA/NAAA Applicator's Guide for spray size quality ratings.
2. Apply with nozzle height no more than 4 feet above the ground or crop canopy.
3. Do not apply product when wind speed exceeds 10 mph as measured by an anemometer.

Orchard Airblast Application

The following mandatory spray drift best management practices are required to reduce the likelihood of off-target drift movement from airblast applications.

1. Nozzles must be directed so spray is not projected above the canopies.
2. Apply only when wind speed is 3 to 10 mph at the application site as measured by an anemometer outside of the orchard/vineyard on the upwind side.
3. Outward pointing nozzles must be shut off when turning corners at row ends.

The applicator should take into account the following best management practices to reduce off-site spray drift. This section is advisory and does not supersede mandatory label requirements.

1. Number of nozzles, nozzle orientation and spray volume, air speed and wind direction are key factors in adjusting airblast spray delivery to match the height and density of the crop canopy. Airblast equipment should be adjusted to provide uniform coverage while minimizing the amount of spray movement over-the-top or completely through the crop canopy.
 - High air volumes deliver spray more efficiently than air at high speed. Reducing forward travel speed decreases the air speed necessary to deliver the spray to the top of the crop canopy.
 - Use air guides along with the number and orientation of spray nozzles to achieve the desired spray coverage and directional control.
2. The following steps should be taken to minimize drift and the amount of non-target spray:
 - Orient nozzles and adjust air speed/volume/direction to force the spray through the crop canopy but not allow drift past the canopy.
 - Shut off spray delivery when passing gaps in crop canopy within rows.
 - Spray the outside rows of orchards from outside in, directing the spray into the orchard and shutting off nozzles on the side of the sprayer away from the orchard.
 - When treating smaller trees, vines or bushes, shut off top nozzles to minimize over-the-top spray movement.

APPLICATION INSTRUCTIONS

Broadcast Foliar Application

Apply with conventional power-operated spray equipment using nozzles and spray pressures recommended for insecticides. Apply Warhawk in a spray volume of not less than 2 gallons per acre for aerial application equipment (fixed wing or helicopter) or not less than 10 gallons per acre for ground equipment, unless otherwise specified. Increase spray volume to ensure adequate coverage with increased density and height of crop canopy. See Spray Drift Precautions section for recommendations on droplet size.

Ground Application: Orient the boom and nozzles so that uniform coverage is obtained. The swath width should not be wider than the boom. Follow nozzle manufacturer's recommendations for insecticide nozzles with respect to nozzle type, pressure, and spacing.

Broadcast Soil Application

Apply with conventional power-operated spray equipment that will apply the product uniformly to the soil surface. Use nozzles that produce medium or coarse droplets (235-400 microns). Unless otherwise indicated, a spray volume of 10 gallons or more per acre is recommended. For band application, use proportionally less spray volume.

Aerial Application

Use a minimum spray volume of 2 gallons per acre and follow recommendations for best management practices for aerial application, above.

Marking of swaths by flagging, permanent markers or use of GPS equipment is recommended.

Chemigation (Sprinkler Irrigation)

Warhawk may be applied to the following crops through sprinkler irrigation equipment: alfalfa, almond (orchard floors only), citrus (orchard floors only), corn (field and sweet), cotton, cranberry, mint, sorghum, soybeans, sugarbeet, orchard floors (pecan and walnut), walnut (orchard floors only), and wheat, or other crops as specified in Loveland

Note: Unless otherwise indicated in specific use directions, the application rates for chemigation are the same as those recommended for broadcast application.

Special Use Directions for Sprinkler Irrigation

The following use directions must be followed when Warhawk is applied through sprinkler irrigation systems. Thoroughly clean the injection system and tank of any fertilizer or chemical residues, and dispose of the residues according to state and federal laws. Flush the injector with soap and water. Determine the amount of Warhawk needed to cover the desired acreage. Mix according to instructions in the Mixing Directions section and bring mixture to desired volume. Do not add crop oil when Warhawk is applied by chemigation. Maintain continuous agitation during mixing and throughout the application period. Set the sprinkler system to deliver the desired inches of water per acre. Start the water pump and sprinkler, and let the system achieve the desired pressure and speed before starting the injector. Start the injector and calibrate the injector system according to Calibration Instructions in the following Special Use Precautions section. The mixture containing Warhawk must be injected continuously and uniformly into the irrigation water line as the sprinkler is moving to ensure uniform application at the correct rate. When the application is finished, flush and clean the entire irrigation and injector system prior to shutting down the system.

Special Use Precautions for Sprinkler Irrigation

The following use precautions will result in a safe and successful application of mixtures containing Warhawk:

1. Apply this product only through the following sprinkler irrigation systems: center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, micro sprinkler, or hand move. Do not apply this product through any other type of irrigation system. Do not apply through sprinkler systems that deliver a low coefficient of uniformity such as certain water drive units.
2. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.
3. If you have questions about calibration, you should contact state extension service specialists, equipment manufacturers, or other experts.
4. Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system.
5. 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.
6. 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 back flow. Refer to the American Society of Agricultural Engineer's Engineering Practice 409 for more information.
7. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
8. 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.
9. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
10. The irrigation line or water pump must include a functional pressure switch that will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
11. 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. The metering pump must provide a greater pressure than that of the irrigation system at the point of injection. The pump must meet Section 675 for "Electrically Driven or Controlled Irrigation Machines" NEC 70 and must contain Viton or Teflon seals.
12. To insure uniform mixing of the insecticide into the water line, inject the mixture through a nozzle placed in the fertilizer injection port or just ahead of an elbow or tee in the irrigation line so that the turbulence will assist in mixing. It is suggested that the injection point be higher than the insecticide tank to prevent siphoning.
13. The tank holding the insecticide mixture should be large enough to allow the system to complete the application with 1 filling. It must be free of rust, fertilizer, sediment, and foreign material, and equipped with an in-line strainer situated between the tank and the injector pump.
14. **Calibration:** In order to calibrate the irrigation system and injector to apply the mixture of Warhawk, determine the following: 1) Calculate the number of acres irrigated by the system; 2) Set the irrigation rate and determine the number of minutes for the system to cover the intended treatment area; 3) Calculate the total gallons of insecticide mixture needed to cover the desired acreage. Divide the total gallons of insecticide mixture needed by the number of minutes to cover the treatment area. This value equals the gallons per minute output that the injector must deliver. Convert the gallons per minute to milliliters or ounces per minute. Calibrate the injector pump with the system in operation at the desired irrigation rate. It is suggested that the timed output of the injector pump be checked at least twice before operation, and the system monitored during operation.
15. Do not apply when wind speed favors drift beyond the area intended for treatment. End guns must be turned off during the application if they irrigate non-target areas.
16. Do not allow irrigation water to collect or run off and pose a hazard to livestock, wells, or adjoining crops.
17. **Reentry:** Follow requirements in the Agricultural Use Requirements section or crop-specific sections of this label.
18. Do not apply through sprinkler systems that deliver a low coefficient of uniformity such as certain water drive units.

WARHAWK®
EPA REG. NO. 3-14857

Citrus Fruits (Not for Use in Mississippi)

Including, but not limited to: calamondin, chironja, citrus citron, citrus hybrids, grapefruit, kumquat, lemon, lime, mandarin (tangerine), pummelo, satsuma mandarin, sour orange, sweet orange, tangelo, tangor

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 5 days unless PPE required for early entry is worn.

Apply as a concentrate or dilute spray using conventional, power-operated spray equipment. Use a higher rate in rate range when there is increased pest pressure. Use sufficient water to ensure thorough and complete coverage of the foliage and fruit. For dilute sprays (greater than 200 gpa), use a spray concentration of at least 0.5 pints of Warhawk per 100 gallons of finished spray. Complete coverage is not necessary for outside canopy sprays targeting certain pests such as lepidoptera insects and katydids. Treat when pests become a problem or in accordance with the local spray schedule as recommended by your State Agricultural Experiment Station, certified Pest Control Advisor, or Extension Service Specialist. To avoid excessive ridding, do not apply Warhawk to citrus from December up to the initiation of bloom.

Use of Spray Oils: To improve control of aphids, mealybugs, scale insects, and thrips, a petroleum spray oil recommended for use on citrus trees may be added to spray mixtures at up to 1.8 gallons per 100 gallons of spray.

