

66222-19

02/12/2008

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



OFFICE OF
PREVENTION, PESTICIDES,
AND TOXIC SUBSTANCES

February 12, 2008

Jane Rothwell
Makhteshim Agan of North America, Inc.
4515 Falls of Neuse Road, Suite 300
Raleigh, NC 27609

Dear Ms. Rothwell:

Subject: Revised labeling in response to Reregistration Notice dated 12/19/2007 and other Agency correspondence dated 1/3/08, 1/10/08, and 1/11/08
Chlorpyrifos 4E AG
EPA Registration No. 66222-19
Submission dated January 16, 2008

The amended label referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, is acceptable with the following comments:

- On page 4, change the headings "Special Use Directions" and "Special Use Precautions" to "**Sprinkler Use Directions**" and "**Sprinkler Use Precautions.**"
- In the directions for sprinkler irrigation for alfalfa, citrus orchard floors, corn, mint, cotton, cranberries, sorghum, and soybeans, change the phrase "use the recommended rate(s)/amount" to "use the **listed** rate(s)/amount." The word recommended implies that the rates are advisory, not mandatory.
- On page 16, under Tree Fruits, remove the directions for post-bloom application to apple tree trunk. This use pattern is not supported by the product source. Retain the restriction "**Post bloom use on apple trees is prohibited.**" This statement is also required for the product source, per comments in an Agency letter dated 1/30/08.
- On page 18 under Turf Grass Grown for Sod, insert the word "Commercial" so the heading reads, "Turf Grass Grown for **Commercial Sod.**"
- On page 18 under Turf Grass Grown for Sod, **delete ticks.**

- On page 23, under Ornamental in Nurseries and Greenhouses (Soil Treatment), modify the first sentence so it reads, "Chlorpyrifos 4E AG may be used for **USDA quarantine use only** to treat containerized, potted, or balled and burlapped nursery stock plants to control the insects in the soil attached to the roots of these plants."
- On page 23, under Ornamental in Nurseries and Greenhouses (Soil Treatment), **replace the word "recommended" with "listed"** under the text of the Note section.
- On page 27, under Turf, Industrial Plant, and Road Median Outdoor Uses, **replace the word "recommended" with "listed"** in the first sentence.
- On page 29, under Outside Surfaces and Around Industrial Plant Sites, **delete the phrase "but are not limited to"** in the second sentence of the first paragraph.

A stamped copy is enclosed for your records. Submit two copies of your final printed labeling before you release the product for shipment. Should you have any questions, please contact me at 703-308-8735 or chao.julie@epa.gov.

Sincerely,



Julie Chao
 Insecticide-Rodenticide Branch
 Registration Division (7505P)

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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

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

ACTIVE INGREDIENT	% BY WT.
Chlorpyrifos: 0,0-diethyl-0-(3,5,6-trichloro-2-pyridinyl) phosphorothioate	42.5%
INERT INGREDIENTS*	57.5%
TOTAL 100.0%	

Contains 4 pounds of chlorpyrifos per gallon
* Contains petroleum distillates

Contains chlorpyrifos, the active ingredient used in Lorsban® 4E.
Chlorpyrifos 4E AG is not manufactured or distributed by Dow AgroSciences LLC.

EPA Reg. No. 66222-19

Manufactured For:
Makhteshim Agan of North America, Inc.
4515 Falls of Neuse Rd., Suite 300
Raleigh, NC 27609

EPA Reg. No. 66222-19
ACCEPTED
with COMMENTS
In EPA Letter Dated:
FEB 12 2008
Under the Federal Insecticide,
Fungicide, and Rodenticide Act,
as amended, for the pesticide
registered under EPA Reg. No.
66222-19

NET CONTENTS: 2 1/2 GALLONS

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

- IF SWALLOWED:**
 - Call a poison control center or doctor immediately for treatment advice.
 - Do not give any liquid to a person.
 - Do not induce vomiting unless told to do so by a poison control center or doctor.
 - Do not give anything by mouth to an unconscious person.
- IF IN EYES:**
 - Hold eye open and rinse slowly and gently with water for 15-20 minutes.
 - Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
 - Call a poison control center or doctor for treatment advice.
- IF ON SKIN OR CLOTHING:**
 - 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.
- IF INHALED:**
 - Move person to fresh air.
 - If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
 - Call a poison control center or doctor for further treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. For medical emergencies involving this product, call Prosar at 1-877-250-9291.

Note to Physician: This product contains an organophosphate that inhibits cholinesterase. Treat symptomatically. If exposed, plasma and red blood cell cholinesterase tests may indicate significance of exposure (baseline data are useful). Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration. Contains petroleum distillate. Vomiting may induce aspiration pneumonia.

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

May be fatal if swallowed. Causes substantial but temporary eye injury. Causes skin irritation. Harmful if absorbed through skin. Do not get in eyes, on skin, or on clothing.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category H on an EPA chemical resistance category selection chart.

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

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

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

ENGINEERING CONTROLS

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

USER SAFETY RECOMMENDATIONS

Users should:

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

ENVIRONMENTAL HAZARDS

This pesticide is 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 washwater or rinsate.

This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area. Protective information may be obtained from your cooperative agricultural extension service.

PHYSICAL OR CHEMICAL HAZARDS

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

DIRECTIONS FOR USE

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. Read all Directions for Use carefully before applying.

AGRICULTURAL USE REQUIREMENTS

Use this product 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) of:

- 4 days for fruit trees
- 5 days for citrus
- 3 days for cauliflower
- 24 hours for all other crops not listed above

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:

- 5/32
- Coveralls over short sleeved shirt and short pants
 - Chemical resistant gloves made out of any waterproof material
 - Chemical resistant footwear plus socks
 - Chemical resistant headgear for over head exposure

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

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

NON AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides [40CFR Part 170]. The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses. Keep children, pets and other unprotected persons out of treated area until sprays have dried.

GENERAL 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 PRECAUTIONS

Do not formulate this product into other end use products. **Attention:** Do not cut or weld container.

SPRAY DRIFT

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 fish ponds. 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 fish ponds. 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 fish ponds. 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 fish ponds. Apply only when wind speed is 10 mph or less.

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

DIRECTIONS

To prepare the spray, add a portion of the required amount of water to the spray tank and with agitation, add the Chlorpyrifos 4E AG. Complete filling the tank with the balance of water needed. Maintain sufficient agitation during both mixing and application to ensure uniformity 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. Prepare tank mixtures in the same manner as recommended above for use of Chlorpyrifos 4E AG alone. When tank mixtures of Chlorpyrifos 4E AG and herbicides are involved, add wettable powders first, flowables second, and emulsifiable concentrates last. Where a fertilizer solution is involved, it is strongly recommended that a fertilizer pesticide compatibility agent such as Unite or Compex be used. Maintain constant agitation during both mixing and application to ensure uniformity of the spray mixture. Do not allow spray mixtures to stand overnight.

