

84229-25

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



OFFICE OF  
CHEMICAL SAFETY AND  
POLLUTION PREVENTION

December 20, 2012

Tide International USA, Inc.  
c/o Mr. Mike Kellogg  
Pyxis Regulatory Consulting, Inc.  
4110 136<sup>th</sup> Street NW  
Gig Harbor, WA 98332

Subject: Amended labeling to implement required spray drift mitigation measures  
Product Name: Chlorpyrifos 4E AG  
EPA Registration Number: 84229-25  
Submission dated August 30, 2012

Dear Mr. Kellogg:

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, is acceptable. A stamped copy of the label is enclosed for your records. Please submit one copy of your final printed labeling before you release the product for shipment. Your release for shipment of the product constitutes acceptance of these conditions. If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6(e). If you have any questions, please contact Julie Chao by phone at 703-308-8735, or by email at [chao.julie@epa.gov](mailto:chao.julie@epa.gov).

Regards,

A handwritten signature in black ink, appearing to read "Venus Eagle".

*for*

Venus Eagle, Product Manager 01  
Insecticide-Rodenticide Branch  
Registration Division (7505P)

# RESTRICTED USE PESTICIDE

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

## CHLORPYRIFOS 4E AG [Alt brand name: CHLORPYRIFOS 4# AG]

For the control of listed pests infesting particular field, fruit, nut, and vegetable crops

### ACTIVE INGREDIENT:

Chlorpyrifos O,O-diethyl- O-(3,5,6-trichloro-2-pyridinyl) phosphorothioate ..... 44.7%

OTHER INGREDIENTS\*..... 55.3%

TOTAL..... 100.0%

Contains 4 pounds of chlorpyrifos per gallon.

\*Contains 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 this label, find someone to explain it to you in detail.)

FIRST AID Organophosphate	
<b>IF SWALLOWED:</b>	Immediately call a poison control center or doctor. Do not induce vomiting unless told to 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.
<b>IF ON SKIN OR CLOTHING:</b>	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.
<b>IF INHALED:</b>	Move person to fresh air. If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.
<b>IF IN EYES:</b>	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.
<b>PHYSICIAN TREATMENT:</b> Chlorpyrifos is a cholinesterase inhibitor. Treat poisoning symptomatically. Baseline data are useful in detecting the level of exposure. Certain tests, such as plasma and red blood cell cholinesterase, may detect exposure level. Preferred antidote post exposure is Atropine, by injection only. If detected early, treat with 2 PAM/protopam or other Oximes in conjunction with atropine. Use recommended antidote immediately after establishing an open airway and respiration in the event of serious acute poisoning. May pose as aspiration pneumonia hazard. Contains petroleum distillate.	
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact CHEMTREC at 1-800-424-9300 for emergency medical treatment information.	

EPA Reg. No. 84229-25

EPA Est. No.

ACCEPTED

DEC 20 2012

Manufactured For:

Tide International USA, Inc.

21 Hubble

Irvine, CA 92618

Under the Federal Insecticide, Fungicide,  
and Rodenticide Act, as amended, for the  
pesticide registered under:

EPA. Reg. No: 84229-25

NET CONTENTS: \_\_\_\_\_

**PRECAUTIONARY STATEMENTS**  
**Hazard to Humans and Domestic Animals**  
**WARNING**

May be fatal if swallowed. Harmful if absorbed through skin or inhaled. Causes moderate eye irritation. Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Wear long-sleeved shirt and long pants, socks, shoes, and chemical resistant gloves (barrier laminate or viton, selection category G).

**PERSONAL PROTECTIVE EQUIPMENT**

Some materials that are chemical-resistant to this product are barrier laminates and Viton. If you want more options, follow the instructions for category G on an EPA chemical resistance category selection chart.

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

- long sleeved shirt and long pants;
- socks and shoes

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 any R, P, or HE filter.

See engineering controls for additional requirements.

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

1. Coveralls over long sleeved shirt and long pants
2. Chemical-resistant gloves
3. Chemical-resistant apron when mixing or loading or exposed to the concentrate.
4. Chemical-resistant footwear plus socks
5. Chemical-resistant headgear for overhead exposure
6. A NIOSH-approved dust mist filtering respirator with MSHA/NIOSH approval number prefix TC-21C or a NIOSH-approved respirator 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 and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

**USER SAFETY RECOMMENDATIONS**

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing and/or 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.

**ENGINEERING CONTROLS**

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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 personal 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 a 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 Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)].

Use of human flaggers is prohibited. Instead, use mechanical flagging equipment.

When handlers use closed cab motorized ground application equipment in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR 170.240(d)(4-6), the handler PPE requirements may be reduced or modified as specified in the WPS.

### 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 may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment wash water 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 weed is bees are 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.

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.

#### Preharvest interval restrictions:

Crop	PHI*
Alfalfa	7 at rates ≤ 0.25 lb. ai/A
	14 at rates ≤ 0.50 lb. ai/A
	21 at rates > 0.50 lb. ai/A
Asparagus	1
Broccoli	30
Brussels Sprouts	21
Cabbage	30
Cauliflower	30
Cherries	6
Chinese Cabbage	30
Citrus Fruits	21 at rates ≤ 3.5 lb. ai/A
	35 at rates > 3.5 lb. ai/A
Collards	30
Cotton	14

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Cranberries	60
Field Corn, Sweet Corn (including corn grown for seed)	21
Figs	210
Grapes	35
Kale	30
Kohlrabi	30
Mint	90
Nectarines, Peaches	14
Peanuts	21
Sorghum, Grain Sorghum	30 at rates $\leq$ 0.5 lb. ai/A
	60 at rates $>$ 0.5 lb. ai/A
Soybeans	28
Strawberries	21
Sugar Beets	30
Sunflowers	42
Sweet Corn (grown only in Florida and Georgia)	21
Sweet Potatoes	125
Tree Fruits (Apple, Cherry, Pear, Plum/Prune)	6 - Cherry
Tree Nuts (Almonds, Filberts, Walnuts)	14
Tree Nuts (Pecans)	28
Turnips	30
Wheat	14 - forage and hay
	28 - grain and straw

\*PHI = Pre-Harvest Interval or the number of days to wait between the last application and harvest.

Aerial application to peanuts is prohibited.

Read all Directions for Use carefully before applying.

**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 intervals. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI). The REI for each crop is listed in the direction for use associated with each crop. REIs for all crops except those listed below is 24 hours:

- Cauliflower: 3 days
- Citrus trees: 5 days
- Fruit trees: 4 days

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

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

1. Coveralls over short sleeved shirt and short pants
2. Chemical-resistant gloves made out of any waterproof material

3. Chemical-resistant footwear plus socks

4. 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.

### STORAGE AND DISPOSAL

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

**Storage:** Keep in original container in dry secured storage space. Do not permit contact with other pesticides and fertilizers. Do not store above 100°F for long periods of time. Crystals may form if stored below 20°F. If crystals form, store at 50° - 70°F and agitate to allow crystals to redissolve. Use product immediately, or dispose of it with the container in the manner prescribed below in the event that the container is damaged or a spill occurs.

**Pesticide Disposal:** Open dumping is prohibited. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your state pesticide or environmental control agency, or the hazardous waste representative at the nearest EPA Regional Office for guidance.