Target Pests	Warhawk (pint/acre)	
aphids (including brown citrus aphid)	2 - 7	
glassywinged sharpshooter		
grasshoppers (1)		
katydids		
lepidopterous larvae (such as: avocado leafroller, cutworms, fruit tree leafroller, orange dogs, orange tortrix, western tussock moth)		
mealybugs (see below for California and Arizona)		
scale insects (such as: black scale, brown soft scale, chaff scale, California red scale (see below for California and Arizona), Florida red scale, long scale, purple scale and snow scale)		
thrips (see below for California and Arizona)		
citrus rust mites (2) (Florida only)		4 - 7
citrus psylla (3) (Florida only)		5
thrips suppression and mealybugs (California and Arizona, see restrictions)	6 - 12	
California red scale (California and Arizona, see restrictions)	8 - 12	

Numbers in parentheses (-) refer to Pest-Specific Use Directions.

Pest-Specific Use Directions:

- Lubber grasshoppers:** Effective control requires direct contact with spray when grasshoppers are small (less than 1 inch in length).
- For control of **citrus rust mites**, use a spray concentration of at least 1 pint per 100 gallons.
- For control of **citrus psylla**, add citrus oil at 2% v/v in a tank mix with Warhawk.

Specific Use Restrictions:

- Preharvest Interval:** Do not treat within 21 days of harvest for applications of up to 7 pints of Warhawk per acre or within 35 days for application of rates above 7 pints per acre.
- The use of application rates greater than 8 pints of Warhawk (4 lb ai chlorpyrifos) per acre are allowed only in the following counties in California: Fresno, Tulare, Kern, Kings, and Madera.
- Do not apply more than 15 pints of Warhawk (7.5 lb ai chlorpyrifos) per acre per year.
- Do not make more than 2 applications of Warhawk or other products containing chlorpyrifos per year (does not include citrus orchard floors).
- Do not make second foliar application of Warhawk or other product containing chlorpyrifos within 30 days of the first application.
- Do not allow meat or dairy animals to graze in treated areas.
- Observe local recommendations for tank mix combinations especially with regard to use of Warhawk with spray oil. Consult with a county farm advisor, county agency, extension service personnel, agricultural commissioner, pest control advisor, or local Loveland Products, Inc. representative for local recommendations.
- Do not apply when trees are stressed by drought or high temperatures.
- Warhawk is highly toxic to bees exposed to direct treatment and should not be applied when bees are actively visiting the area. During the citrus bloom period in California, apply from 1 hour after sunset until 2 hours before sunrise.
- Additional Precautions for California and Arizona:** Warhawk should not be used in combination with spray oil when temperatures are expected to exceed 95°F the day of application or for several consecutive days thereafter.

Citrus Orchard Floors (Not for Use in Mississippi)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 5 days unless PPE required for early entry is worn.

Apply as a ground broadcast spray directed to the orchard floor to control foraging ants and suppress mounds. Do not apply spray to contact foliage or fruit. Apply in a total spray volume of 25 gpa or more using equipment that will apply the spray uniformly to the soil surface. Use a higher rate in the rate range for increased pest pressure. For best results, remove weed growth or other obstructions that might prevent the spray from reaching the soil surface. Foliar applications of Warhawk or other products containing chlorpyrifos may be made in addition to the orchard floor treatments but must comply with the 10 day re-treatment interval (see Specific Use Restrictions).

Chemigation: Warhawk may be applied to citrus orchard floors through sprinkler irrigation systems only if the system uniformly covers the soil surface at the base of the tree. Apply at recommended broadcast application rates to control listed pests. See Chemigation (Sprinkler Irrigation) section for application instructions.

Note: Do not apply in tank mixture with Evik® herbicide.

Target Pests	Warhawk (pint/acre)
ant species*	1 1/2 - 2

*Excludes fire ants, harvester ants, carpenter ants, and pharaoh ants.

Application with Dry Bulk Fertilizer: Most dry fertilizers can be used for impregnation with Warhawk. Apply Warhawk at the equivalent broadcast rate using a minimum of 200 lb per acre of dry bulk fertilizer.

Impregnation of Dry Bulk Fertilizer: Use a closed rotary drum mixer suitable for blending of dry bulk fertilizer equipped with an internal spray nozzle. Add the dry fertilizer to the mixer followed by the appropriate amount of Warhawk. After mixing the dry ingredients to ensure uniformity, add water through the spray nozzle in an amount sufficient to just dampen the mixture (4 to 8 pints of water per ton of fertilizer). The spray nozzle should be positioned within the mixer to provide uniform coverage of the tumbling mixture of fertilizer and Warhawk. Addition of water will cause Warhawk to uniformly adhere to the dry bulk fertilizer. Bulk fertilizers impregnated with Warhawk should be applied immediately, **not stored**. Foliar applications of Warhawk may be made in addition to the orchard floor treatments.

Compliance with any and all federal and state laws and regulations relating to the Warhawk and fertilizer mixture is the responsibility of the person offering such mixture for sale or distribution.

Specific Use Restrictions:

- Preharvest Interval:** Do not apply last treatment within 28 days before harvest.
- Do not apply more than 3 quarts of Warhawk (3 lb ai chlorpyrifos) per acre per year.
- Do not make more than 3 applications of Warhawk or other products containing chlorpyrifos per year (does not include foliar applications to citrus trees).
- Do not make a second application of Warhawk or other product containing chlorpyrifos within 10 days of the first application.
- Do not allow meat or dairy animals to graze in treated areas.
- Maximum single application rate is 1 lb ai chlorpyrifos per acre.

Cole Crop (Brassica) Leafy Vegetables and Radish, Rutabaga, and Turnip

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours (3 days for cauliflower) unless PPE required for early entry is worn.

Soil Application

Apply as indicated in Pest-Specific Use Directions. Use a higher rate in the rate range when there is increased pest pressure.

Crop	Target Pests	Warhawk (fl oz/1000 ft of row)
cauliflower	root maggot (1)	1.6 - 2.4
broccoli	root maggot (1)	1.6 - 2.75
Brussels sprout		
cabbage		
Chinese cabbage		
collard		
kale		
kohlrabi		
turnip		
broccoli	root aphid (2)	1.2 (2.4 for double row plantings)
cabbage		
radish	root maggot (3)	1
rutabaga	root maggot (1)	1.6 - 3.3

Numbers in parentheses (-) refer to Pest-Specific Use Directions.

Pest-Specific Use Directions:

- Root maggot:**
 - Direct seeded crops (cauliflower, broccoli, Brussels sprout, cabbage, Chinese cabbage, collard, kale, kohlrabi, turnip, and rutabaga):** Apply the specified dosage in a water-based spray as a 4-inch wide band over the row at planting time. Band placement should be behind the planter shoe and in front of the press wheel to achieve shallow incorporation. Use a minimum of 40 gpa total spray volume.
 - Transplanted crops (cauliflower, broccoli, Brussels sprout, cabbage, Chinese cabbage, collards, kale, kohlrabi, and turnip):** Apply Warhawk as a water-based spray directed to the base of the plants immediately after setting. Use a minimum of 40 gpa total spray. Do not add any additional adjuvants, surfactants or spreader stickers. Do not apply as a foliage application.

8/14

Tank Mixing: Warhawk may also be applied in tank mixtures with paraquat or Roundup herbicide and/or liquid fertilizer solutions. See Mixing Directions section for tank mixing instructions. Read and carefully follow all applicable directions, restrictions, and precautions on labeling for each product used in combination with Warhawk.

- Root aphid (broccoli, cabbage):** Apply Warhawk in water or with liquid fertilizer injected as a sidedress on each side of the row after plants are established. See Mixing Directions section for Mixing Instructions for Liquid Fertilizer. Avoid mechanical damage to crop roots. Use a minimum of 15 gpa of total spray volume.
- Root maggot (radish):** Apply the specified dosage as a water-based drench in the seed furrows with the seed at planting time. Use a minimum of 40 gpa of total drench.

Specific Use Restrictions:

- Cauliflower:** Do not apply more than 2 pints of Warhawk to cauliflower planted in 40-inch rows. Use proportional amounts for other row spacings, but do not exceed 4 pints per acre of Warhawk. Do not make more than 1 soil application per crop.
- Broccoli, Brussels Sprout, Cabbage, Chinese Cabbage, Collard, Kale, Kohlrabi, and Turnip:** Do not apply within 30 days of harvest. Do not make more than 1 soil application per crop. Do not apply more than 2.6 pints of Warhawk per acre when planted in 40-inch rows. Do not apply more than 4.5 pints of Warhawk per acre to these crops when in 20-inch rows (or 2 rows per bed). Use proportional amounts for other row spacings, but do not exceed 4.5 pints per acre of Warhawk.
- Radish:** Do not apply more than 5.5 pints of Warhawk per acre. Do not make more than 1 soil application per crop.
- Rutabaga:** Do not apply more than 4.5 pints of Warhawk per acre. Do not make more than 1 soil application per crop. Do not use rutabaga tops for food or feed purposes.
- Soil applications (all labeled crops):** Do not foliar apply any chlorpyrifos product labeled for foliar application within 10 days of a soil application of Warhawk.