Note: Test compatibility of the intended tank mixture before adding Chlorpyrifos 4E AG to the spray or tank mix. Add proportionate amounts of each ingredient to a pint or quart jar, cap, shake, and let set 15 minutes. Formation of precipitates that do not readily redisperse indicates an incompatible mixture that should not be used.

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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, and soybeans.

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.

SPECIAL USE DIRECTIONS

The following use directions are to be followed when Chlorpyrifos 4E AG is applied through sprinkler irrigation systems. Thoroughly clean the injection system and tank of any fertilizer or chemical residues, and dispose of the residues according to state and federal laws. Flush the injector with soap and water. Determine the amount of insecticide 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. Set the sprinkler system to deliver the desired inches of water per acre. Start the water pump and sprinkler, and let the system achieve the desired pressure and speed before starting the injector. Start the injector and calibrate the injector system according to number 14 in **SPECIAL USE PRECAUTIONS** section. The mixture containing Chlorpyrifos 4E AG must be injected continuously and uniformly into the irrigation water line as the sprinkler is moving. 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.

SPECIAL USE PRECAUTIONS

The following use precautions will result in a safe and successful application of mixture containing Chlorpyrifos 4E AG.

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 specialist, 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 a 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 insure uniform mixing of the insecticide into the water line, inject the mixture through a nozzle place in the fertilizer injection port or just ahead of an elbow or tee in the irrigation line so that the turbulence created at those points will assist in mixing. It is suggested that the injection point be higher than the insecticide tank to prevent siphoning.
13. The steel tank holding the insecticide mixture should be large enough to allow the system to complete a revolution with one filling. It should be free of rust, fertilizer sediment, and foreign material, and equipped with an in-line strainer situated between the tank and the injector pump.
14. In order to calibrate the irrigation system and injector to apply the mixture containing Chlorpyrifos 4E AG, determine the following: 1) Calculate the number of acres irrigated by the system; 2) Set the irrigation rate and determine the number of minutes for the system to cover the intended treatment area; 3) Calculate the total gallons of insecticide mixture needed to cover the desired acreage. Divide the total gallons of insecticide mixture needed by the number of minutes to cover the treatment area. This value equals the gallons per minute output that the injector must deliver. Convert the gallons per minute to milliliters or ounces per minute. Calibrate the injector pump with the system in operation at the desired irrigation rate. It is suggested that the injector pump be calibrated at least twice before operation, and the system should be monitored during the operation.

- 15. Do not apply when wind speed favors drift beyond the area intended for treatment. End guns must be turned off during the application if they irrigate nontarget areas.
- 16. Do not allow irrigation water to collect or runoff and pose a hazard to livestock, wells, or adjoining crops.
- 17. Allow foliage to dry before reentering the field.
- 18. Do not apply through sprinkler systems that deliver a low coefficient of uniformity such as certain water drive units.

**APPROVED CROPS
ALFALFA**

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.

Use Chlorpyrifos 4E AG to control the following pests at the dosages indicated by application as a broadcast foliar spray:

PEST	CHLORPYRIFOS 4E AG
Aphids (suppression)	½ pint/acre (0.25 lb. a.i./acre)
Corn rootworm adults (spotted cucumber beetle), Grasshoppers	½ - 1 pint/acre (0.25 -0.5 lb. a.i./acre)
Alfalfa blotch leafminer, Alfalfa looper, Alfalfa weevil larvae and adults, Armyworms, Cutworms, Egyptian alfalfa weevil larvae and adults, Plant bugs, Leafhoppers, Spittlebugs	1-2 pints/acre (0.5-1 lb. a.i./acre)

NOTE: Use higher rates to control spotted alfalfa aphid in California and Nevada. Stubble spray may be applied to control leafhopper in the Northeast.

Mix the required dosage with enough water to ensure thorough coverage of crop foliage and apply using aerial (fixed-wing or helicopter) or power-operated ground spray equipment. For aerial application, use 2 to 5 gallons of water per acre. For best coverage when using ground application, a minimum of 20 gallons of water per acre with hollow cone nozzles is recommended. Control may be reduced at low spray volumes under high temperature and wind conditions. Treat when field counts or crop injury indicates that damaging pest populations are developing or present; however, do not apply more than once per crop cutting. Some reduction in insect control may be evident under excessively cool conditions. For Egyptian alfalfa weevil control in California, apply the specified dosage in a minimum of 5 gallons of water per acre when larvae are actively feeding and populations reach 15 to 20 larvae per 180° sweep with a 15-inch diameter net.

Chlorpyrifos 4E AG may also be applied through sprinkler irrigation systems as a postemergence broadcast application to control the above listed foliar pests. For best results, use the recommended rate of Chlorpyrifos 4E AG per acre. Maintain vigorous tank agitation to assure uniformity of the application throughout the injection period. See **SPRINKLER IRRIGATION** section for further information.

Chlorpyrifos 4E AG should not be tank mixed with pesticides, surfactants, or fertilizer formulations unless prior use has shown the combination noninjurious under your current conditions of use. Some phytotoxic symptoms may be observed on young, tender, rapidly growing alfalfa when treated with Chlorpyrifos 4E AG. Alfalfa will outgrow the 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 foraging. Protective information may be obtained from your agricultural extension service.

RESTRICTIONS: Do not cut or graze treated alfalfa within 7 days after application of ½ pint (0.25 lb. a.i.) of Chlorpyrifos 4E AG per acre, within 14 days after application of 1 pint (0.5 lb. a.i.) per acre, or within 21 days after application of rates above 1 pint (0.5 lb. a.i.) per acre. Do not make more than 4 applications per year or apply more than once per crop cutting. Do not make a second application of Chlorpyrifos 4EAG within 10 days of the first application. To avoid contamination of irrigation floodwaters, do not flood irrigate within 24 hours following an application of Chlorpyrifos 4E AG.

ASPARAGUS

Use Chlorpyrifos 4E AG to control cutworms, asparagus aphids, and asparagus beetles by application at the rate of 2 pints per acre (1 lb a.i.). Mix the specified dosage in sufficient water to ensure thorough coverage of treated plants and apply a broadcast foliar spray. For cutworms, it is preferable to apply Chlorpyrifos 4E AG when the soil is moist and worms are active on or near the soil surface. Applications may be made during the fern stage for control of asparagus beetles and asparagus aphids when field counts or crop injury indicates that damaging pest populations are developing or present.