#### CONTAINER HANDLING:

##### Refillable Containers:

Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

Return the empty container to a Tide International USA, LLC designated repository site. For proper handling instructions in the event that the container has been damaged and cannot be returned safely in accordance to the advised procedures, call Tide International USA, LLC at 1-949-679-3535.

**Non-Refillable Containers equal to or less than 5 gallons:** Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling, if available, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

**Non-Refillable Containers greater than 5 gallons:** Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Offer for recycling, if available, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

### USE INFORMATION

Chlorpyrifos 4E AG insecticide forms an emulsion when diluted with water and is suitable for use in all conventional spray equipment. Consult your state experiment station or state extension service for proper timing of applications.

### USE RESTRICTIONS

Do not use on turf (other than sod farms) or for structural pest control. Do not formulate this product into other end use products.

Attention: Do Not Cut or Weld Container.

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### SPRAY DRIFT RESTRICTIONS

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, nontarget crops, aquatic and wetland areas, woodlands, pastures, rangelands, or animals.

For ground boom applications, do not apply within 25 feet of rivers, natural ponds, lakes, streams, reservoirs, marshes, estuaries and commercial fishponds. Apply with nozzle height no more than 4 feet above the ground or crop canopy and when wind speed is 10 mph or less at the application site as measured by an anemometer. Use fine or coarser spray according to ASAE 572 definition for standard nozzles or VMD for spinning atomizer nozzles.

For orchard/vineyard airblast applications, do not apply within 50 feet of rivers, natural ponds, lakes, streams, reservoirs, marshes, estuaries and commercial fishponds. Direct spray above trees/vines and turn off outward pointing nozzles at row ends and outer rows. Apply only when wind speed is 3-10 mph at the application site as measured by an anemometer outside of the orchard/vineyard on the upwind side.

For aerial applications, do not apply within 150 feet of rivers, natural ponds, lakes, streams, reservoirs, marshes, estuaries and commercial fishponds. The boom width must not exceed 75% of the wingspan or 90% of the rotary blade. Use upwind swath displacement and apply only when wind speed is 3-10 mph as measured by an anemometer. Use fine or coarser spray according to ASAE 572 definition for standard nozzles or VMD for spinning atomizer nozzles. If application includes a no-spray zone do not release spray at a height greater than 10 feet above the ground or the crop canopy.

For overhead chemigation, do not apply within 25 feet of rivers, natural ponds, lakes, streams, reservoirs, marshes, estuaries and commercial fishponds. Apply only when wind speed is 10 mph or less.

The applicator also must use all other measures necessary to control drift.

The buffer distances specified in the below table are the distances in feet that must exist to separate sensitive sites from the targeted application site. Buffers are measured from the edge of the sensitive site to the edge of the application site.

Sensitive sites are areas frequented by non-occupational bystanders (especially children). These include residential lawns, pedestrian sidewalks, outdoor recreational areas such as school grounds, athletic fields, parks and all property associated with buildings occupied by humans for residential or commercial purposes. Sensitive sites include homes, farmworker housing, or other residential buildings, schools, daycare centers, nursing homes, and hospitals. Non-residential agricultural buildings, including barns, livestock facilities, sheds, and outhouses are not included in this prohibition.

Application rate (lb ai/A)	Nozzle Droplet Type	Required Setback (Buffer Zones) (feet)		
		Aerial	Airblast	Ground
>0.5 - 1	coarse or very coarse	10	10	10
>0.5 - 1	medium	25	10	10
>1 - 2	coarse or very coarse	50	10	10
>1 - 2	medium	80	10	10
>2 - 3	coarse or very coarse	80 <sup>1</sup>	10	10
>2 - 3	medium	100 <sup>1</sup>	10	10
>3 - 4	medium or coarse	NA <sup>2</sup>	25	10
>4	medium or coarse	NA	50	10

<sup>1</sup>Aerial application of greater than 2 lb ai/A is only permitted for Asian Citrus Psylla control, up to 2.3 lb ai/A.

<sup>2</sup>NA is not allowed.

Only pesticide handlers are permitted in the setback area during application of this product. Do not apply this product if anyone other than a mixer, loader, or applicator, is in the setback area. Exception: Vehicles and persons riding bicycles that are passing through the setback area on public or private roadways are permitted.

### MIXING DIRECTIONS

To prepare the spray, add some of the required water to the spray tank, agitate, and then add the Chlorpyrifos 4E AG. Continue to fill the tank with the remaining water needed. Continue with enough agitation during mixing and application to ensure consistency of the spray mixture.

Chlorpyrifos 4E AG may also be used in tank mixtures with certain herbicides and/or with non-pressure fertilizer solutions as recommended under specific crop use directions. To prepare tank mixtures, mix in the same way as if preparing just the Chlorpyrifos 4E AG, as described above. If using tank mixtures of Chlorpyrifos 4E AG and herbicides, add the following products in this order: wettable powders, flowables and emulsifiable concentrates. If using a fertilizer solution, a fertilizer pesticide compatibility agent, like Unite or Complex, is highly recommended. Continue with enough agitation during mixing and application to ensure consistency of the spray mixture. Do not let the spray mixtures stand overnight.

Note: Before adding Chlorpyrifos 4E AG to the spray or mix tank, test its compatibility with the designated tank mixture. Add equal amounts of each product to a pint or quart jar, then cap, shake, and allow it to stand for 15 minutes. Do not use if precipitates form and do not readily redisperse. This is an indication that the mixture is not compatible and therefore should not be used.

### CHEMIGATION (SPRINKLER IRRIGATION)

Chlorpyrifos 4E AG may be applied by sprinkler irrigation for the following crop uses: alfalfa, citrus orchard floors, field corn, mint, sweet corn, cotton, cranberries, sorghum, soybeans, and wheat.

See the use sections for the individual crops for further application information. Do not apply this product to the above listed crops through any other type of irrigation system. Do not apply this product by chemigation to any other crop.

### SPRINKLER USE DIRECTIONS

If using Chlorpyrifos 4E AG through sprinkler irrigation systems, first clean the injection system and tank of all fertilizer or chemical residue. Dispose of the residue in accordance with applicable state and federal laws. Next, thoroughly wash out the injector with soap and water. Determine how much insecticide is needed to cover the desired acreage. Pump the required Chlorpyrifos 4E AG into a steel tank, start mechanical or hydraulic agitation, and add in order the non-emulsifiable oil and/or water. Continually agitate the mixture containing Chlorpyrifos 4E AG. Position the sprinkler system to disperse the desired amount of water per acre. Turn on the water pump and sprinkler, allowing the system to reach the desired pressure and speed before starting the injector. Start the injector and calibrate the injector system following the instructions in #14 in the "Sprinkler Use Precautions" section. While the sprinkler is moving, inject the Chlorpyrifos 4E AG mixture continuously and uniformly into the irrigation water line. This procedure is necessary to deliver the desired rate per acre in a uniform manner. When the application is finished, allow the entire irrigation and injector system to be thoroughly flushed clean before stopping the system.

### SPRINKLER USE PRECAUTIONS

Follow the precautions below in order to apply Chlorpyrifos 4E AG mixtures safely and effectively:

1. Apply this product only through sprinkler irrigation systems including 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.

2. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform 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 backflow. 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, which 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 make sure that the insecticide is mixed uniformly into the water line, inject the mixture either (a) through a nozzle placed in the fertilizer injection port or (b) just in front of an elbow or tee in the irrigation line so that the turbulence created at those points will aid in mixing. Prevent siphoning by selecting an injection point that is higher than the insecticide tank.