Foliar Application (Brussels Sprout Only)

Apply with conventional power-operated spray equipment in 20 to 150 gpa of water. Use a higher rate in the rate range when there is increased pest pressure. Consult your state agricultural experiment station, extension service specialist, or integrated pest control advisor for proper time to treat in your area.

Crop	Target Pests	Warhawk (pint/acre)
Brussels sprout	armyworms cabbage aphid cutworms imported cabbage worm striped flea beetle (adult)	1 - 2

Specific Use Restrictions:

- Preharvest Interval:** Do not apply within 21 days before harvest.
- Do not make more than 3 applications of products containing chlorpyrifos per crop.
- Do not make a second application of Warhawk or other product containing chlorpyrifos within 10 days of the first application.

Corn (Field Corn and Sweet Corn, Including Corn Grown for Seed)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Preplant Incorporation Application

Apply as a broadcast spray to the soil surface using power-operated ground spray equipment. Use a total spray volume of 10 gpa or more. Use a higher rate in the rate range when there is increased pest pressure. On the day of treatment, incorporate Warhawk into the top 2 to 4 inches of soil using a disc, field cultivator, or equivalent equipment.

Target Pests	Warhawk (pint/acre)
cutworms	2 - 4
symphylans	
billbugs	4
flea beetle larvae	
grubs	
seed corn maggots	
seed corn beetle	
wireworms	
corn rootworm larvae	6
lesser cornstalk borer	

Tank Mixing and Mixing with Liquid Fertilizer: Warhawk may be applied in tank mixture with liquid fertilizer solutions. See Mixing Directions section for tank mixing instructions. Read and carefully follow all applicable directions, restrictions, and precautions on labeling for each product used in combination with Warhawk.

Conservation Tillage: Preplant, At-Plant, or Preemergence Applications

Apply as a broadcast spray to surface trash and exposed soil using power-operated ground spray equipment. Use a total spray volume of 20 gpa or more. Use a higher rate in the rate range to extend residual control.

Target Pests	Warhawk(pint/acre)
armyworms	1 - 2
cutworms	

At Plant T-Band Application

Apply as a liquid T-Band in fields with no more than 30% cover of crop residue remaining on the soil surface. Apply Warhawk at a rate of 2.4 fl oz per 1000 linear feet of row (2 pints per acre with 40-inch row spacing) in a minimum spray volume of 5 gpa. Position a flat fan nozzle over the open seed furrow immediately behind the planter shoe, in front of the press wheel, and adjust to provide a 5 to 6 inch band width centered over the row. Incorporate into the top 1 inch of soil using tires, chains or other suitable equipment.

The following table provides equivalent application rates for various row spacings when Warhawk is applied at the rate of 2.4 fl oz per 1000 ft of row at the indicated row spacing.

Target Pests	Amount of Warhawk Required	
	Row Spacing (inches)	Pints per Acre
corn rootworm larvae	30	2.6
cutworms	36	2.2
grubs	38	2.1
seed corn beetle	40	2.0
seed corn maggot		

Sprayer Calibration Information for Band Application:

Volume of Spray Per Acre	Fluid Ounces of Spray Required Per 100 Feet of Row for Various Row Spacings and Spray Volumes			
	30"	36"	38"	40"
5 gallons	3.67	4.41	4.65	4.90
10 gallons	7.34	8.82	9.30	9.80
15 gallons	11.00	13.23	13.95	14.70
20 gallons	14.68	17.64	18.60	19.69

Postemergence Treatment

Apply as a postemergence broadcast spray using sufficient spray volume to ensure thorough coverage of treated plants, but no less than 15 gpa for ground spray equipment or 2 to 5 gpa for aircraft equipment. Control may be reduced at low spray volumes under high temperature and wind conditions. **Note:** Do not apply aerially in Mississippi.

Target Pests	Warhawk (pint/acre)
grasshoppers	1/2 - 1
aphids	1 - 2
armyworms	
chinch bugs (1)	
corn rootworm adults (2)	
cutworms (3)	
flea beetle adults (1)	
southern corn leaf beetle	
webworms (4)	
Western bean cutworm	
European corn borer (5)	
corn earworm	1 1/2 - 2
Southwestern corn borer (6)	
billbugs (1)	2
corn rootworm larvae (7), (8)	
lesser cornstalk borer	
common stalk borer (9)	

Numbers in parentheses (-) refer to Pest-Specific Use Directions.

Chemigation: Warhawk may be broadcast applied postemergence through sprinkler irrigation systems at recommended application rates to control listed foliar pests. For best results, tank mix Warhawk with 2 pints of non-emulsifiable oil. See Chemigation (Sprinkler Irrigation) section for application instructions.

Pest-Specific Use Directions:

- For best **billbug**, **chinch bug**, or **flea beetle** control, ground apply in a minimum spray volume of 20 to 40 gpa at 40 psi. If corn is less than 6 inches tall, apply in a 9- to 12-inch wide band over the row. For corn greater than 6 inches tall, apply using drop nozzles directed to the base of the plant. Do not reduce the application rate for banded or directed applications. Concentrate the full labeled dosage rate in the treated zone. When chinch bugs continue to immigrate to corn over a prolonged period or under extreme pest pressure, a second application may be needed.
- The recommended dosage will control silk clipping by **corn rootworm adults**.
- For **cutworms**, it is preferable to apply Warhawk when soil is moist and worms are active on or near the soil surface. If ground is dry, cloddy, or crusted at time of treatment, worms may be protected from the spray and effectiveness will be reduced. Shallow incorporation using a rotary hoe or other suitable equipment immediately before or soon after treatment may improve control. A second application may be required if damage or density levels exceed economic thresholds established for your area.
- For **webworm** control, shallow incorporation using a rotary hoe or other suitable equipment immediately before or soon after treatment is necessary.
- For **European corn borer** control, use 1 1/2 to 2 pints per acre when application is made with power-operated ground or aerial equipment or 1 to 2 pints per acre when application is made through a sprinkler irrigation system. University research indicates that achieving greater than 50% control of first-generation European borer with a single liquid insecticide treatment is highly dependent on timing, insecticide placement, and weather conditions.
- For **southwestern corn borer**, a second application may be applied 21 days later if needed due to reinfestation.

9/14

- For postemergence control of **corn rootworm larvae** apply at cultivation. Direct the spray to both sides of the row at the base of the plants just ahead of the cultivator shovels. Cover the insecticide with soil around the brace roots. A cultivation application of Warhawk may be made in addition to an at-planting application of Lorsban® 15G insecticide.
- Warhawk may also be applied through **sprinkler irrigation** systems at the rate of 2 pints per acre to control **corn rootworm larvae**. Time application to coincide with the appearance of the second instar larvae. Apply with enough water to wet the root zone to the depth control needed. If soils are wet, allow enough soil drying to occur such that an application using a minimum amount of water will not produce surface runoff. See Chemigation (Sprinkler Irrigation) section for application instructions.
- Do not use Warhawk in combination with a burndown herbicide for control of **common stalk borer**. For common stalk borer control, treat approximately 11 days after application of Roundup herbicide or after burndown with paraquat herbicide is complete (3 to 5 days).

Specific Use Restrictions:

- Preharvest Interval:** Do not apply within 21 days before harvest of grain or ears. Do not feed treated corn fodder to meat or dairy animals within 35 days after last treatment.
- Do not apply more than 6 pints of Warhawk (3 lb ai chlorpyrifos) per acre per season.
- Do not make more than 3 applications of Warhawk or other products containing chlorpyrifos per season including the maximum allowed of 2 granular applications, at the 1 lb ai chlorpyrifos rate.
- Do not make a second application of Warhawk or other product containing chlorpyrifos within 10 days of the first application.
- Do not apply in tank mixes with Steadfast or Lightrig herbicides.
- If more than 1 lb ai granular chlorpyrifos per acre is applied at-plant (for a maximum of 1.3 lb ai per acre per season), only 1 additional application of a liquid product containing chlorpyrifos at 1 lb ai per acre is allowed per season, for a total of 2.3 lb ai chlorpyrifos per acre per season.
- Do not allow meat or dairy animals to graze in treated areas nor harvest treated corn silage as feed for meat or dairy animals within 14 days after last treatment.