RESTRICTIONS: Do not make more than one preharvest application per season or apply within one day of harvest. Do not make more than two postharvest applications during the fern stage. Do not make a second application of Chlorpyrifos 4EAG within 10 days of the first application. Based on available residue data, the use of Chlorpyrifos 4E AG on asparagus is limited to the Midwest and Pacific Northwest.

CHERRIES

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.

Use Chlorpyrifos 4E AG for the control of lesser peach tree borer, greater peach tree borer, and American plum borer by application as a trunk spray. Mix 1½ to 3 quarts (1.5 to 3 lbs. a.i.) of Chlorpyrifos 4E AG with 100 gallons of water and apply as a coarse, low-pressure spray to give uniform coverage of tree trunks and lower limbs. Make a second application two

weeks after the first one and a third application after harvest. Avoid contact with foliage in sweet cherries as premature leaf drop may result. Consult your state agricultural experiment station or extension service specialist for proper time to treat in your area.

In addition, one of the three allowable applications per year may be applied as a dormant spray for control of San Jose scale, peach twig borer, and climbing cutworm. For control of these pests, tank mix 1/2 to 1 pint (0.25 to 0.5 lb. a.i.) of Chlorpyrifos 4E AG with 1 to 2 gallons of a petroleum oil recommended for dormant use in 100 gallons of water and spray the entire tree by application to runoff using ground spray equipment. For low volume (concentrate) sprays (40 to 100 gallons of spray mixture per acre), use the same amounts of Chlorpyrifos 4E AG and spray oil per acre required for application as a dilute spray and apply in a manner that will ensure thorough coverage of the trees. Use the higher dosage of Chlorpyrifos 4E AG for severe infestations. Use oil as recommended by your state agricultural experiment station or extension service specialist.

RESTRICTIONS: Make only three applications per year. Do not apply within 21 days before harvest. Do not allow meat or dairy animals to graze in treated orchards.

**CHRISTMAS TREES
(NURSERIES AND PLANTATIONS)**

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

Use Chlorpyrifos 4E AG at the rate indicated to control the following insects on the tree varieties listed.

TREE VARIETY	PEST	DOSAGE CHLORPYRIFOS 4E AG	REMARKS
Balsam fir Concolor fir Douglas fir Eastern white pine Fraser fir Grand fir Noble fir Scotch pine White spruce	Ants(excluding fire, harvester, and pharaoh ants), Aphids, Adelgids (Cooley, Eastern spruce gall), European pine shoot moth, European pine sawfly, Grasshopper, Gypsy moth, Mites (European red spider, Two spotted spider) [except in WA & OR], Pales weevil (adult), Pine needle midge, Pine spittlebug, Plant bugs, Spittlebugs, Spruce budworm, Spruce needleminer, Scale (Pine needle, Pine tortoise, Spruce bud, Black pine, Striped pine)	1 quart/acre (1 lb. a.i./acre)	Do not treat plants under extreme heat and drought stress. Apply to foliage in sufficient water to ensure adequate coverage. For effective control of adult spider mites if large numbers of eggs are present, apply a second spray 7 - 10 days after initial treatment to control newly hatched nymphs. For scale control, apply when scale crawlers are active. Before treating other conifer species, make application and observe for 7 to 10 days for symptoms of phytotoxicity. The user is responsible for determining if it is safe to treat other conifer species under commercial growing conditions.
	Pales weevil	3 quarts/100 gal. (3 lbs. a.i./100 gal.)	Apply as a cut stump drench.

RESTRICTIONS: Use Chlorpyrifos 4E AG on tree plantations only in Connecticut, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Vermont, Virginia, Washington, and Wisconsin. Do not allow livestock to graze in treated areas. Do not make more than 3 applications per season. Do not make a second application of Chlorpyrifos 4EAG within 7 days of the first application.

CITRUS FRUITS

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.

Use Chlorpyrifos 4E AG at the rates indicated according to the designated geographic area to control the following pests. Use the lower rates for light infestations and increase the dosage for heavier infestations. A petroleum spray oil recommended for use on citrus trees may be added to dilute spray mixtures only at a rate of up to 1.8 gallons per 100 gallons of water to improve control of aphids, mealybugs, scale insects, and thrips. Treat when insects become a problem or in accordance with the local spray schedule recommended by your state extension service specialist.

Chlorpyrifos 4E AG may be applied in tank mixtures with ethion, dicofol, Agri-Mek, or Vendex. See **MIXING DIRECTIONS** for further instructions. Read and carefully follow all applicable directions, restrictions, and precautions on labeling for the other products used in combination with Chlorpyrifos 4E AG

PRECAUTIONS: Observe local use directions for tank-mix combinations especially in regard to applications of Chlorpyrifos 4E AG plus spray oil. Consult with a county farm advisor, county agency, extension service personnel, agricultural commissioner, or pest control advisor for such information regarding a given locality.

Do not apply when trees are stressed by drought or high temperatures.

Chlorpyrifos 4E AG should not be tank mixed with Difolatan 80 Sprills as crop injury may occur.

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 bloom period in California, apply from one hour after sunset until two hours before sunrise.

RESTRICTIONS: Do not apply more than 2 applications (does not include citrus orchard floor) or more than 15 pints (7.5 lbs. a.i.) of Chlorpyrifos 4E AG per acre per year. Do not make second foliar application within 30 days of the first application. Do not treat within 21 days of harvest for applications up to 7 pints (3.5 lbs. a.i.) of Chlorpyrifos 4E AG per acre nor within 35 days for application of rates above 7 pints (3.5 lbs. a.i.) per acre. Do not allow livestock to graze in treated areas. The use of application rates greater than 8 pints (4 lbs. a.i.) per acre are allowed only in the following California counties: Fresno, Tulare, Kern, Kings, Stanislaus, Madera.