13. Make sure the steel tank containing the insecticide mixture is large enough for the system to complete a revolution in a single filling. Keep the tank free of rust, fertilizer, sediment and foreign material, and outfitted with an in-line strainer positioned between the tank and the injector pump.

14. To calibrate the irrigation system and injector for application of the Chlorpyrifos 4E AG mixture:

(1) calculate the number of acres irrigated by the system

(2) set the rate of irrigation and determine the amount of minutes for the system to cover the desired area to be treated

(3) determine the total gallons of insecticide mixture needed to cover the desired acreage. To do this, divide the total gallons of insecticide mixture needed by the number of minutes required to cover the treatment area. This figure is equivalent to 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. Calibrating the injector pump at least twice before operation and monitoring the system during operation are recommended.

15. Do not apply when wind speed favors drift beyond the area intended for treatment. Turn off end guns during application if they irritate nontarget areas.

16. Keep irrigation water from accumulating or running-off and posing danger to livestock, wells, or adjoining crops.

17. Allow foliage to dry before reentering the field.

18. Because sprinkler systems such as certain water drive units deliver a low coefficient of uniformity, do not apply through such systems.

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### APPROVED CROPS

#### Uses

#### Alfalfa

(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. Use a higher rate in the rate range for increased pest pressure. Use a minimum spray volume of 2 gpa for aerial (fixed wing or helicopter) or 10 gpa for ground equipment. Use a spray volume of 5 gpa or more by air or up to 20 gpa by ground when foliage is dense and/or pest population is high and/or under high temperature and wind conditions. Some reduction in insect control may occur under unusually cool conditions.

**Chemigation:** Chlorpyrifos 4E AG may be applied through sprinkler irrigation systems to control listed foliar pests. Use recommended broadcast application rates. See Chemigation (Sprinkler Irrigation) section for application instructions.

PESTS	Chlorpyrifos 4E AG
Aphids (suppression)	1/2 pint/acre
Corn rootworm adults (spotted cucumber beetle)	1/2 - 1 pint/acre
Grasshoppers	
Alfalfa blotch leafminer	1 - 2 pints/acre
Alfalfa caterpillar	
Alfalfa weevil larvae and adults	
Armyworms	
Blue alfalfa aphid	
Cutworms	
Egyptian alfalfa weevil larvae and adults	
Pea aphid	
Plant Bugs	
Leafhoppers	
Spittlebugs	

#### Specific Use Precautions:

- Chlorpyrifos 4E AG should not be tank mixed with other pesticides, surfactants, or fertilizer formulations unless proper use has shown the combination to be non-injurious to alfalfa under current conditions of use. Some phytotoxic symptoms may be observed on young, tender, rapidly growing alfalfa treated with Lorsban-4E. Alfalfa will outgrow these symptoms and no yield loss should be expected.
- This product is highly toxic to bees exposed to direct treatment on alfalfa. Do not apply if nearby bees are clustered outside of hives and bees are actively foraging in the treated area. Protective information may be obtained from your Agricultural Extension Service.
- To avoid contamination of irrigation tail waters, do not flood irrigate within 24 hours following and application of Chlorpyrifos 4E AG.

#### Specific Use Restrictions:

- **Preharvest Interval:** Do not cut or graze treated alfalfa within 7 days after application of 1/2 pint per acre of Chlorpyrifos 4E AG, within 14 days after application of 1 pint per acre, or within 21 days after application of rates above 1 pint per acre.

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- Do not make more than 4 applications per season of Chlorpyrifos 4E AG or other product containing chlorpyrifos or apply any product containing chlorpyrifos more than once per alfalfa cutting.
- Do not make a second application of Chlorpyrifos 4E AG or other product containing chlorpyrifos within 10 days of the first application.
- Maximum single application rate is 1 lb ai chlorpyrifos per acre.

**Asparagus**

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

Apply as a ground broadcast foliar spray. Use sufficient volume of finished spray to ensure thorough coverage of crop foliage. **Note:** Chlorpyrifos 4E AG insecticide may be applied aerially or with ground equipment for control of armyworms and grasshoppers.

Pests	Chlorpyrifos 4E AG
Asparagus aphids <sup>1</sup> Asparagus beetles <sup>1</sup> Cutworms <sup>2</sup>	2 pints / acre

**Pest-Specific Use Directions:**

1. For **asparagus beetles** and **asparagus aphids** apply during the fern stage when field counts or crop injury indicates that damaging pest populations are developing or present.
2. For **cutworms**, it is preferable to apply when the soil is moist and worms are active on or near the soil surface.

**Specific Use Restrictions:**

- Do not make more than 1 preharvest application per season or apply within 1 day or harvest.
- Do not make more than 2 postharvest applications during the fern stage.
- Do not make a second application of Chlorpyrifos 4E AG or other product containing chlorpyrifos within 10 days of the first application.
- For use only in the Midwest and Pacific northwest states.
- Maximum single application rate preharvest or postharvest is 1 lb ai chlorpyrifos per acre.

**Christmas Trees (Nurseries and Plantations)  
(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.

Unless otherwise indicated, apply as a foliar spray using power-operated ground equipment. Thorough coverage of foliage is essential. Use a minimum of 10 gpa of finished spray with ground equipment. Use higher volume of finished spray, 20 gpa or more, when foliage is dense and/or pest density is high and/or under high temperature and wind conditions.

TREE VARIETY	INSECTS CONTROLLED	CHLORPYRIFOS 4E AG
Balsam fir Blue spruce Concolor fir Douglas fir Eastern white pine Fraser fir	Adelgids (Cooley) (Eastern spruce gall) Ants (excluding fire, carpenter, harvester, and pharaoh ants) Aphids European pine sawfly	1 qt/acre

Grand fir Noble fir Scotch pine White spruce	European pine shoot moth Grasshopper Gypsy moth Mites <sup>1</sup> (European red spider) (Two spotted spider) [except in WA & OR] Pales weevils (adult) Pine needle midges Pine spittlebugs Plant bugs Spittlebugs Spruce budworms Spruce needleminers Scale <sup>2</sup> (Black pine) (pine needle) (pine tortoise) (Spruce bud) (Striped pine)	
	Pales weevil <sup>3</sup>	3 qt/100 gal

**Pest-Specific Use Directions:**

1. When large numbers of **spider mite** eggs are present at the first application, a second application after 7 to 10 days may be required to control newly hatched nymphs and maintain effective control. **Not for control of mites in Washington and Oregon.**
2. For **scale control**, apply when scale crawlers are active.
3. Apply as a cut stump drench.

**Specific Use Precautions:**

**Phytotoxicity:** Do not apply under conditions of extreme heat or drought stress. Environmental factors and varietal differences significantly influence potential phytotoxic expression. **Testing has shown that Chlorpyrifos 4E AG may be used at recommended rates on the following conifer species without serious phytotoxicity: balsam fir, concolor fir, Douglas fir, eastern white pine, Fraser fir, grand fir, noble fir, Scotch pine, white spruce.** Before treating large numbers or other conifer species, it is recommended that a small block of plants be treated and observed 7 to 10 days for symptoms of phytotoxicity. **Note:** The user assumes responsibility for determining if it is safe to treat other conifer species with Chlorpyrifos 4E AG under commercial growing conditions.