Cotton (Not for Use in Mississippi)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Apply as a broadcast foliar spray using aircraft or ground spray equipment in all states except Arizona and California. Use a higher rate in the rate range when there is increased pest pressure. Use sufficient spray volume to ensure thorough coverage of treated plants, but no less than 10 gpa for ground spray equipment or 2 gpa for aircraft equipment. Increase spray volume when foliage is dense and/or pest population is high and/or under high temperature and wind conditions. Treat when field counts indicate damaging insect populations are developing or present.

Chemigation: Warhawk may be applied through sprinkler irrigation systems at recommended broadcast application rates to control listed foliar pests. See Chemigation (Sprinkler Irrigation) section for application instructions.

Proper application methods are necessary to ensure thorough spray coverage and correct rate, and minimize off-target drift. Follow Application Guidelines for ground and aerial application and Spray Drift Management recommendations in General Information section of this label.

All States Except Arizona and California

Target Pests	Warhawk (pint/acre)
cotton fleahopper (1)	3/8 - 1
plant bugs (1) (<i>Lygus</i> , <i>Mirids</i>)	
grasshoppers	1/2 - 1
thrips	
cotton aphid	1/2 - 2
fall armyworm	
yellowstriped armyworm	
spider mites (2)	
beet armyworm	1 1/2 - 2
cotton bollworm (3)	
cutworms	
pink bollworm	
salt marsh caterpillar	
tobacco budworm (3)	

Numbers in parentheses (-) refer to Pest-Specific Use Directions.

Pest-Specific Use Directions:

- The 3/8 pint per acre rate will not provide a high degree of control but, compared to the 1 pint per acre rate, will minimize the damage from **plant bugs and cotton fleahoppers** and allow increased survival and build-up of **beneficial insects** to aid in the control of **bollworms** infesting cotton.
- Spider mites:** When large numbers of eggs are present, scout the treated area in 3 to 5 days. If newly hatched nymphs are present, make a follow-up application of a non-chlorpyrifos product that is effective against mites.
- Bollworms and budworms:** For best results, it is suggested that fields be scouted twice per week and applications made when worms are 1/4-inch or less in length.

Arizona and California

Target Pests	Warhawk (pint/acre)	
armyworms	1 - 2	
cotton aphid		
cotton fleahopper		
<i>Lygus</i>		
salt marsh caterpillar		
silverleaf whitefly (1)		
thrips		
boll weevil		2
cotton bollworm (2)		
cotton leaf perforator (suppression)		
cutworms		
pink bollworm		
spider mites (suppression)		
tobacco budworm (2)		

Numbers in parentheses (-) refer to Pest-Specific Use Directions.

Pest-Specific Use Directions:

- Silverleaf whitefly:** Apply in tank mix combination with the recommended rate of a pyrethroid insecticide labeled for control or suppression.
- Bollworms and budworms:** For best results, it is suggested that fields be scouted twice per week and applications made when worms are 1/4-inch or less in length.

Specific Use Restrictions:

- Preharvest Interval:** Do not apply within 14 days before harvest.
- Do not apply more than 6 pints of Warhawk (3 lb ai chlorpyrifos) per acre per season.
- Do not make more than 3 applications of Warhawk or other products containing chlorpyrifos per crop season.
- Do not make a second application of Warhawk or other product containing chlorpyrifos within 10 days of the first application.
- Do not allow meat or dairy animals to graze in treated areas.
- Do not feed trash or treated forage to meat or dairy animals.
- Maximum single application rate is 1 lb ai chlorpyrifos per acre.

Cranberry (Not for Use in Mississippi)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Apply as a broadcast foliar spray. Use sufficient spray volume to ensure thorough coverage, but no less than 15 gpa. Except for control of cranberry weevil, treat when field counts indicate damaging insect populations are developing or present.

Chemigation: Warhawk may be applied through sprinkler irrigation systems to control listed pests. Apply at recommended broadcast application rates. See Chemigation (Sprinkler Irrigation) section for application instructions.

Target Pests	Warhawk (pint/acre)
brown spanworm	3
cranberry fruitworm	
cranberry weevil (1)	
cutworms, fireworms	
<i>Sparganothis</i> fruitworms	

Numbers in parentheses (-) refer to Pest-Specific Use Directions.

Pest-Specific Use Directions:

- For weevil control, apply once at flower bud development (late May, early June) and, if weevils are present, once after 100% bloom (early to mid-July).

Specific Use Restrictions:

- Preharvest Interval:** Do not apply within 60 days before harvest.
- Do not make more than 2 applications of Warhawk or other products containing chlorpyrifos per season.
- Do not make a second application of Warhawk or other product containing chlorpyrifos within 10 days of the first application.
- Maximum single application rate is 1.5 lb ai chlorpyrifos per acre.
- Apply only after the winter flood water has been removed. To avoid pesticide contamination of flood waters, do not apply when bogs are flooded.

Fig (California Only)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 days unless PPE required for early entry is worn.

Apply Warhawk as a dormant application in late winter prior to beetle emergence and prior to leaf formation. Use a spray volume of 10 gpa or more and apply as a broadcast spray to the soil surface using power-operated ground spray equipment. On the day of treatment, incorporate Warhawk into the top 3 inches of soil using suitable equipment.

Target Pest	Warhawk (quart/acre)
dried fruit beetle	2

Specific Use Restrictions:

- Preharvest Interval:** Do not apply within 7 months of harvest.
- Make only 1 application per year of Warhawk or other product containing chlorpyrifos.
- Maximum single application rate is 2 lb ai chlorpyrifos per acre.

Grape (Areas East of the Continental Divide Only)
(Not for Use in Mississippi)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Soil Surface Application

Apply Warhawk just before the pest emerges from the soil. Apply 2 quarts of the diluted spray mixture to the soil surface on a 15-square foot area (4.4 ft circle) around the base of each vine.

Target Pest	Warhawk (pint/100 gal)
grape borer	4 1/2

Specific Use Restrictions:

- Do not allow spray to contact fruit or foliage.

Prebloom Application

Apply as a spray drench ground application using a minimum spray volume of 25 gpa.

Target Pest	Warhawk (quart/acre)
climbing cutworm	1

Specific Use Restrictions:

- Preharvest Interval:** Do not apply within 35 days before harvest.
- Do not make more than 1 application per season of Warhawk or other product containing chlorpyrifos.
- Based upon available residue data, the use of Warhawk in grapes is restricted to areas east of the Continental Divide only.
- Maximum single application rate for soil surface application is 2.25 lb ai chlorpyrifos per 100 gallons.
- Maximum single application rate for prebloom application is 1 lb ai chlorpyrifos per acre.
- Do not use in conjunction with soil surface application for grape borer control.

Legume Vegetables (Succulent Or Dried Except Soybeans)†

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

† Including but not limited to: Adzuki bean, Bean, Blackeyed Pea, Broad bean (dry and succulent), Catjang, Chickpea, Cowpea, Crowder pea, English pea, Field bean, Field pea, Garden pea, Grain Lupin, Green pea, Guar, Lima bean (dry and green), Kidney Bean, Labiab bean, Lentil, Moth bean, Navy bean, Mung bean, Pea, Pigeon pea, Pinto bean, Rice bean, Southern pea, Sweet lupin, Tepary bean, Urd bean, White lupin, White sweet lupin.

PEST: Control of Seed Maggots
Preplant Broadcast Application

Apply Warhawk at a rate of 2 pints per acre to control seed maggots. Make a preplant broadcast application in a minimum of 10 gpa of spray to the soil surface using suitable ground equipment. To improve the activity against seed maggots, Warhawk must be incorporated into the top 1 to 3 inches of soil using suitable tillage equipment.

At Plant T-Band Treatment

Apply 1.8 fl oz of Warhawk per 1000 feet of row at 30-inch row spacing. Apply the spray in a 3 - 5 inch wide band over the row behind the planter shoe and in front of the press wheel to achieve shallow incorporation. Mix the specified dosage in a minimum of 10 gallons of spray per acre and apply to the soil surface using suitable ground spray equipment. Equivalent rates of insecticide spray required per 100 feet of row for various row spacing are given in the accompanying table. To improve the activity of Warhawk against seed maggots, incorporate the Warhawk into the top 1 to 3 inches of soil using suitable tillage equipment.