CITRUS FRUITS

CROP	GEOGRAPHIC LOCATION	PEST	DOSAGE PT./ACRE	SPRAY VOLUME GAL./ACRE	REMARKS
Grapefruit, Lemons, Oranges, and Other Citrus Fruit	California- Fresno, Tulare, Kern, Kings, and Madera Counties Only	Red scale	8-12 (4-6 lbs. a.i.)	Ground: 100-2400	Do not use a spray concentration of Chlorpyrifos 4E AG of less than 1/2 pt./100 gal. of total volume. Additional Precautions for California and Ari-zona: 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. Do not apply during the months of December, January, or February.
Grapefruit, Lemons, Oranges, and Other Citrus Fruit	California, Arizona	Aphids, Katydid, Lepidopterous larvae, Avocado leafroller, Cutworms, Fruit-tree leafroller, Orange tortrix, Western tussock moth	2-7 (1-3.5 lbs. a.i.)	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. Additional Precautions for California and Ari-zona: 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. Do not apply during the months of December, January, or February.
		*Scale insects (Black scale, Brown soft scale, California red scale)	8 (4 lbs. a.i.)	100-2400	
		Thrips (suppression) Mealybugs	6-12 (3-6 lbs. a.i.)	100-750	
Grapefruit, Lemons, Oranges, and Other Citrus Fruit	Florida	Aphids, Grasshoppers, Orangedogs, Mealybugs, Scale insects (Snow scale, Florida red scale, Purple scale, Long scale, Chaff scale, Black scale, Brown soft scale)	2-4 (1-2 lbs. a.i.)	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. Lubber grasshoppers must be controlled when they are small (less than 1 inch in length) by direct contact with spray.
		Citrus rust mites	4-7 (2-3.5 lbs. a.i.)	100-700	Do not use a spray concentration of Chlorpyrifos 4E AG of less than 1 pt./100 gal. of water per acre.

	Texas	Aphids, Cutworms, Katydid, Mealybugs, Scale insects (Brown soft scale, California red scale, Chaff scale)	4-7 (2-3.5 lbs. a.i.)	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 (2-3.5 lbs. a.i.)	200-700	
Small Transplanted Grapefruit, Orange, and other Citrus Trees	Texas	Aphids, Cutworms, Katydid, Mealybugs, Scale insects (Brown soft scale, California red scale, Chaff scale)	Max of 7 (3.5 lbs. a.i.)		Apply Chlorpyrifos 4E AG at a rate of 1 fl. oz/1 gal. of water with a backpack sprayer. Apply to runoff.

CITRUS ORCHARD FLOORS

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.

Use Chlorpyrifos 4E AG to control ant species (excluding fire, carpenter, harvester, and pharaoh ants) by applying the specified dose in 25 or more gallons of water with ground application equipment that will uniformly apply the spray to the orchard floor. To control foraging ants, apply Chlorpyrifos 4E AG to the orchard floor at the rate of 3/4 to 1 quart (0.75 to 1 lb. a.i.) per acre. Repeat as needed. For best insect control, uniform coverage of the orchard floor is necessary. Do not apply where weed growth or other obstructions would impede uniform coverage of the orchard floor. Do not apply in tank mixtures with Evik herbicide. Foliar applications of Chlorpyrifos 4E AG may be made in addition to the orchard floor.

Chlorpyrifos 4E AG may also 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. For best results, use the recommended amount of Chlorpyrifos 4E AG per acre. See **SPRINKLER IRRIGATION** section for further information.

RESTRICTIONS: Do not apply last treatment within 28 days before harvest. Do not allow livestock or dairy animals to graze in treated areas. Do not apply more than 3 quarts (3 lbs. a.i.) per acre per year. Do not make more than 3 applications per year (does not include foliar applications to citrus trees). Do not make a second application within 10 days of the first application.

CRANBERRIES

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.

Use Chlorpyrifos 4E AG by application as a broadcast, foliar spray to control brown spanworm, cranberry fruitworm, cranberry weevil, cutworms, fireworms, and *Sparganothis* fruitworm at the rate of 3 pints (1.5 lbs. a.i.) per acre. Mix the specified dosage in enough water to ensure thorough coverage and apply no less than 5 gallons of spray per acre when using aerial equipment or no less than 15 gallons of spray per acre when using ground equipment. 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). For other insects, treat when field counts indicate damaging insect populations are developing or present. Apply only after the winter flood has been removed. To avoid pesticide contamination of flood water, make no applications while bogs are flooded.

Chlorpyrifos 4E AG may also be applied through sprinkler irrigation systems to control the above listed pests. For best results, use the recommended rate of Chlorpyrifos 4E AG per acre. Maintain vigorous tank agitation to assure uniformity of the application throughout the injection period. See **SPRINKLER IRRIGATION** section for further information.

RESTRICTIONS: Do not make more than two applications per year or apply within 60 days before harvest. Do not make a second application within 10 days of the first application.

CORN (FIELD), CORN (SWEET) (INCLUDING CORN GROWN FOR SEED)

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 in this label 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.

TARGET PESTS	CHLORPYRIFOS 4E AG
Armyworms, Cutworms	1-2 pints/acre (0.5 - 1 lb. a.i./acre)

Postemergence Application

Apply as a postemergence broadcast spray using sufficient spray volume to ensure thorough coverage of treated plants, but no less than 15 gallons per acre (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 **SPRINKLER IRRIGATION** Section of this product label for application instructions.

TARGET PESTS	CHLORPYRIFOS 4E AG
Grasshoppers	½-1 pint/acre (0.25 lb.-0.5 lb. a.i./acre)
Aphids, Armyworms, Chinch bugs (1), Corn rootworm adults (2), Cutworms (3), European corn borer (5), Flea beetle adults (1), Southern corn leaf beetle, Webworms (4), Western bean cutworm	1-2 pints/acre (0.5 - 1 lb. a.i./acre)
Corn earworm, Southwestern corn borer (6)	1½-2 pints/acre (0.75-1 lb. a.i./acre)
Billbugs(1), Common stalk borer (9), Corn rootworm larvae (7),(8), Lesser cornstalk borer	2 pints/acre (1 lb. a.i./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 to 2 pints per acre when application is made with power-operated ground or aerial equipment or 1 to 2 pints per acre when application is made through a sprinkler irrigation system. University research indicates that achieving greater than 50% control of first-generation European borer with a single liquid insecticide treatment is highly dependent 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.
7. For postemergence control of corn rootworm larvae apply at cultivation. Direct the spray to both sides of the row at the base of the plants just ahead of the cultivator shovels. Cover the insecticide with soil around the brace roots. A cultivation application of Chlorpyrifos 4E AG may be made in addition to an at-planting application of Chlorpyrifos 15G.
8. Chlorpyrifos 4E AG may also be applied through sprinkler irrigation systems at the rate of 2 pints per acre to control corn rootworm larvae. Time the application to coincide with the appearance of the second instar larvae. Apply with enough water to wet the root zone to the depth control needed. If soils are wet, allow enough soil drying to occur such that an application using a minimum amount of water will not produce surface runoff. See Chemigation (**SPRINKLER IRRIGATION**) section of this label for application instructions.
9. 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).