**Specific Use Restrictions:**

- Do not make more than 3 applications of Chlorpyrifos 4E AG or other product containing chlorpyrifos per season.
- Do not make a second application of Chlorpyrifos 4E AG or other product containing chlorpyrifos within 7 days of the first application.
- Do not allow mea or dairy animals to graze in the treated areas.

**Citrus Fruits**

**(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 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

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concentration of at least 0.5 pints of Chlorpyrifos 4E AG 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 Extension Station, certified Pest Control Advisor, or Extension Service Specialist. To avoid excessive ridging, do not apply Chlorpyrifos 4E AG 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.

CROP	GEOGRAPHIC LOCATION	PEST	DOSAGE OF Chlorpyrifos 4E AG (pint/acre)	SPRAY VOLUME GAL ACRE	REMARKS
Grapefruit Lemons Oranges and Other Citrus Fruit	California Arizona	Aphids Avocado leafroller Cutworms Fruit tree leafroller Katydids Lepidopterous larvae Orange tortrix Western tussock moth	2-7	ground: 100-750  aerial: min 15	Do not use a spray concentration of Chlorpyrifos 4E AG of less than 1/2 pt/100 gal of total volume.
		Scale insects Black scale Brown soft scale California red scale	8-12	100-2400	
		Thrips (suppression) Mealy bugs	6-8	100-750	
	Florida	Aphids Grasshoppers Mealy bugs Orange dogs Scale insects: Black scale Brown soft scale Chaff scale Florida red scale Long scale Purple scale Snow scale	2-7	ground: 100-1400  aerial: min 20	Do not use a spray concentrate of Chlorpyrifos 4E AG of less than 1/2 pt/100 gal of water per acre.
		Citrus rust mites	4-7	100-700	

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CROP	GEOGRAPHIC LOCATION	PEST	DOSAGE OF Chlorpyrifos 4E AG (pint/acre)	SPRAY VOLUME GAL ACRE	REMARKS
Grapefruit Lemons Oranges and Other Citrus Fruit, cont'd	Texas	Aphids Cutworms Katydid Mealy bugs Scale insects: Brown soft scale California red scale Chaff scale	4-7	200-700	Do not use less than 1/2 pt of Chlorpyrifos 4E AG per 100 gallons of water in dilute applications
		Citrus rust mites (suppression)	4-7	200-700	
Small Transplanted Grapefruit, Orange and other Citrus Trees	Texas	Aphids Cutworms Katydid Mealy bugs Scale Insects: Brown soft scale California red scale Chaff scale	Max. of 7		Apply Chlorpyrifos 4E AG at a rate of 1 fl oz/1 gal of water with a backpack sprayer. Apply to runoff.

**Specific Use Precautions:**

- Observe local recommendations for tank mix combinations especially with regards to use of Chlorpyrifos 4E AG with spray oil. Consult with a county farm advisor, county agent, extension service personnel, agricultural commissioner, pest control advisor, or local Tide International USA, LLC representative for local recommendation.
- Do not apply when trees are stressed by drought or high temperatures.
- Chlorpyrifos 4E AG 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:** Chlorpyrifos 4E AG 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.

**Specific Use Restrictions:**

- **Preharvest Interval:** Do not apply within 21 days of harvest for applications or up to 7 pints of Chlorpyrifos 4E AG 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 Chlorpyrifos 4E AG (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 Chlorpyrifos 4E AG (7.5 lb ai chlorpyrifos) per acre per year.
- Do not make more than 2 applications of Chlorpyrifos 4E AG or other products containing chlorpyrifos per year (does not include citrus orchard floors).
- Do not make second foliar application of Chlorpyrifos 4E AG or other product containing chlorpyrifos within 30 days of the first application.
- Do not allow meat or dairy animals to graze in treated areas.

**Citrus Orchard Floors (Control of Ants (excluding fire, harvester, pharaoh and carpenter) (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 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 Chlorpyrifos 4E AG 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:** Chlorpyrifos 4E AG 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.

Pests	Chlorpyrifos 4E AG
Ants (excluding fire, harvester, pharaoh and carpenter)	3/4 - 1 quart/acre

**Application with Dry Bulk Fertilizer:** Most dry fertilizers can be used for impregnation with Chlorpyrifos 4E AG. Apply Chlorpyrifos 4E AG 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 Chlorpyrifos 4E AG. 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 Chlorpyrifos 4E AG. Addition of water will cause Chlorpyrifos 4E AG to uniformly adhere to the dry bulk fertilizer. Bulk fertilizers impregnated with Chlorpyrifos 4E AG should be applied immediately, **not stored**. Foliar applications of Chlorpyrifos 4E AG may be made in addition to the orchard floor treatments.

Compliance with any and all federal and state laws and regulations relating to the Chlorpyrifos 4E AG and fertilizer mixture is the responsibility of the person offering such mixture for sale or distribution.

**Specific Use Restrictions:**

- **Preharvest Interval:** Do not apply within 28 days before harvest.
- Do not apply more than 3 quarts of Chlorpyrifos 4E AG (3 lb ai chlorpyrifos) per acre per year.
- Do not make more than 3 applications of Chlorpyrifos 4E AG or other products containing chlorpyrifos per year (does not include foliar applications to citrus trees).
- Do not make a second application of Chlorpyrifos 4E AG 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.

**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**

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

**SOIL APPLICATION**

CROP	INSECTS CONTROLLED	DOSAGE Chlorpyrifos 4E AG	USE DIRECTIONS	RESTRICTIONS
Cauliflower	Root maggot	1.2 fl oz/1000 linear ft of row	<p>For direct seeded crops use the specified application amount in a water-based spray as a band 4 inches wide over the row at planting time. Shallow incorporation is necessary. Placement behind the planter shoe and in front of the press wheel is recommended.</p> <p>For transplanted crops, use Chlorpyrifos 4E AG as a water-based spray directed to the base of the plants right after setting.</p>	<p>Apply a maximum 1 pint of Chlorpyrifos 4E AG to cauliflower planted in 40 inch rows.</p> <p>Use proportional amounts for other row spacings, but do not use more than 4 pints of Chlorpyrifos 4E AG per acre.</p> <p>Do not make more than one soil application per crop.</p> <p>Do not apply within 30 days before harvest.</p>
Broccoli Brussels sprouts Cabbage Chinese cabbage Collards Kale Kohlrabi Turnips	Root maggot	1.6 - 2.75 fl oz/1000 linear ft of row	<p>Use at least 40 gallons of total spray per acre. Do not add any additional adjuvants, surfactants or spreader stickers. Do not use as a foliage application.</p>	<p>Do not apply more than 2.6 pints of Chlorpyrifos 4E AG per acre to broccoli, Brussels sprouts, cabbage, Chinese cabbage, collards, kale, kohlrabi, and turnips planted in 40-inch rows.</p> <p>Use a maximum of 4.5 pints of Chlorpyrifos 4E AG per acre to these crops in 20 inch rows (or two rows per bed).</p> <p>Use proportional amounts for other row spacings, but do not use more than 4.5 pints of Chlorpyrifos 4E AG per acre.</p> <p>Do not make more than one soil application per crop.</p> <p>Do not apply within 30 days before harvest.</p>
Broccoli Cabbage	Root aphid	1.2 fl oz/1000 ft of row for single row plantings, and 2.4 fl oz/1000 ft of row for double row plantings.	<p>After plants are established, apply product either in a water emulsion or with liquid fertilizer injected as a sidedress on each side of the row. Prevent mechanical damage to crop roots. Use at least 15 gallons of total spray volume per acre.</p>	<p>Do not make more than one soil application per crop.</p> <p>Do not apply within 30 days before harvest.</p>
Radishes	Root maggot	0.5 fl oz/1000 linear ft of row	<p>Apply the specified application amount as a water-based drench in the seed furrows with the seed at planting time. Use at least 40 gallons of total drench per acre.</p>	<p>Apply no more than 5.5 pints of Chlorpyrifos 4E AG per acre. Do not make more than one soil application per crop.</p> <p>Do not apply within 7 days before harvest.</p>