Spray Volume Per Acre (Gallons)	fl oz of Spray Volume per 100 feet of row			
	30 - inch	28 - inch	24 - inch	22 - inch
10	7.3	6.9	5.9	5.4
15	11	10.3	8.8	8.1
20	14.7	13.7	11.8	10.8

Specific Use Restrictions:

- Do not make more than 1 application per year.
- Do not apply more than 2 pints of Warhawk per acre.
- Do not apply Warhawk at-plant if the field was treated with a preplant incorporated treatment of Warhawk or other chlorpyrifos product.
- Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.
- Insecticides, including Warhawk, may contribute to the stress of the bean plant under certain environmental conditions. This stress may reduce plant stand or interfere with normal plant development. Herbicides used preplant incorporated may interact with insecticides and enhance this stress.

Mint (Not for Use in Mississippi)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Apply as a broadcast spray using a total spray volume of 10 gpa or more using ground equipment.

Chemigation: Warhawk may be applied through sprinkler irrigation systems at recommended broadcast application rates to control listed foliar pests. See Chemigation (Sprinkler Irrigation) section for application instructions.

Target Pests	Warhawk (pint/acre)
cutworm (1)	2 - 4
garden symphylans (2)	4
mint root borer (3)	

Numbers in parentheses (-) refer to Pest-Specific Use Directions.

Pest-Specific Use Directions:

- Cutworms:** Apply during May and June when field counts indicate damaging insect populations are developing or present. When larvae are less than 3/4 inch in length, use the 2 pint rate; otherwise, use the higher rate.
- Garden symphylans:** Apply preplant to the soil surface. On the same day of treatment, incorporate the insecticide into the top 2 to 4 inches of soil using a disc, field cultivator, or equivalent equipment.
- Mint borer:** Apply postharvest when field counts indicate damaging insect populations are developing or present. If ground applied, follow with approximately 1 acre inch of sprinkler irrigation immediately after application to incorporate the insecticide into the soil or apply by chemigation.

Specific Use Restrictions:

- Preharvest Interval:** Do not apply within 90 days before harvest.
- Make only 1 application of Warhawk or other product containing chlorpyrifos during the growing season.
- Do not make more than 1 preplant incorporated application in the spring.
- Do not use in conjunction with a broadcast foliar application of Warhawk for cutworm control.
- Make only 1 postharvest application per season of Warhawk or other products containing chlorpyrifos.
- Maximum single application rate is 2 lb ai chlorpyrifos per acre.

Onion (Dry Bulb)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

At Plant Soil Drench Application

For direct seeded onions to control onion maggot, apply Warhawk in a water-based spray as a 2 to 4 inch wide band over the row at planting time in a minimum of 40 gpa. Equivalent rates of insecticide spray required per 1000 feet of row for various row spacings are given in the accompanying table. Shallow incorporation is necessary. Placement behind the planter shoe and in front of the presswheel is recommended. Phytotoxicity may occur if Warhawk is sprayed directly onto onion seeds. Do not mix Warhawk with other pesticide products. **Note:** The user should exercise reasonable judgment and caution with this product. Until familiar with results under user planting and growing conditions, limit application of this product to a small area to determine plant tolerance and extent of injury if such occurs prior to initiating large scale applications.

Target Pest	Row Spacing	Warhawk (fl oz/1000 ft of row)			
		6-inch	10-inch	12-inch	18-inch
onion maggot	32 fl oz/acre	0.37	0.61	0.73	1.1

Specific Use Restrictions:

- Do not make more than 1 application per year.
- Maximum single application rate is 0.03 lb ai chlorpyrifos per 1000 feet of row.

Postplant Soil Drench Application

Apply as an early season directed spray to the base of onion seedlings or transplants during peak egg laying. Use a minimum of 100 gpa for thorough wetting.

Target Pest	Warhawk (quart/acre)
onion maggot	1

Specific Use Restrictions:

- Preharvest Interval:** Do not harvest within 60 days before harvest.
- Do not make more than 2 applications (at plant plus postplant) per year.
- Maximum single application rate is 1 lb ai chlorpyrifos per acre.

Peanut

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Apply to the soil surface as a preplant broadcast spray followed by immediate soil incorporation to a depth of 3 to 4 inches. Use a minimum of 10 gpa total spray.

10/14

WARHAWK®
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Target Pests	Warhawk (pint/acre)
wireworms (suppression)	4

Specific Use Restrictions:

- **Preharvest Interval:** Do not harvest within 21 days after treatment.
- The combined total of preplant and postplant applications of Warhawk, Lorsban 15G or other products containing chlorpyrifos must not exceed 4 lb ai chlorpyrifos per acre per season.
- Aerial application to peanuts is prohibited in Mississippi.
- Do not make more than 1 preplant application of Warhawk per season.
- Do not feed treated peanut forage or hay to meat or dairy animals.
- Maximum single application rate is 2 lb ai chlorpyrifos per acre.

Pear (Post Harvest Control Of Codling Moth)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Mixing and Application Instructions: Apply 4 pints of Warhawk per acre. Mix the specified dosage in 100 to 400 gallons of spray per acre and apply using an airblast speed sprayer or other suitable ground equipment.

Target Pest	Warhawk (pint/acre)
codling moth	4

Specific Use Restrictions:

- Do not make more than 1 post harvest application (prior to dormancy) per year.
- Do not harvest or use treated fruit for food or feed.
- Do not allow meat or dairy animals to graze in treated orchards.
- If unauthorized entry into a treated orchard cannot be prevented, then the orchard shall be posted with the appropriate signs specifying the health risks involved to deter entry by people while treated unharvested fruit remains on the tree.

Sorghum - Grain Sorghum (Milo)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Apply as a postemergence broadcast spray using sufficient spray volume to ensure thorough coverage of treated plants, but no less than 15 gpa for ground spray equipment or 2 to 5 gpa for aircraft equipment. **Note:** Do not aerially apply in Mississippi. Control may be reduced at low spray volumes under high temperature and wind conditions.

Chemigation: Warhawk may be applied through sprinkler irrigation systems at recommended broadcast application rates to control listed foliar pests. See Chemigation (Sprinkler Irrigation) section for application instructions.

Target Pests	Warhawk (pint/acre)
sorghum midge (1)	1/2
grasshoppers	1/2 - 1
yellow sugar cane aphid and other aphids	
greenbug (2)	1/2 - 2
armyworms	1 - 2
chinch bugs (3)	
cutworms	
lesser cornstalk borer (3)	
webworms	1
European and Southwestern corn borer	1 1/2 - 2
corn earworm	2

Numbers in parentheses (-) refer to Pest-Specific Use Directions.

Pest-Specific Use Directions:

1. **Sorghum midge:** Apply when 30% to 50% of the seed heads are in bloom
2. **Greenbug:** Use a higher rate within the indicated rate range when pest populations are high.
3. **Chinch bugs and lesser cornstalk borer:** Apply as a directed spray toward the base of the plant using power-operated ground spray equipment with sufficient water to ensure coverage of an 8- to 12-inch band centered in the row. For plants less than 6 inches high, apply an 8- to 12-inch band centered over the row. Do not reduce the dosage for banded or directed applications. Concentrate the full labeled dosage rate in the treated zone.

Specific Use Restrictions:

- **Preharvest Interval:** Do not harvest for grain, forage, fodder, hay, or silage within 30 days after application of 1 pint of Warhawk per acre or within 60 days after application of rates above 1 pint per acre.
- Do not apply more than 3 pints of Warhawk (1.5 lb ai chlorpyrifos) per acre per season.
- Do not make more than 3 applications of Warhawk or other products containing chlorpyrifos per use season.
- Do not make a second application of Warhawk or other product containing chlorpyrifos within 10 days of the first application.
- Do not treat sweet varieties of sorghum.
- Maximum single application rate is 1 lb ai chlorpyrifos per acre.

- To minimize the potential for chemical injury, do not apply Warhawk to drought stressed grain sorghum 3 days following irrigation or rain except where the product is applied in irrigation water.
- Be aware that sorghum lines used in seed production fields may be more susceptible to chemical injury. Susceptible inbred lines or hybrids are likely to be at greater risk of yield-reducing chemical injury when treated at the higher application rates. Do not apply more than 1 pint of Warhawk per acre to seed sorghum if the additional risk of crop injury is unacceptable.