RESTRICTIONS (CORN (FIELD), CORN (SWEET) (INCLUDING CORN GROWN FOR SEED):

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. Do not apply within 21 days before harvest of grain or ears. Do not apply more than 3 lb. a.i. chlorpyrifos (6 pints of Chlorpyrifos 4E AG) per acre per season. Do not make more than 3 applications per season of any product containing chlorpyrifos per season, including the maximum allowed of 2 granular applications, at the 1 lb a.i. chlorpyrifos rate. Do not make a second application of Chlorpyrifos 4E AG or other product containing chlorpyrifos within 10 days of the first application. The maximum single application rate is 1 lb a.i. chlorpyrifos (2 pints of Chlorpyrifos 4E AG) per acre. Do not apply in tank mixes with Steadfast or Lightning herbicides. If more than 1 lb a.i. granular chlorpyrifos per acre is applied at-plant (for a maximum of 1.3 lb a.i. per acre per season) only 1 additional application of a liquid product containing chlorpyrifos at 1 lb a.i. per acre is allowed per season, for a total of 2.3 lb a.i. chlorpyrifos per acre per season.

COTTON

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.

Chlorpyrifos 4E AG for control of the following pests in all states except Arizona and California at the dosages indicated:

PEST	CHLORPYRIFOS 4E AG
Cotton fleahopper, Plant bugs (Lygus, Mirids)	3/8-1 pint/acre

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Fall armyworm, Grasshopper, Thrips, Yellowstriped armyworm	(0.18 -0.5 lb. a.i./acre) ½ - 1 pint/acre (0.25 -0.5 lb. a.i./acre)
Cotton aphid	½ -2 pints/acre (0.25-1 lb. a.i./acre)
Spider mites	1 pint/acre (0.5 lb. a.i./acre)
Beet armyworm, Cotton budworm, Tobacco budworm, Cutworms, Pink bollworm, Salt marsh caterpillar	1½ - 2 pints/acre (0.75 - 1 lb. a.i./acre)

NOTE: The recommended dosage rate of 3/8 pint per acre will not achieve the high degree of control of the highest label rate but will minimize the damage done by plant bugs and cotton fleahopper and allow the beneficial insects to survive, build up, and be available to aid in the control of bollworms infesting cotton. For infestations of cotton aphids that are difficult to control, use a higher dosage within the indicated rate range.

Use Chlorpyrifos 4E AG for control of the following pests in Arizona and California at the dosages indicated:

PEST	CHLORPYRIFOS 4E AG
Armyworms, Cotton Aphid, Cotton fleahopper, Lygus, Salt marsh caterpillar, Thrips	1-2 pints/acre (0.5 - 1 lb. a.i./acre)
Cotton bollworm, Tobacco budworm, Boll weevil, Cutworms, Pink bollworm	2 pints/acre (1 lb. a.i./acre)

Note: The 2-pint rate will aid in the suppression of cotton leafperforator and spider mites.

Mix the required dosage with sufficient water to ensure thorough coverage of plants and apply using aerial or power-operated ground spray equipment. For aerial application, use at least 2 gallons of spray per acre. For ground application, use sufficient spray volume to ensure thorough coverage of treated plants but not less than 10 gallons of spray per acre. Increase spray volume when foliage is dense and/or when pests populations are high, and/or under high temperature and wind conditions. Treat when field counts indicate damaging insect populations are developing or present. Retreat as necessary to maintain control.

Chlorpyrifos 4E AG may also be applied through sprinkler irrigation systems as a postemergence broadcast application to control the above listed foliar pests. For best results, use the recommended rate of Chlorpyrifos 4E AG per acre. Maintain vigorous tank agitation to assure uniformity of the application throughout the injection period. See **SPRINKLER IRRIGATION** section for further information. For effective control of spider mites when large numbers of eggs are present, apply a second spray 3 to 5 days after initial treatment to control newly hatched nymphs.

For best results on bollworms and budworms, it is suggested that fields be scouted twice per week and treatments made when worms are 1/4 inch or less in length.

RESTRICTIONS: Do not apply within 14 days before harvest or make more than 3 applications per season. Do not apply more than 6 pints per acre per season. Do not make a second application 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.

FIGS

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.

Use Chlorpyrifos 4E AG at the rate of 2 quarts (2 lbs. a.i.) per acre for control of dried fruit beetle by application in sufficient water to the soil surface followed by incorporation into the top 3 inches of soil. Apply to fig orchard soil as a dormant application in late winter prior to beetle emergence and prior to leaf formation. Use a spray volume of 10 gallons per acre or more and apply as a broadcast spray to the soil surface using ground equipment. On the day of treatment incorporate into the top 3 inches of soil using suitable equipment.

RESTRICTIONS: Make only one application per year. Do not apply within 7 months of harvest. Based on available residue data, use of Chlorpyrifos 4E AG on figs is restricted to California.

GRAPES

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.

Use Chlorpyrifos 4E AG as a soil surface application for control of grape root borer by application just before the pest emerges from the soil. Mix 4½ pints (2.25 lbs. a.i.) of Chlorpyrifos 4E AG with 100 gallons of water and apply 2 quarts of the diluted spray mixture to the soil surface on a 15 square foot area around the base of each vine. Do not allow spray to contact fruit or foliage. Chlorpyrifos 4E AG may also be used as a prebloom application to control climbing cutworm. Apply one quart per acre as a spray drench ground application using a minimum spray volume of 25 gallons per acre. Do not use in conjunction with soil surface application for grape borer control.

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RESTRICTIONS: Do not make more than one application per season or apply within 35 days before harvest. Based upon available residue data, the use of Chlorpyrifos 4E AG in grapes is restricted to states east of the Rocky Mountains.

MINT

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.

Use Chlorpyrifos 4E AG by application as a broadcast foliar spray to control cutworms at the rate of 2 to 4 pints (1 to 2 lbs. a.i.) per acre and mint root borer at the rate of 4 pints per acre. Mix the specified dosage in water to give no less than 10 gallons of spray per acre and apply using ground spray equipment. For cutworm control, treat during May and June when field counts indicate damaging insect populations are developing or present. When larvae are less than 3/4 inch in length, use the 2 pint rate. When larvae are 3/4 inch or more in length, use the higher rate. For mint root borer control, apply post-harvest when field counts indicate damaging insect populations are developing or present.

Follow treatment with approximately 1-acre inch of sprinkler irrigation immediately after application to incorporate the insecticide into the soil.

Chlorpyrifos 4E AG may also be applied through sprinkler irrigation systems as a postemergence broadcast application to control the above listed pests. For best results, use the recommended rate of Chlorpyrifos 4E AG per acre. Maintain vigorous tank agitation to assure uniformity of the application throughout the injection period. See **SPRINKLER IRRIGATION** for further information.

RESTRICTIONS: Do not apply within 90 days before harvest. Make only one application during the growing season. Do not make more than one preplant incorporated application in the spring. Do not use in conjunction with a broadcast foliar application for cutworm control. Make only one post-harvest application per season.