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CROP	INSECTS CONTROLLED	DOSAGE Chlorpyrifos 4E AG	USE DIRECTIONS	RESTRICTIONS
Rutabagas	Root maggot	1.6 fl oz/1000 linear ft of row	Apply the specified application amount in a water-based spray as a band 4 inches wide over the row at planting time, in back of the planter shoe and in front of the press wheel for shallow incorporation.  Use at least 40 gallons of total spray volume per acre.	Apply a maximum of 4.5 pints of Chlorpyrifos 4E AG per acre. Apply only once per season. Do not make more than one soil application per crop. Rutabaga tops should not be used for food or feed purposes. Do not apply within 7 days before harvest.

**FOLIAR APPLICATION (Brussels Sprouts Only)**

CROP	INSECTS CONTROLLED	DOSAGE Chlorpyrifos 4E AG	USE DIRECTIONS	RESTRICTIONS
Brussels sprouts	Armyworms Cabbage aphid Cutworms Imported cabbageworm Striped flea beetle (adult)	1 - 2 pints/acre	Using conventional power-operated spray equipment, apply Chlorpyrifos 4E AG in 20 to 150 gallons of water per acre. Use when insects are present on foliage and at 7 to 14 day intervals thereafter as necessary.  To determine the proper timing for treatment, contact local agricultural experiment station, extension service specialist, or integrated pest control advisor.	Do not make more than 3 applications of any products containing chlorpyrifos per crop.  Do not make a second application of Chlorpyrifos 4E AG or other product containing chlorpyrifos within 10 days of the first application.  Do not apply within 21 days of harvest.

**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.

**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.

**Tank Mixing:** Chlorpyrifos 4E AG may also be applied in tank mixtures with paraquat or glyphosate 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 Chlorpyrifos 4E AG.

PESTS	Chlorpyrifos 4E AG
Armyworms Cutworms	1-2 pints/acre

**Postemergence Application**

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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. Chlorpyrifos 4E AG may be tank mixed with glyphosate products such as Glyphomax® XRT herbicide or Durango™ herbicide when application is to be made to glyphosate-tolerant corn. **Note:** Do not apply aerially in Mississippi.

**Chemigation:** Chlorpyrifos 4E AG may be broadcast applied postemergence through sprinkler irrigation systems at recommended application rates to control listed foliar pests. For best results, tank mix Chlorpyrifos 4E AG with 2 pints of non- emulsifiable oil. See Chemigation (Sprinkler Irrigation) section for application instructions.

PESTS	Chlorpyrifos 4E AG
Grasshoppers	1/2 - 1 pint/acre
Aphids Armyworms Chinch bugs <sup>1</sup> Corn rootworm adults <sup>2</sup> European corn borer <sup>5</sup> Webworms <sup>4</sup> Western bean cutworm	1 - 2 pints/acre
Corn earworm Southwestern corn borer <sup>6</sup>	1 1/2 - 2 pints/acre
Billbugs <sup>1</sup> Common stalk borer <sup>7</sup> Cutworms <sup>3</sup> Flea beetle adults <sup>1</sup> Lesser cornstalk borer	2 pints/acre

**Pest-Specific Use Directions:**

1. 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.
2. The recommended dosage will control silk clipping by **corn rootworm adults**.
3. For **cutworms**, it is preferable to apply Chlorpyrifos 4E AG 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.
4. For **webworm** control, shallow incorporation using a rotary hoe or other suitable equipment immediately before or soon after treatment is necessary.
5. For **European corn borer** control, use 1 ½ 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 upon timing, insecticide placement, and weather conditions.
6. For **southwestern corn borer**, a second application may be applied 21 days later if needed due to reinfestation.

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- 7. Do not use Chlorpyrifos 4E AG in combination with a burndown herbicide for control of common stalk borer. For **common stalk borer** control, treat approximately 11 days after application of glyphosate 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 apply more than 6 pints of Chlorpyrifos 4E AG (3 lb ai chlorpyrifos) per acre per season.
- Do not make more than 3 applications of any product 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 Chlorpyrifos 4E AG or other product containing chlorpyrifos within 10 days of the first application.
- Maximum single application rate is 2 pints of Chlorpyrifos 4E AG (1 lb ai chlorpyrifos) per acre.
- Do not apply in tank mixes with Steadfast or Lightning herbicides.
- If more than 1 lb ai granular chlorpyrifos per acre is applied at-plant (for a maximum of 1.3 ai per acre per season), only 1 additional application of a liquid product containing chlorpyrifos at 1 lb per acre is allowed per season, for a total of 2.3 lb ai chlorpyrifos per acre per season.

**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:** Chlorpyrifos 4E AG 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 State Except Arizona and California**

PESTS	Chlorpyrifos 4E AG
Cotton fleahopper <sup>1</sup> Plant bugs (Lygus, Mirids) <sup>1</sup>	3/8 - 1 pint/acre
Fall armyworm Grasshopper Thrips Yellow-striped armyworm	1/2 - 1 pint/acre
Cotton aphid	1/2 - 2 pints/acre
Spider mites <sup>2</sup>	1 pint/acre
Beet armyworm Cotton bollworm <sup>3</sup> Cutworms Pink bollworm <sup>3</sup> Salt marsh caterpillar Tobacco budworm <sup>3</sup>	1 1/2 - 2 pints/acre

**Pest-Specific Use Directions:**

1. 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.
2. **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 non-chlorpyrifos product that is effective against mites.
3. **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**

PESTS	Chlorpyrifos 4E AG
Armyworms Cotton aphid Cotton fleahopper <i>Lygus</i> Salt marsh caterpillar Thrips	1 - 2 pints/acre
Boll weevil Cotton bollworm <sup>1</sup> Cutworms Pink bollworm <sup>1</sup> Tobacco budworm <sup>1</sup>	2 pints/acre

**Pest-Specific Use Directions:**

1. **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 Chlorpyrifos 4E AG (3 lb ai chlorpyrifos) per acre per season.
- Do not make more than 3 applications of Chlorpyrifos 4E AG or other products containing chlorpyrifos per crop season.
- Do not make a second application of Chlorpyrifos 4E AG 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 gin trash or treated forage to meat or dairy animals.
- Maximum single application rate is 1 lb ai chlorpyrifos per acre.

The following table illustrates the size of worms in relation to age and stage of development (instar) as a guide to timing of treatments for best control.

From the table it can be seen that a scouting schedule of only once per week will not be satisfactory since the worms may be too big to control effectively by the seventh or eighth day.