Soybean (Not for Use in Mississippi)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Soil Application

Apply as a broadcast treatment to soil surface in a minimum spray volume of 10 gpa using suitable ground spray equipment or as a band application. Use a higher rate in the rate range when there is increased pest pressure. For band application, equivalent rates of insecticide spray required per 100 feet of row for various row spacing are given in the accompanying table. For at-plant treatments, apply in a 4- to 6-inch band centered over the row. Position the spray nozzle in front of the planter shoe or press wheel or after the press wheel followed by a drag chain for light incorporation. **Do not apply as an in-furrow treatment.** For a postemergence rescue treatment, apply as a directed spray in a 9- to 12-inch band at the base of the plant. For plants less than 6 inches tall, apply over-the-top in a 6- to 12-inch band.

Target Pests	At-Plant Treatment (Broadcast, T-band or band) (pint/acre)	Postemergence Rescue Treatment (band only) (pint/acre)
cutworms	1 - 2	1 - 2
lesser cornstalk borer		

Fluid Ounces of Spray Required Per 100 Feet of Row for Various Row Spacings and Spray Volumes

Volume of Spray Per Acre	36"	32"	28"	24"
10 gallons	8.8	7.9	6.9	5.9
15 gallons	13.2	11.8	10.3	8.8
20 gallons	17.6	15.7	13.7	11.8

Foliar Application

Apply as a postemergence broadcast spray using sufficient spray volume to ensure thorough coverage of treated plants, but no less than 15 gpa for ground spray equipment or 2 to 5 gpa for aircraft equipment. Apply when field counts indicate damaging pest populations are developing or present. Warhawk may be tank mixed with glyphosate products when application is to be made to glyphosate-tolerance soybeans. Use a higher rate in the rate range when there is increased pest pressure.

Chemigation: Warhawk may be applied through sprinkler irrigation systems at recommended broadcast application rates to control listed foliar pests. See Chemigation (Sprinkler Irrigation) section for application instructions.

Target Pests	Warhawk (pint/acre)	
grasshoppers	1/2 - 1	
green cloverworm		
spider mites (1)		
velvetbean caterpillar		
armyworms		1 - 2
bean leaf beetle		
cutworms		
corn earworm		
Mexican bean beetle		
painted lady butterfly		
potato leafhopper		
saltmarsh caterpillar and other woolly bears		
soybean aphid		
European corn borer	2	
southern green stink bug		

Numbers in parentheses (-) refer to Pest-Specific Use Directions.

Pest-Specific Use Directions:

1. **Spider mites:** When large numbers of eggs are present, scout the treated area in 3 to 5 days. If newly hatched nymphs are present, make a follow-up application of a non-chlorpyrifos product that is effective against mites.

Specific Use Restrictions:

- **Preharvest Interval:** Do not apply last treatment within 28 days before harvest.
- Do not apply more than 6 pints of Warhawk (3 lb ai chlorpyrifos) per acre per season.
- Do not make a second application of Warhawk or other product containing chlorpyrifos within 14 days of the first application.
- Do not make more than 3 applications per year of Warhawk or other products containing chlorpyrifos.
- Do not allow meat or dairy animals to graze in treated areas or otherwise feed treated soybean forage, hay, and straw to meat or dairy animals.
- Maximum single application rate is 1 lb ai chlorpyrifos per acre.
- On determinate soybeans, do not make more than 1 application after pod set.

WARHAWK®
EPA REG. NO. 3. 4-857

12/14

Strawberry (Not for Use in Mississippi)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Preplant Incorporation Treatment

Apply Warhawk in sufficient water to ensure uniform soil coverage and incorporate into the soil in the spring for protection of strawberries during the following year.

Target Pest	Warhawk (quart/acre)
garden symphylans	2
grub	

Foliar Application

Apply as a broadcast foliar spray when buds first appear and repeat application 10 to 14 days later. Use a minimum spray volume of 40 gpa.

Target Pest	Warhawk (quart/acre)
strawberry bud weevil	1

Postharvest Application

Apply as a directed spray to crown of strawberry plants immediately after harvest and after plants are topped. Repeat application, if required, 14 to 18 days later. Use a minimum spray volume of 100 gpa.

Target Pest	Warhawk (quart/acre)
strawberry crown moth	1

Specific Use Restrictions:

- **For pre-bloom use only.** Do not apply after berries start to form or when berries are present.
- **Preharvest Interval:** Do not apply within 21 days before harvest.
- **Preplant Application:** Do not make more than 1 application per year of Warhawk or other products containing chlorpyrifos.
- **Foliar and Postharvest Applications:** Do not make more than 2 applications per year of Warhawk or other products containing chlorpyrifos.
- **Postharvest Application:** Do not sprinkle irrigate for 1 week following application.
- Do not make a second application of Warhawk or other product containing chlorpyrifos within 10 days of the first foliar application and within 14 days for postharvest application.
- Maximum single application rate is 2 lb ai chlorpyrifos per acre for preplant incorporation and 1 lb ai chlorpyrifos per acre for foliar and postharvest application.
- Warhawk should not be tank mixed with pesticides, surfactants, or fertilizer formulations unless prior use has shown the combination non-injurious under your current conditions of use.
- Phytotoxicity may occur when Warhawk is applied to strawberries under conditions of high temperature and drought stress.

Sugarbeet (Not for Use in Mississippi)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Soil Treatment (At Planting or Preplant Incorporated)

To reduce feeding damage from early season insects such as cutworms, apply at planting or as a preplant treatment and incorporate to a depth of 1 to 2 inches. Do not apply as an in-furrow treatment. Apply 1 pint of Warhawk per planted acre to a 10-inch wide band centered over the row for furrows 30 inches apart. (For rows 30 inches apart, this is equivalent to 9.2 fl oz of Warhawk per 10,000 feet of row). For other row widths, adjust the spray volume per planted acre in proportion to the length of row actually treated.

Postemergence Treatment

Apply specified rate as a broadcast or banded foliar spray. Treat when field counts indicate that damaging insect populations are developing or present.

Broadcast Application: Apply the specified dosage in water using 2 to 5 gpa of finished spray when using aerial spray equipment or 10 to 30 gpa when using ground spray equipment.

Banded Foliar Spray: Apply the specified rate within the band using a minimum of 7 gallons of spray volume in a 5- to 7-inch wide band centered over the row. Do not reduce the rate for band applications. Concentrate the full labeled dosage rate (see band rates in table below) in the treated zone. For best results, band-applied treatments should be lightly incorporated, either mechanically or with irrigation.

Target Pests	Warhawk	
	Broadcast (pint/acre)	Band (pint/acre)
grasshoppers (1)	1/2 - 1	-
leafminers		
spider mites	1	2/3
tarnished plant (Lygus)	1	-
fall armyworm		
yellowstriped armyworm		
webworms	1 - 2	2/3 - 1 1/3
beet armyworm	1 1/2 - 2	1 - 1 1/3
cutworms		
beetle adults	2	1 1/3
sugarbeet root maggot adults (2), (5)	1/2 - 1	-
sugarbeet root maggot larvae (3), (5)	-	1 1/3 - 2
sugarbeet root maggot larvae (4), (5)	2	1 1/3 - 2

Numbers in parentheses (-) refer to "Pest-Specific Use Directions".

Pest-Specific Use Directions:

1. **Grasshoppers:** The low rate will control small nymphs (1st through 3rd instar).
2. **Sugarbeet root maggot adults:** Apply anytime from 7 days before until 3 days after peak adult emergence in order to target adults present at time of application based on local field trap monitoring.
3. **Sugarbeet root maggot larvae:** Use as **primary treatment** to control root maggot larvae. Base application timing on local field trap monitoring. Apply anytime from 7 days before until 3 days after peak adult emergence.
4. **Sugarbeet root maggot larvae:** Use as **supplemental postemergence treatment** following an at-plant insecticide application for control of root maggot larvae. Base application timing on local field trap monitoring. Apply anytime from 7 days before until 3 days after peak adult emergence.
5. To prevent potential development of insecticide resistance in **sugarbeet root maggot**, producers are encouraged to take the following steps: (1) avoid making more than 2 applications of Warhawk per season when adults are active; (2) if an organophosphate insecticide was applied at planting, make no more than 1 postemergence application of Warhawk when adults are active.