NECTARINES, PEACHES, ALMONDS

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.

Use Chlorpyrifos 4E AG for the control of peach tree borer in almonds, nectarines, and peaches by application as a trunk spray before newly hatched borers enter the trees. Mix 3 quarts (3 lbs. a.i.) of Chlorpyrifos 4E AG with 100 gallons of water and apply as a coarse, low-pressure spray to give uniform coverage of tree trunks. Thoroughly wet all bark areas from ground level to scaffold limbs. Do not allow spray to contact fruit. Consult your state agricultural experiment station or extension service specialist's written recommendations for proper time to treat in your area.

Chlorpyrifos 4E AG may also be used as a preplant dip application for non-bearing peach and nectarine trees (only) at the equivalent application rate of 3 quarts (3 lbs. a.i.) per 100 gallons of water for control of peach tree borer. Dip trees several inches above the grafting bud scar and plant immediately or allow to dry before returning to storage. Do not allow peach trees to remain in contact with the dip solution.

RESTRICTIONS: Make only one application per season. Do not apply within 14 days before harvest. Do not allow meat or dairy animals to graze in treated orchards.

ONIONS (DRY BULB)

At Plant Soil Drench Application: Use Chlorpyrifos 4E AG to control onion maggot by application as an in-furrow drench. Apply Chlorpyrifos 4E AG at the rate of 1.1 fluid ounce per 1000 linear feet of row at an 18-inch row spacing. Use a minimum of 40 gallons of total drench per acre. Incorporate to a depth of 1 to 2 inches. Do not make more than one application per year following these instructions.

Post Plant Soil Drench Application: Apply one quart (1 lb. a.i.) per acre as an early season directed spray to the base of onion seedlings or transplants during peak onion maggot egg laying. Use a minimum of 100 gallons per acre for thorough wetting.

RESTRICTIONS: Do not make more than two applications per year (at plant plus post plant). Do not harvest within 60 days of application.

PEANUTS

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 suppression of wireworms, apply Chlorpyrifos 4E AG at a rate of 4 pints (2 lbs. a.i.) per acre as a preplant broadcast spray to the soil surface followed by immediate soil incorporation to a depth of 3 to 4 inches. Use a minimum of 10 gallons of total spray per acre.

RESTRICTIONS: Do not make more than one application per season. Do not harvest within 21 days after treatment. Do not feed treated peanut forage or hay to meat or dairy animals. Aerial application to peanuts is prohibited in Mississippi.

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**PERENNIAL GRASS GROWN FOR SEED
IDAHO, NEVADA, OREGON, WASHINGTON**

PEST	CHLORPYRIFOS 4E AG	SPECIFIC DIRECTIONS
Billbugs, Cutworms, Sod webworm ((cranberry girdler), Larvae (western Oregon))	1 qt/acre (1 lb. a.i./acre)	Apply in 20 gallons of water per acre as a broadcast spray using power-operated ground spray equipment. For aerial application, apply in 2 to 5 gallons of water per acre. For improved result, thatch should be moist at time of application and the insecticide should be washed into the thatch immediately after application. If sprinkler irrigation is available, apply ¼ to ½ inch of water after application to help incorporate the material or, apply to early morning dew-covered fields, or during or immediately following a light rain. Billbug control: Apply in early April when adult billbugs are active. Cutworm control: Apply in either spring or fall when larvae or larval damage first appears. Fall applications should follow sufficient irrigation and/or rainfall. Heavy carbon residue from field burning will prevent penetration of Chlorpyrifos 4E AG into the plant crown where the insects feed. Retreat as necessary to maintain control. Sodwebworm: Apply in late summer (early September to late September) when larvae are small and most of the eggs have hatched. Later applications (late October) have limited effectiveness because most cranberry girdler larvae have finished feeding.
Aphids	1-2 pints/acre (0.5 lb. - 1 lb. a.i./acre)	Apply 20 gallons of water per acre as a broadcast spray using power-operated ground spray equipment. For aerial application, use 2 to 5 gallons of water per acre. Treat before heading as colonies begin to form.

RESTRICTIONS: Use of Chlorpyrifos 4E AG is a non-food use and as such, is not for use on fields producing grass for livestock feed. Do not feed or graze grass following application of Chlorpyrifos 4E AG. No portion of the treated field may be used for human or animal feed. Chlorpyrifos 4E AG may only be applied to grass seed fields during the year of establishment. Harvest of grass seed from fields treated with Chlorpyrifos 4E AG cannot occur for at least 365 days from the date of application. Do not make more than 3 applications of Chlorpyrifos 4E Ag per year. All grass seed screening, hay, forage and other crop by-products produced from treated fields must be disposed of in such a way that they cannot be distributed or used for food or feed.

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.

Use Chlorpyrifos 4E AG Insecticide for control of the following pests at the dosage indicated:

PEST	CHLORPYRIFOS 4E AG	SPECIFIC DIRECTIONS
Sorghum midge	½ pint/acre (0.25 lb. a.i./acre)	Apply when 30 to 50% of the seed heads are in bloom. Repeat at 3-day intervals if necessary.
Grasshoppers, Yellow sugar cane aphid and other aphids	½-1 pint/acre (0.25 - 0.5 lb. a.i./acre)	
Greenbug	½-2 pints/acre (0.25 - 1 lb. a.i./acre)	For infestations of greenbug that are difficult to control, use a higher dosage within the indicated rate range.
Chinch bugs, Lesser cornstalk borer	1-2 pints/acre (0.5 - 1 lb. a.i./acre)	Apply as a directed spray toward the base of the plant using power-operated ground spray equipment with sufficient water to ensure coverage of an 8-12 inch band centered on the row. On plants less than 6 inches high, apply an 8- to 12-inch band over the row. Do not reduce the dosage for banded or directed applications. Concentrate the full labeled dosage rate in the treated zone.
Webworms	1 pint/acre (0.5 a.i. lb. /acre)	
Armyworms, Corn earworm, Cutworms	1-2 pints/acre (0.5 - 1 lb. a.i./acre)	
European and Southwestern corn borer	1½-2 pints/acre (0.75 - 1 lb. a.i./acre)	

Mix the specified dosage in enough water to ensure thorough coverage and apply using suitable aerial or ground spray equipment. To minimize 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.

Chlorpyrifos 4E AG may also be applied through sprinkler irrigation systems as a postemergence broadcast application to control the above listed foliar pests. For best results, use the recommended rate of Chlorpyrifos 4E AG per acre. Maintain vigorous tank agitation to assure uniformity of the application throughout the injection period. See **SPRINKLER IRRIGATION** section for further information.