TIMING FOR THE BEST WORM CONTROL			
Get the worms at this stage	Age (days)	Size (inches)	Instar
	Hatch	1/16	Hatch
	3	3/32	I
	5	9/32	II
	6	7/16	III

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	8	11/16	IV
1/16"	(insert graphics)		
3/32"			
9/32"			
7/16"			
11/16"			

**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.

Pests	Chlorpyrifos 4E AG
Brown spanworm Cranberry fruitworm Cranberry weevil <sup>1</sup> Cutworms Fireworms Sparganothis fruitworm	3 pints/acre

**Chemigation:** Chlorpyrifos 4E AG insecticide 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.

**Pest-Specific Use Directions:**

1. 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 Precautions:**

Apply only after the winter flood water has been removed. To avoid pesticide contamination of flood waters, do not apply when bogs are flooded.

**Specific Use Restrictions:**

- **Preharvest Interval:** Do not apply within 60 days before harvest.
- Do not make more than 2 applications of Chlorpyrifos 4E AG or other product chlorpyrifos within 10 days of the first application.
- Maximum single application rate is 1.5 lb ai chlorpyrifos per acre.

**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 Chlorpyrifos 4E AG 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 Chlorpyrifos 4E AG into the top 3 inches of soil using suitable equipment.

Pest	Chlorpyrifos 4E AG
Dried fruit beetle	2 quarts / acre

**Specific Use Restrictions:**

- **Preharvest Interval:** Do not apply within 7 months (210 days) before harvest.
- Make only 1 application per year of Chlorpyrifos 4E AG or other product containing chlorpyrifos.
- Maximum single application rate is 2 lb ai chlorpyrifos per acre.

**Grape (Areas East of the Continent 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 Chlorpyrifos 4E AG 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.

Pest	Chlorpyrifos 4E AG
Grape root borer	4 ½ pints/100 gallons of water

**Specific Use Precautions:**

- Do not allow spray to contact fruit or foliage.

**Specific Use Restrictions:**

- **Preharvest Interval:** Do not apply within 35 days before harvest.
- Do not make more than 1 application per season of Chlorpyrifos 4E AG in grapes or other product containing chlorpyrifos.
- Based upon available residue data, the use of Chlorpyrifos 4E AG 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.

**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:** Chlorpyrifos 4E AG 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.

Pests	Chlorpyrifos 4E AG
Cutworm <sup>1</sup>	2 – 4 pints/acre
Mint root borer <sup>2</sup>	4 pints/acre

**Pest-Specific Use Directions:**

1. **Cutworms:** Apply during May and June when field counts indicate damaging insect populations are developing or present. When larvae are less than  $\frac{3}{4}$  inch in length, use the 2 pint rate; otherwise, use the higher rate.
2. **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 Chlorpyrifos 4E AG 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 Chlorpyrifos 4E AG for cutworm control.
- Make only 1 postharvest application per season of Chlorpyrifos 4E AG 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 Chlorpyrifos 4E AG in a water-based spray as 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 Chlorpyrifos 4E AG is sprayed directly onto onion seeds. Do not mix Chlorpyrifos 4E AG 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.

Row Spacing	Chlorpyrifos 4E AG (fl. oz./1000 ft. of row)			
	6-inch	10-inch	12-inch	18-inch
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.

**Specific Use Restrictions:**

- **Preharvest Interval:** Do not apply 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.

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**Orchard Floors (Ant Control excluding fire, harvester, pharaoh and carpenter) in Almonds, 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 above 90°F.

**Chemigation:** Chlorpyrifos 4E AG 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.

Pests	Chlorpyrifos 4E AG
Ants (excluding fire, harvester pharaoh and carpenter)	4 – 8 pints/acre

Eliminate weed growth that would prevent uniform coverage of the orchard floor by mowing or herbicide treatment. Foliar applications of Chlorpyrifos 4E AG may be made in addition to the orchard floor treatment.

**Specific Use Precaution:**

- To avoid contamination of irrigation tail waters, do not flood irrigate within 24 hours of application of Chlorpyrifos 4E AG.

**Specific Use Restrictions:**

- Preharvest Interval:** Do not apply within 14 days before harvest.
- Do not apply more than 8 pints of Chlorpyrifos 4E AG (4 lb ai chlorpyrifos) per acre per season to the orchard floor.
- Do not make more than 2 applications totaling 8 pints of Chlorpyrifos 4E AG or other products containing chlorpyrifos per acre per season to the orchard floor.
- Do not make a second application of Chlorpyrifos 4E AG or other product containing chlorpyrifos within 10 days of the first application.
- Do not allow meat or dairy animals to graze in treated orchards.

**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 using a disc, field cultivator, or equivalent equipment. Use a minimum of 10 gpa total spray.

Pest	Chlorpyrifos 4E AG
Wireworms (suppression)	4 pints/acre

**Specific Use Restrictions:**

- Preharvest Interval:** Do not apply within 21 days before harvest.
- The combined total of preplant and postplant applications of Chlorpyrifos 4E AG, Chlorpyrifos 15G or other products containing chlorpyrifos must not exceed 4 lb ai chlorpyrifos per acre per season.



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- Aerial application to peanuts is prohibited.
- Do not make more than 1 preplant application of Chlorpyrifos 4E AG 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.

**SOD FARM TURF**

Apply to turfgrass grown for sod. Dilute Chlorpyrifos 4E AG in water and apply using suitable application equipment. For best results, turf should be moist at time of treatment.

PEST	Chlorpyrifos 4E AG	
	Fl. Oz./ 1000 sq. ft	Pint/ ACRE
Armyworms Chinch Bugs Cutworms Pillbugs Sod Webworms <sup>1</sup> Turfgrass weevils Mole Crickets <sup>2</sup>	0.5 – 0.75	1 ½ -2

**Specific Use Directions:**

1. For **sod webworms**, watering or mowing of the treated area should be delayed for 12 to 24 hours after treatment.
2. To control **mole crickets** in turfgrass, apply Chlorpyrifos 4E AG through high-pressure injection or other suitable subsurface placement application equipment. Depending on the application equipment used, follow the manufacturer's recommendation for calibration and the volume of spray per acre needed to provide control or as recommended by your Agricultural Extension Service Specialist. For best results, apply when young nymphs are active.

**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:** Chlorpyrifos 4E AG insecticide 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.

PESTS	Chlorpyrifos 4E AG
Sorghum midge <sup>1</sup>	1/2 pint/acre
Grasshoppers Yellow sugar cane aphid and other aphids	1/2 - 1 pint/acre
Greenbug <sup>2</sup>	1/2 - 2 pints
Armyworms Cutworms Chinch bugs <sup>3</sup> Lesser cornstalk borer <sup>3</sup>	1 - 2 pints/acre
Webworms	1 pint/acre

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PESTS	Chlorpyrifos 4E AG
Sorghum midge <sup>1</sup>	1/2 pint/acre
Grasshoppers Yellow sugar cane aphid and other aphids	1/2 - 1 pint/acre
Greenbug <sup>2</sup>	1/2 - 2 pints
European and Southwestern corn borer	1 1/2 - 2 pints/acre
Corn earworm	2 pints/acre

**Pest-Specific Use Directions:**

- Sorghum midge:** Apply when 30% to 50% of the seed heads are in bloom.
- Greenbug:** Use a higher rate within the indicated rate range when pest populations are high.
- Chinch bugs and lesser cornstalk borer:** Apply as 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 Precautions:**

- To minimize the potential for chemical injury, do not apply Chlorpyrifos 4E AG to drought stressed grain sorghum within 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 Chlorpyrifos 4E AG per acre to seed sorghum if the additional risk of crop injury is unacceptable.