Specific Use Restrictions:

- **Preharvest Interval:** Do not apply within 30 days of harvest of beet roots and tops.
- Do not apply more than 6 pints of Warhawk (3 lb ai chlorpyrifos) per acre per season.
- Do not make more than 3 applications of Warhawk or other products containing chlorpyrifos per season.
- Do not make a second application of Warhawk or other product containing chlorpyrifos within 10 days of the first application.
- Do not allow meat or dairy animals to graze in treated areas or harvest treated beet tops as feed for meat or dairy animals within 30 days of last treatment.
- Maximum single application rate is 1 lb ai chlorpyrifos per acre.
- To avoid unacceptable crop injury, do not tank mix Warhawk with Quadris or Headline. Quadris or Headline should not be tank mixed with any EC formulation or any tank mix containing an oil adjuvant.

Sunflower (Not for Use in Mississippi)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Preplant Incorporation Treatment

Broadcast apply to soil surface in a minimum spray volume of 10 gpa using suitable ground spray equipment. On the same day of treatment, incorporate the insecticide into the top 2 to 4 inches of soil using a disc, field cultivator, or equivalent equipment. Use a higher rate in the rate range when there is increased pest pressure.

Target Pests	Warhawk (pint/acre)
cutworms	2 - 4

Postemergence Broadcast Treatment

Apply as a postemergence broadcast spray using sufficient spray volume to ensure thorough coverage of treated plants, but no less than 15 gpa for ground spray equipment or 2 to 5 gpa for aircraft equipment. Use a higher rate in the rate range when there is increased pest pressure.

Target Pests	Warhawk (pint/acre)
grasshoppers	1
banded sunflower moth	1 - 1 1/2
seed weevil (4)	
stem weevil (2)	
sunflower beetle larvae and adults (1)	
sunflower moth (3)	
woolly bears	
cutworms	2
tarnished plant bug (Lygus) (5)	1 - 2

Numbers in parentheses (-) refer to Pest-Specific Use Directions.

Pest-Specific Use Directions:

1. **Sunflower beetle:** For control of larvae or adults, treat when field counts indicate 10 larvae or 1 to 2 adults per seedling.
2. **Stem weevil:** Optimal treatment time is within 5 to 7 days after adult weevils begin to appear.

- Sunflower moth:** To control, make first application during early 1% to 5% bloom stage.
- Seed weevil:** To control, apply when field counts indicate 10 to 12 adults per plant for oil crop varieties and 1 to 3 adults per plant on confectionery crop varieties.
- Tarnished plant bug (*Lygus*):** Use the higher rate in the rate range where populations are heavy. It is recommended to apply at the onset of pollen spread or approximately 10% bloom (R-5 growth stage). For best protection, make a second application 10 days later. Use sufficient water to ensure thorough coverage of treated plants.

Specific Use Restrictions:

- **Preharvest Interval:** Do not apply within 42 days before harvest.
- Do not apply more than 6 pints of Warhawk (3 lb ai chlorpyrifos) per acre per season.
- Do not make more than 3 applications per season of Warhawk or other products containing chlorpyrifos.
- Do not make a second application of Warhawk or other product containing chlorpyrifos within 10 days of the first application.
- Do not allow meat or dairy animals to graze in treated areas.
- Maximum single application rate is 2 lb ai chlorpyrifos per acre for preplant incorporation and 1.5 lb ai chlorpyrifos per acre for postemergence broadcast treatment.

Sweet Potato

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Apply to the soil surface as a preplant broadcast spray to reduce the feeding damage caused by listed pests. Use a spray volume of 10 gpa or more. Incorporate immediately after application to a depth of 4 to 6 inches using a rotary hoe, disc cultivator, or other suitable incorporation equipment. Plant sweet potatoes in the usual manner no more than 14 days after treatment. Delaying planting more than 14 days after application will reduce the time interval of protection against feeding damage.

Target Pests	Warhawk (pint/acre)
<i>Conoderus</i> (wireworm)	4
<i>Systema</i> (flea beetle)	
sweet potato flea beetle	

Specific Use Restrictions:

- **Preharvest Interval:** Do not harvest within 125 days of treatment.
- Do not make more than 1 application of Warhawk or other product containing chlorpyrifos per season.
- Maximum single application rate is 2 lb ai chlorpyrifos per acre.
- Warhawk will not control false wireworms, white fringe beetle or other grubs that attack sweet potatoes.

Tobacco

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Apply as a preplant broadcast spray to reduce the feeding damage caused by listed pests. Apply 24 to 48 hours before bedding and transplanting using a spray volume of 10 gpa or more. Incorporate immediately after application to a depth of 2 to 4 inches using suitable incorporation equipment. The application of Warhawk will also suppress the movement of imported fire ants into treated fields.

Before broadcast application of Warhawk onto existing beds, knock down beds to final shape for transplanting. Use of PTO-driven implements that will incorporate Warhawk to a depth of 4 inches is recommended.

Target Pests	Warhawk (quart/acre)
cutworms	2
fire ants (suppression)	
flea beetles	
mole crickets	
root maggots	
wireworms	

To control the above listed pests and suppress populations of rootknot nematodes in all tobacco growing regions, use Warhawk in a tank mix with Nematicur 3 at the rate of 2 quarts of Warhawk plus 4 quarts of Nematicur® 3 nematicide per acre. Read and carefully follow all applicable directions, restrictions, and precautions on labeling for Nematicur 3 used in combination with Warhawk. Apply the specified rate(s) to the soil surface in a spray volume of 10 gpa or more 24 to 48 hours before bedding and transplanting. Immediately following application, incorporate into the soil to a depth of at least 4 inches using suitable equipment. Where the nematode species *Meloidogyne arenaria* or *M. javanica* are present or high populations of *M. incognita*, apply Telone II soil fumigant at the recommended label rate.

Specific Use Restrictions:

- Do not make more than one application of Warhawk or other product containing chlorpyrifos per season.
- Maximum single application rate is 2 lb ai chlorpyrifos per acre.

**Tree Fruits and Tree Nuts (Dormant/Delayed Dormant Sprays)
(Not for Use in Mississippi)**

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 days for tree fruits and 24 hours for tree nuts unless PPE required for early entry is worn.

Apply as a dormant or delayed dormant spray. While Warhawk may be used without oil, oil is recommended to control additional pests such as European red mite. See precautions for use of oil below. Apply as a concentrate or dilute spray using conventional, power-operated spray equipment. For **dilute sprays** (greater than 200 gpa), use sufficient spray volume to completely wet tree foliage, but not to point of runoff. For **concentrate sprays** (less than 200 gpa), uniformly apply an equivalent amount of Warhawk per acre.

Use a higher rate in the rate range when there is increased pest pressure.

Crops	Target Pests	Warhawk (pint/acre)
apple	climbing cutworms	1/2 - 4
	<i>Lygus</i>	
	obliquebanded leafroller	
	pandemis leafroller	
	rosy apple aphid	
San Jose scale		
almond	American plum borer	
	brown almond mite	
cherry	climbing cutworms	
	European red mite	
nectarine	greater peach tree borer	
	lesser peach tree borer	
peach	mealy plum aphid	
	peach twig borer	
pear	pear psylla adults	
	San Jose scale	
plum		
prune		

Specific Use Restrictions:

- Do not use more than 4 pints of Warhawk (2 lb ai chlorpyrifos) per acre per season as a dormant/delayed dormant application.
- Only one application of any chlorpyrifos containing product can be made on apples per year. The application can be either a pre-bloom dormant/dormant delayed to the canopy or the trunk, or a post-bloom application to the lower 4 feet of the trunk. Post-bloom application to apples is prohibited.
- Do not make a soil or foliar application of Warhawk or products containing chlorpyrifos within 10 days of a dormant/delayed dormant application of chlorpyrifos to the orchard.
- Make only 1 application of chlorpyrifos during the dormant season.
- Do not allow meat or dairy animals to graze in treated orchards.
- Cold or dry conditions may cause Warhawk plus oil sprays to infuse into trees, resulting in bud damage or bud drop. Do not apply until winter rains or irrigation has replenished soil moisture such that bark and twigs are not desiccated.
- To avoid contamination of irrigation tail waters, do not flood irrigate within 24 hours of application of Warhawk.
- Avoid contact with foliage in sweet cherries as premature leaf drop may result.