RESTRICTIONS: The treated crop is not to be used 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 of rates above 1 pint (0.5 lb. a.i.) per acre. Do not treat sweet varieties of sorghum. Do not apply more than 3 pints (1.5 lbs. a.i.) of Chlorpyrifos 4E AG per acre per season. Do not make more than 3 applications per season. Do not make a second application within 10 days of the first application. Do not apply by air in Mississippi.

SOYBEANS

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

For use to control armyworms, bean leaf beetle, corn earworm, cutworms, European corn borer, grasshoppers, green cloverworm, lesser cornstalk borer, Mexican bean beetle, saltmarsh caterpillar and other woollybears, southern green stink bug, spider mites, and velvetbean caterpillar.

Soil Treatment

Use Chlorpyrifos 4E AG at the rate of 1 to 2 pints (0.5 to 1 lb. a.i.) per acre to control cutworms and lesser cornstalk borer. Mix the specified dosage in a minimum of 10 gallons of spray per acre and apply to the soil surface using suitable ground spray equipment. Equivalent rates of insecticide spray required per 100 feet of row for various row spacing are given in the accompanying table. For at-plant treatments, apply the insecticide over the row in a 4- to 6-inch band 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 postemergence rescue treatments, apply as a directed spray in a 9- to 12-inch band at the base of the plant. To plants under 6 inches high, apply over-the-top in a 6- to 12-inch band. Treat when field counts or conditions indicate that pests are or may become a problem.

Fluid Ounces of Spray Required Per 100 Feet of Row for Various Row Spacing

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

Foliar Treatment

Use Chlorpyrifos 4E AG at the following rate by application in sufficient water to ensure thorough coverage of treated plants:

PEST	CHLORPYRIFOS 4E AG
European corn borer, Southern green stink bug	2 pints/acre (1 lb. a.i./acre)
Bean leaf beetle, Cutworms, Corn earworm, Saltmarsh caterpillar and other woollybears, soybean aphid	1-2 pints/acre (0.5 -1 lb. a.i./acre)
Mexican bean beetle, Armyworms	1-1½ pints/acre (0.5-0.75 lb. a.i./acre)
Velvetbean caterpillar, Grasshoppers, Green cloverworm, Spider mites	½ -1 pint/acre (0.25 - 0.5 lb. a.i./acre)

Apply as a broadcast spray using either aerial or ground equipment when field counts indicate damaging insect populations are developing or present; retreat as necessary to maintain control. Mix the specified dosage in a minimum of 15 gallons of spray per acre for ground spray equipment or 5 gallons of spray per acre for aircraft equipment. For effective control of spider mites when large numbers of eggs are present, apply a second spray 3 to 5 days after initial treatment to control newly-hatched nymphs. On determinate soybeans, do not apply more than one application after pod set.

Chlorpyrifos 4E AG insecticide may also be applied through sprinkler irrigation systems as a postemergence broadcast application to control the above listed foliar pests. For best results, use the recommended rate of Chlorpyrifos 4E AG per acre. Maintain vigorous tank agitation to assure uniformity of the application throughout the injection period. See **SPRINKLER IRRIGATION** section for further information.

RESTRICTIONS: Do not apply more than 6 pints (3 lbs. a.i.) of Chlorpyrifos 4E AG per acre per season. Do not make more than 3 applications per season. Do not apply last treatment within 28 days before harvest nor apply last two treatments closer than 10 days apart. Do not allow livestock to graze in treated areas or otherwise feed treated soybean forage, hay, and straw to meat or dairy animals.

STRAWBERRIES

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 Treatment: Use Chlorpyrifos 4E AG insecticide at the following rates by application in sufficient water to the soil surface and incorporate into the soil in the spring for protection of strawberries during the following year:

PEST	CHLORPYRIFOS 4E AG
Garden symphylans, grub	4 pints/acre (2 lbs. a.i./acre)

Foliar Application: Use Chlorpyrifos 4E AG by application as a broadcast foliar spray to control strawberry bud weevil at the rate of 1 quart per acre. Apply in a minimum of 40 gallons of spray per acre when buds first appear and 10 to 14 days later. Do not apply after berries start to form or when berries are present. Chlorpyrifos 4E AG should not be tank mixed with pesticides, surfactants, or fertilizer formulations unless prior use has shown the combination noninjurious under your current conditions of use. Phytotoxicity may occur when Chlorpyrifos 4E AG is applied to strawberries experiencing high temperature and drought stress.

Post Harvest Application: For strawberry crown moth, apply 1 quart (1 lb. a.i.) per acre as a directed spray to crown of strawberry plants immediately after harvest and after plants are topped. Use a minimum spray volume of 100 gallons per acre and repeat application if required 14 to 18 days later. Do not sprinkle irrigate for one week following application.

RESTRICTIONS: For prebloom use only, do not apply after berries start to form or when berries are present. Do not apply within 21 days before harvest. For preplant application, do not make more than one application per year. For foliar and post harvest applications, do not make more than two applications per year. Do not make a second application within 10 days of the first foliar application and within 14 days for post harvest application.

SUGAR BEETS

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

Soil Treatment (At Planting or Preplant Incorporated): To reduce feeding damage from early season insects such as cutworms, apply at planting or as a preplant treatment and incorporate to a depth of 1 to 2 inches. Do not apply as an in-furrow treatment. Apply 1 pint of Chlorpyrifos 4E AG per planted acre to a 10-inch wide band centered over the row for furrows 30 inches apart. (For rows 30 inches apart, this is equivalent to 9.2 fl. oz of 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 Treatment: Apply specified rate as a broadcast or banded foliar spray. Treat when field counts indicate that damaging insect populations are developing or present.

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

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

Target Pests	Chlorpyrifos 4E AG	
	Broadcast (pint/acre)	Band (pint/acre)
Grasshoppers	1/2 - 1 (0.25-0.5 lb. a.i.)	-
Spider mites	1 (0.5 lb. a.i.)	3/4 (0.33 lb. a.i.)
Tarnished plant (Lygus)	1 (0.5 lb. a.i.)	-
Fall armyworms, yellowstriped armyworm, webworms	1-2 (0.5 - 1 lb. a.i.)	3/4-1 1/3 (0.33 - 0.66 lb. a.i.)
Beet armyworm	1 1/2 - 2 (0.75 - 1 lb. a.i.)	1 - 1 1/3 (0.5-0.66 lb. a.i.)
Cutworms, flea beetle adults	2 (1 lb. a.i.)	1 1/3 (0.66 lb. a.i.)
Sugarbeet root maggot adults	1/2 - 1 (0.25-0.5 lb. a.i.)	-
Sugarbeet root maggot larvae	-	1 1/3- 2 (0.66 - 1 lb. a.i.)
Sugarbeet root maggot larvae	2 (1 lb. a.i.)	1 1/3 - 2 (0.66 - 1 lb. a.i.)