**Specific Use Restrictions:**

- Preharvest Interval:** Do not harvest for grain, forage, fodder, hay, or silage within 30 days after application of 1 pint of Chlorpyrifos 4E AG per acre or within 60 days after application or rates above 1 pint per acre.
- Do not apply more than 3 pints of Chlorpyrifos 4E AG (1.5 lb ai chlorpyrifos) per acre per season.
- Do not make more than 3 applications for a total of 3 pints of Chlorpyrifos 4E AG or other products containing chlorpyrifos per use season. If the 2 pint per acre application rate is used, then only one application may be made per season, or the second application must not exceed 1 pint per acre, for a total of 3 pints per acre per season.
- Do not make a second application of Chlorpyrifos 4E AG 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.

**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 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.

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<b>Pest</b>	<b>Chlorpyrifos 4E AG</b>
Cutworms Lesser cornstalk borers	1 – 2 pints/acre

**Amount of Spray Required, in Fluid Ounces Per 100 Feet of Row at Various Row Spacings**

Amt of Spray Per Acre	Various Row Spacings Measured in Inches:			
	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. Chlorpyrifos 4E AG may be tank mixed with glyphosate products such as Glyphomax XRT or Durango when application is made to glyphosate-tolerant soybeans. Use a higher rate in the rate range when there is increased pest pressure.

**Chemigation:** Chlorpyrifos 4E AG 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.

<b>PESTS</b>	<b>Chlorpyrifos 4E AG</b>
European corn borers Southern green stink bugs	2 pints/acre
Aphids (including Chinese) Bean leaf beetles Corn earworms Cutworms Saltmarsh caterpillars and other woolly bears	1 - 2 pints/acre
Armyworms Mexican bean beetles	1 - 1 1/2 pints/acre
Grasshoppers Green cloverworm Spider mites <sup>1</sup> Velvetbean caterpillars	1/2 - 1 pint/acre

**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 Precaution:**

- On determinate soybeans, do not make more than 1 application after pod set.

**Specific Use Restrictions:**

- **Preharvest Interval:** Do not apply within 28 days before harvest.
- Do not apply more than 6 pints of Chlorpyrifos 4E AG (3 lb ai chlorpyrifos) per acre per season.
- Do not make a second application of Chlorpyrifos 4E AG or other product containing chlorpyrifos within 14 days of the first application.

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- Do not make more than 3 applications per year of Chlorpyrifos 4E AG 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.

**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.

**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.

Pest	Chlorpyrifos 4E AG
Strawberry bud weevil	2 – 4 pints/acre

**Specific Use Precautions:**

- Chlorpyrifos 4E AG 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.
- Phototoxicity may occur when Chlorpyrifos 4E AG is applied to strawberries under conditions of high temperature and drought stress.

**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.
- **The maximum single application rate for foliar applications is 2 pints Chlorpyrifos 4E AG per acre. Do not make more than 2 foliar applications for a total of 4 pints (2 lb ai chlorpyrifos) per acre per season.**
- **The maximum single application rate for preplant soil incorporation is 4 pints Chlorpyrifos 4E AG per acre. Do not make more than 1 preplant soil incorporation application for a total of 4 pints (2 lb ai chlorpyrifos) per acre per season.**
- Do not make a second application of Chlorpyrifos 4E AG or other product containing chlorpyrifos within 10 days of the first foliar application and within 14 days for postharvest application.

**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 Application (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 Chlorpyrifos 4E AG insecticide 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 or Chlorpyrifos 4E AG 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 Application**

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 a minimum of 7 gallons of spray

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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.

Pests	Chlorpyrifos 4E AG	
	Broadcast	Band
Grasshoppers <sup>1</sup>	½ - 1 pint/acre	-
Beet armyworms	1 ½ - 2 pint/acre	1 - 1 ½ pint/acre
Cutworms	2 pints/acre	1 ½ pints/acre
Sugarbeet root maggot adults <sup>2,5</sup>	½ - 1 pint/acre	-
Sugarbeet root maggot larvae <sup>3,5</sup>	-	1 ½ - 2 pints/acre
Sugarbeet root maggot larvae <sup>4,5</sup>	2 pints/acre	1 ½ - 2 pints/acre

**Band application to control Sugar Beet Root Maggot:** Apply 2 pints of Chlorpyrifos 4E AG per acre on a broadcast basis, e.g., 2/3 pints/acre in a 7.5 inch band based on a 22-inch row spacing. For rows 22 inches apart, this is equivalent to 13.5 fluid ounces of Chlorpyrifos 4E AG per 10,000 feet of row. For band application, do not apply less than 20 gallons of water per acre on a broadcast basis.

**Pest-Specific Use Directions:**

- Grasshoppers:** The low rate will control small nymphs (1<sup>st</sup> through 3<sup>rd</sup> instar).
- Sugarbeet root maggot adults:** Apply anytime from 7 days until 3 days after peak adult emergence in order to target adults present at time of application based on local field trap monitoring.
- 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.
- 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.
- 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 Chlorpyrifos 4E AG per season when adults are active; (2) if an organophosphate insecticide was applied at planting, make no more than 1 postemergence application of Chlorpyrifos 4E AG when adults are active.

**Specific Use Restrictions:**

- Preharvest Interval:** Do not apply within 30 days before harvest of beet roots and tops.
- Do not apply more than 6 pints of Chlorpyrifos 4E AG (3 lb ai chlorpyrifos) per acre per season.
- Do not make more than 3 applications of Chlorpyrifos 4E AG or other products containing chlorpyrifos per season.
- Do not make a second application of Chlorpyrifos 4E AG 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 Chlorpyrifos 4E AG 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.

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### Preplant Incorporation Application

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.

PESTS	Chlorpyrifos 4E AG
Cutworms	2 - 4 pints/acre

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

PESTS	Chlorpyrifos 4E AG
Grasshoppers	1 pint/acre
Banded sunflower moth	1 - 1 1/2 pints/acre
Seed weevil <sup>4</sup>	
Stem weevil <sup>2</sup>	
Sunflower beetle larvae and adults <sup>1</sup>	
Sunflower moth <sup>3</sup>	
Woolly bears	
Cutworms	2 - 3 pints/acre

### 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.
3. **Sunflower moth:** To control, make first application during early 1% to 5% bloom stage.
4. **Seed weevil:** To control, apply when field counts indicate 10 to 20 adults per plant for oil crop varieties and 1 to 3 adults per plant on confectionery crop varieties.

### Specific Use Restrictions:

- **Preharvest Interval:** Do not apply within 42 days before harvest.
- Do not apply more than 6 pints of Chlorpyrifos 4E AG (3 lb ai chlorpyrifos) per acre per season.
- Do not make more than 3 applications per season of Chlorpyrifos 4E AG or other products containing Chlorpyrifos for a total of 6 pints of Chlorpyrifos 4E AG (3lb ai chlorpyrifos) per are per season.
- The maximum single application rate for preplant soil incorporation applications is 4 pints Chlorpyrifos 4E AG (2 lb ai chlorpyrifos) per acre. Do not make more than 1 application for a total of 4 pints (2 lb ai chlorpyrifos) per acre per season.
- The maximum single application rate for postemergence broadcast foliar treatment is 3 pints Chlorpyrifos 4E AG (1.5 lb ai chlorpyrifos) per acre. Do not make more than 2 applications for a total of 6 pints (3 lb ai chlorpyrifos) per acre per season.
- Do not make a second application of Chlorpyrifos 4E AG or other product containing chlorpyrifos within 10 days of the first application.
- Do not allow meat or dairy animals to graze in the treated areas.