Additional Restrictions Specific to California:

- Do not use more than 1% dormant oil in almond orchards less than 4 years old.
- Use a minimum of 250 gpa of total spray volume.
- Use up to 2% Supreme oil with no more than 4 gpa on almonds.
- Use up to 2% Supreme oil with no more than 6 gpa on peaches and nectarines.
- Refer to the University of California pest management guide for apples, pears, plums, and prunes.
- In orchards with high overwintering populations of European red mite or brown almond mite, use higher spray volumes that allow for the use of higher per acre rates of oil.
- Do not use any adjuvants or surfactants in addition to, or as a substitute for, a petroleum spray oil in a tank mix with Warhawk.
- Do not apply on almonds in the following counties in California: Butte, Colusa, Glenn, Solano, Sutter, Tehama, Yolo, and Yuba.

Tree Nuts (Foliar Sprays)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Apply Warhawk as a foliar spray at the dosages indicated to control pests listed in the following table. Mix the required dosage in sufficient water to ensure thorough and complete coverage of the foliage and crop and apply as a concentrate or dilute spray using conventional, power-operated spray equipment. For dilute sprays applied to tree nut crops, mix the required dosage in sufficient water to allow for spray to runoff. For concentrate sprays, apply an equivalent amount of Warhawk per acre. Treat when pests appear or in accordance with local conditions. Aerial application may result in less effective insect control because of reduced coverage. **Note:** Do not aerially apply in Mississippi. Consult your State agricultural experiment station, certified pest control advisor, or extension service specialist for specific use information in your area.

14/14

Crops	Target Pests	Warhawk (pint/acre)
almond	leaf footed plant bug	4
	navel orangeworm	
	peach twig borer	
	San Jose scale	
filbert	eye-spotted bud moth	3 - 4
	filbert aphid	
	filbert leafroller	
	filbert worm	
	obliquebanded leafroller	
	omnivorous leaftier	
	winter moth	
pecan	blackmargined aphid (1)	1 - 4
	spittlebugs (2)	
	yellow pecan aphid (1)	1.5 - 4
	fall webworm	
	pecan nut casebearer	
	black pecan aphid	
hickory shuckworm (3)	2 - 4	
<i>Phylloxera</i> spp.(4)		
walnut	pecan leaf scorch mite (suppression) (5)	4
	codling moth	
	walnut husk fly	
	walnut scale	

Numbers in parentheses (-) refer to Pest-Specific Use Directions.

Pest-Specific Use Directions:

- For control of **yellow pecan aphid** and **blackmargined aphid**, apply in tank mix combination with the recommended rate of a pyrethroid insecticide labeled for control or suppression of these aphids.
- For control of **spittlebug**, use a dosage of 2 to 4 pint per acre for concentrate sprays.
- For best results against **hickory shuckworm**, make 2 applications, 10 to 14 days apart.
- For best control of ***Phylloxera* spp.**, make 2 applications at a 10-day interval using a minimum of 1 pint of Warhawk per acre starting at bud swell.
- For suppression of **pecan leaf scorch mite**, use a preventative program.

Specific Use Restrictions:

- Preharvest Interval:** Do not apply within 14 days of harvest of almonds, filberts and walnuts, or 28 days of harvest of pecans.
- Do not apply more than 8 pints of Warhawk (4 lb ai chlorpyrifos) per acre per season as a foliar spray.
- Do not make more than 3 total applications per season of Warhawk or other products containing chlorpyrifos to almonds, pecans and filberts and no more than 2 applications per season on walnuts.
- Do not make a second application of Warhawk or other product containing chlorpyrifos within 10 days of the first application.
- Do not allow meat or dairy animals to graze in treated orchards.
- Warhawk is highly toxic to bees exposed to direct treatment and should not be applied when bees are actively foraging in the treated area.
- To avoid contamination of irrigation tail waters, do not flood irrigate within 24 hours of application of Warhawk.

Tree Fruits and Tree Nuts (Trunk Spray or Preplant Dip)
(Not for Use in Mississippi)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 days for tree fruits and 24 hours for tree nuts unless PPE required for early entry is worn.

Apply Warhawk to tree trunks and lower branches using a coarse, low-pressure spray to control pests listed in the following table. Use a higher rate in the rate range when there is increased pest pressure. Unless otherwise specified, a second application may be made after 2 weeks and a third application may be made after harvest. Avoid spray contact with foliage in sweet cherries as premature leaf drop may result. Consult your state agricultural experiment station or extension service specialist for proper application timing for your area.

Crops	Target Pests	Warhawk (quart/100 gal)
cherry	American plum borer	1.5 - 3
	greater peach tree borer	
	lesser peach tree borer	
almond	peach tree borers (1) (2)	3
peach		
nectarine		

Numbers in parentheses (-) refer to Pest-Specific Use Directions.

Pest-Specific Use Directions:

- Preplant Dip Application (Peaches and Nectarines Only).** For preplant control of **peachtree borer**, use Warhawk at the equivalent application rate of 3 quarts per 100 gallons of water. Dip trees several inches above the grafting bud scar and plant immediately or allow them to dry before returning to storage. Do not allow peach trees to remain in contact with the dip solution.
- For control of **peach tree borer** in established trees, apply before newly hatched borers enter the tree. Use as a coarse, low-pressure trunk spray and thoroughly wet all bark areas from ground level to scaffold limbs. Do not allow spray to contact

Specific Use Restrictions:

- Preharvest Interval:** Do not apply within 14 days of harvest of almonds, peaches and nectarines or within 21 days before harvest of cherries.
- Do not make more than 1 chlorpyrifos application per year in peaches and nectarines and no more than 3 chlorpyrifos applications per year in cherries.
- Do not allow meat or dairy animals to graze in treated orchards.

Orchard Floors (Ant Control in Almond, Pecan and Walnut)
(Not for Use in Mississippi)

Worker Restricted Entry Interval: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours unless PPE required for early entry is worn.

Apply as a ground broadcast spray directed to the orchard floor using ground application equipment that will apply the spray uniformly. Do not allow spray to contact foliage or fruit. Treat when ant activity becomes evident in the orchard. Since worker ants cease most of their foraging activity at temperatures above 90°F, best results will be achieved if applied at a time of day when temperatures are below 90°F.

Chemigation: Warhawk may be applied to almond, pecan and walnut orchard floors through sprinkler irrigation systems only if the system uniformly covers the soil surface at the base of the tree. Use recommended broadcast application rates to control listed pests. See *Chemigation (Sprinkler Irrigation)* section for application instructions.

Target Pests	Warhawk (pint/acre)
fire ants	4 - 8
other ant species	

Eliminate weed growth that would prevent uniform coverage of the orchard floor by mowing or herbicide treatment. Foliar applications of Warhawk may be made in addition to the orchard floor treatment.

Specific Use Restrictions:

- Preharvest Interval:** Do not apply the last treatment within 14 days of harvest.
- Do not apply more than 8 pints of Warhawk (4 lb ai chlorpyrifos) per acre per season to the orchard floor.
- Do not make more than 2 applications of Warhawk or other products containing chlorpyrifos per season to the orchard floor.
- Do not make a second application of Warhawk or other product containing chlorpyrifos within 10 days of the first application.
- Do not allow meat or dairy animals to graze in treated orchards.
- To avoid contamination of irrigation tail waters, do not flood irrigate within 24 hours of application of Warhawk.

Turfgrass

Apply to turfgrass grown for sod. Dilute Warhawk in water and apply using suitable application equipment. For best results, turf should be moist at time of treatment.

Pests	Amount of Warhawk	
	fl. oz. 1000 sq ft	pint/acre
ants	3/4	2
armyworms (such as: beet, fall, yellowstriped)		
centipedes		
chiggers		
chinch bugs		
crickets		
cutworms		
deer ticks		
earwigs		
European crane fly larvae		
fiery skipper		
fleas		
gnats		
grasshoppers		
greenbug aphids		
billbug adults (such as: bluegrass, Denver, hunting) (3)	3/4 - 1 1/2	2 - 4
annual bluegrass weevil (<i>Hyperodes</i>) (4)	1 1/2	4
black turf grass atenioid adults (5)	1 1/2 - 3	4 - 8
mole crickets (6)		
white grubs (such as: black turfgrass atenioid, European chafer, Japanese beetle larvae, and northern and southern masked chafers) (7)		

Numbers in parentheses (-) refer to Specific Use Directions below.

Specific Use Directions:

- For **sod webworms**, watering or mowing of the treated area should be delayed for 12 to 24 hours after treatment.
- For **billbugs**, spray early in the season just prior to or coinciding with first appearance of adults as recommended by your local Agricultural Extension Service Specialist.
- To control **annual bluegrass weevil**, spray suspected problem areas in mid-April and again in mid-May, or as recommended by your local Agricultural Extension Service Specialist.