### 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.

Pests	Chlorpyrifos 4E AG
<i>Conderus</i> (wireworm) Sweet potato flea beetle <i>Systema</i> (flea beetle)	4 pints/acre

**Specific Use Precaution:**

- Chlorpyrifos 4E AG will not control false wireworms, white fringe beetle or other grubs that attack sweet potatoes.

**Specific Use Restrictions:**

- **Preharvest Interval:** Do not apply within 125 days before harvest
- Do not make more than 1 application of Chlorpyrifos 4E AG or other product containing chlorpyrifos per season.
- Maximum single application rate is 2 lb ai chlorpyrifos per acre.

**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.

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

Pests	Chlorpyrifos 4E AG
Cutworms Flea beetles Mole crickets Root maggots Wireworms	2 pints / acre

To control the above listed pests and suppress populations of rootknot nematodes in all tobacco growing regions, use Chlorpyrifos 4E AG in a tank mix with Nemacur 3 at the rate of 2 pints of Chlorpyrifos 4E AG plus 4 quarts of Nemacur 3 nematicide per acre. Read and carefully follow all applicable directions, restrictions, and precautions on labeling for Nemacur 3 used in combination with Chlorpyrifos 4E AG. 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 rate recommended label rate.

**Specific Use Restrictions:**

- Do not make more than 1 application of Chlorpyrifos 4E AG 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 unless PPE required for early entry is worn.

Apply as a dormant or delayed dormant spray. While Chlorpyrifos 4E AG 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 Chlorpyrifos 4E AG per acre.

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

CROP	INSECT	CHLORPYRIFOS 4E AG
Apples	Climbing cutworms <i>Lygus</i> Oblique banded leafroller Pandemis leafroller Rosy apple aphid San Jose scale	½ - 4 pints/acre
Almonds Cherry Nectarine Peach Pear Plum Prune Peaches	Climbing cutworms Pear psylla adults San Jose scale Mealy plum aphid Peach twig borer	

**Specific Use Precautions:**

- Cold or dry conditions may cause Chlorpyrifos 4E AG 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 Chlorpyrifos 4E AG.
- Avoid contact with foliage in sweet cherries as premature leaf drop may result.

**Specific Use Restrictions:**

- Do not use more than 4 pints of Chlorpyrifos 4E AG (2 lb ai chlorpyrifos) per acre per season as a dormant/delayed dormant application.
- Post-bloom application to apples is prohibited.
- Do not make a soil or foliar application of Chlorpyrifos 4E AG 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.

**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 over wintering 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 Chlorpyrifos 4E AG.
- 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 4 days unless PPE required for early entry is worn.

Apply Chlorpyrifos 4E AG 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 Chlorpyrifos 4E AG 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.

CROP	INSECTS CONTROLLED	Chlorpyrifos 4E AG
Almonds	Navel orangeworm Peach twig borer San Jose scale	4 pints/acre
Filberts	Eye-spotted bud moth Filbert aphid Filbert leafroller Filbert worm Obliquebanded leafroller Omnivorous leaftier Winter moth	3 - 4 pints/acre
Pecans	Black margined aphid <sup>1</sup> Yellow pecan aphid <sup>1</sup>	1 - 4 pints/acre
	Fall webworm Pecan nut casebearer	1 ½ - 1 pint/acre
	Black pecan aphid Hickory shuckworm <sup>2</sup> Pecan leaf scorch mite(suppression) <sup>4</sup> Phylloxera spp. <sup>3</sup>	2 - 4 pints/acre
Walnuts	Codling moth Walnut scale	4 pints/acre

**Pest-Specific Use Directions:**

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

**Specific Use Precautions:**

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- Chlorpyrifos 4E AG 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 Chlorpyrifos 4E AG

**Specific Use Restrictions:**

- **Preharvest Interval:** Do not apply within 14 days before harvest of almonds, filberts and walnuts, or 28 days before harvest of pecans.
- Do not apply more than 8 pints of Chlorpyrifos 4E AG (4 lb ai chlorpyrifos) per acre per season as a foliar spray.
- Do not make more than 3 total applications per season of Chlorpyrifos 4E AG or other products containing chlorpyrifos to almonds, pecans, and filberts and no more than 2 applications per season on walnuts, for a maximum of 8 pints (4 lb ai chlorpyrifos) per acre per season. If the 4 pint per acre application rate is used, then only a maximum of 2 applications may be made.
- Do not make a second application of Chlorpyrifos 4E AG or other product containing chlorpyrifos within 10 days of the first application.
- Do not allow meat or dairy animals to graze in treated orchards.

**Wheat**

**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.

**(For use only in Arizona, California, Colorado, Idaho, Kansas, Minnesota, Montana, Nebraska, New Mexico, Nevada, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington and Wyoming)**

**Foliar Application**

Mix the required dosage with water and apply in a minimum of 2 gpa finished spray volume. Apply using aerial (fixed wing or helicopter) or power-operated ground spray equipment.

**Chemigation:** Chlorpyrifos 4E AG insecticide 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.

INSECTS CONTROLLED	Chlorpyrifos 4E AG
Aphids <sup>1</sup> Grasshoppers	½ to 1 pint per acre
Army cutworms <sup>2</sup> Wheat midge <sup>3</sup>	1 pint per acre

**Pest-Specific Use Directions:**

1. Consult university extension bulletins for local treatment recommendations.
2. Control may be reduced under high temperature conditions (greater than 80°F), under dry soil conditions, or if larvae are more than ½ inch long.
3. For control of **wheat midge**, treatment is recommended when 75% of the wheat heads have emerged from the boot and when midge adults are found in the crop (1 midge per 4-5 heads). If possible, apply in the late afternoon or early evening when temperatures exceed 50°F and wind speed is less than 7 mph.

**Specific Use Restrictions:**

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- **Preharvest Interval:** Do not apply within 14 days before harvest forage and hay and within 28 days before harvest for grain and straw.
- Do not make more than 2 applications of Chlorpyrifos 4E AG or other products containing chlorpyrifos for a total of 1 lb ai chlorpyrifos per acre per season.
- Maximum single application rate is 0.5 lb ai chlorpyrifos per acre.
- Do not allow meat or dairy animals to graze or otherwise feed on treated forage within 14 days of application.
- Do not feed straw from treated wheat within 28 days of application.

**Warranty and Disclaimer Statement**

The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Such risks may arise from weather conditions, soil factors, off-target movement, unconventional farming techniques, the presence of other materials, the manner of use or application, or other unknown factors, all of which are beyond the control of Tide International USA, Inc. ("Tide"), and can cause crop injury, injury to non-target crops or plants, ineffectiveness of the product, or other unintended consequences. All such risks shall be assumed by the user or buyer.

Tide warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks described above, when used in accordance with the Directions for Use under normal conditions. This warranty does not extend to the use of this product contrary to label instructions or under conditions not reasonably foreseeable to Tide, and is subject to the inherent risks described above.

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[EPA approval date]