For grasshopper control, the low rate will control small nymphs (1st through 3rd instar). For sugarbeet root maggot adults, apply anytime from 7 days before until 3 days after peak adult emergence in order to target adults present at time of application based on local field trap monitoring. For 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. Use as a 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 one postemergence application of Chlorpyrifos 4E AG when adults are active.

RESTRICTIONS: Do not apply within 30 days before harvest of beet roots and tops. Do not make more than 3 applications per season. Do not apply more than a total of 6 pints (3 lbs. a.i.) per acre per season. Do not make a second application within 10 days of the first application. Do not allow livestock to graze in treated areas nor harvest treated beet tops as feed for meat or dairy animals within 30 days after last treatment.

SUNFLOWERS

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 to control cutworms, sunflower beetle larvae and adults, stem weevil, sunflower moth, banded sunflower moth, woollybears, seed weevil, and grasshoppers.

Preplant Incorporation Treatment

Use Chlorpyrifos 4E AG insecticide at the following rates by application in sufficient water to the soil surface and incorporate into the soil:

PEST	CHLORPYRIFOS 4E AG
Cutworms	2-4 pints/acre (1 - 2 lbs. a.i./acre)

Use recommended rate in not less than 10 gallons of water per acre and apply as a broadcast spray to the soil surface using suitable power-operated 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.

Postemergence Treatment

Use Chlorpyrifos 4E AG for control of the following pests at the dosage indicated by application in sufficient water to ensure thorough coverage of treated plants:

PEST	CHLORPYRIFOS 4E AG
Cutworms	2-3 pints/acre (1-1.5 lbs. a.i./acre)
Sunflower beetle larvae and adults, Stem weevil, Sunflower moth, Banded sunflower moth, Woollybears, Seed weevil	1-1½ pints/acre (0.5-0.75 lb. a.i./acre)
Grasshoppers	1 pint/acre (0.5 lb. a.i./acre)

Apply as a broadcast spray using either aerial (fixed-wing or helicopter) or power-operated ground spray equipment when field counts indicate that pests are or may become a problem. For cutworm control, a second treatment may be made 7 to 10 days later if needed. For stem weevil control, optimal treatment time is within 5 to 7 days after adult weevils begin to appear. For sunflower moth control, make first application during early 1 to 5 percent bloom stage. A second treatment may be made 10 days later if needed. For seed weevil control, treat when field counts indicate there are 10 to 12 adults per plant for oil crops and 1 to 3 adults per plant on confectionery crops.

Additional treatments should be made at successive 10-day intervals if field counts indicate need to retreat. For sunflower beetle larvae or adult control, treat when field counts indicate there are 10 larvae or 1 to 2 adults per seedling. Additional treatments may be made at successive 10-day intervals if field counts indicate need to retreat.

RESTRICTIONS: Do not apply more than 6 pints (3 lbs. a.i.) of Chlorpyrifos 4E AG per acre per season. Do not make more than 3 applications per season. Do not apply within 42 days before harvest. Do not make a second application within 10 days of the first application. Do not allow livestock to graze in treated areas.

SWEET POTATOES

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.

Use Chlorpyrifos 4E AG to reduce the feeding damage caused by populations of *Conderus* wireworm, *Systema* flea beetle, and the sweet potato flea beetle. Apply at the rate of 4 pints (2 lbs. a.i.) per acre as a broadcast (overall) spray to the soil surface followed by incorporation. Mix the specified dosage with enough water to obtain uniform coverage and apply as a coarse spray using suitable ground spray equipment. Incorporate the insecticide to a depth of 4 to 6 inches as soon as possible after application by using a rotary hoe, disc cultivator, or other suitable incorporation equipment. Plant the crop in the usual manner no later than 14 days after treatment (any delay in planting will reduce the length of time that Chlorpyrifos 4E AG will protect against feeding damage). Chlorpyrifos 4E AG will not control false wireworms or whitefringed beetle or other grubs that attack sweet potatoes.

RESTRICTIONS: Do not make more than one application per season. Do not harvest within 125 days of treatment.

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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.

Use Chlorpyrifos 4E AG for preplant treatment to control larvae of cutworms, flea beetles, mole crickets, root maggots, and wireworms. Apply 2 pints (1 lbs. a.i.) of Chlorpyrifos 4E AG per acre in not less than 10 gallons of water as a broadcast (overall) spray to the soil surface one week before transplanting. Immediately following application, incorporate the insecticide into the soil to a depth of 2 to 4 inches using suitable equipment.

To control the above insects and low to moderate populations of rootknot nematodes in North Carolina, South Carolina, and Virginia, use Chlorpyrifos 4E AG at the rate of 2 pints (1 lbs. a.i.) per acre. To control the above insects and moderate 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 quarts (2 lbs. a.i.) of Chlorpyrifos 4EAG 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 dosage in not less than 10 gallons of water as a broadcast (overall) spray to the soil surface 24 to 48 hours before bedding and transplanting. Immediately following application, incorporate into the soil surface 24 to 48 hours before bedding and transplanting. Immediately following application, incorporate into the soil to a depth of at least 4 inches using suitable equipment. Where the nematode species *Meloidogyne arenaria* or *M. Javanica* are present or high populations of *M. incognita*, apply Telone* II soil fumigant at the recommended label rate.

RESTRICTIONS: Do not apply more than 2 pints (1 lb. a.i.) per application. Do not make more than one application per season. Do not apply more than 2 pints (1 lb. a.i.) per acre per season.

TREE FRUITS

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.

Use Chlorpyrifos 4E AG as a dormant or delayed dormant spray at the rates indicated to control the following insects on the crops listed. While Chlorpyrifos 4E AG may be used without oil, oil is recommended to control additional pests such as European red mite and brown almond mite. Applications may be made on pears after harvest. See specific use directions below.

CROP	PEST	CHLORPYRIFOS 4E AG PER 100 GALLONS OF SPRAY*
Apples (1)	Rosy apple aphid, San Jose scale, Lygus, <i>Pandemis</i> leafroller, Climbing cutworms, Obliquebanded leafroller	½-1 pint (0.25 - 0.5 lb. a.i.) (Use a minimum of 1.5 pints/acre)
Pears	San Jose scale, Climbing cutworms, Pear psylla adults	
Plums, Prunes	San Jose scale, Mealy plum aphid, Climbing cutworms, Peach twig borer	
Almonds, Peaches, Nectarines	San Jose scale, Peach twig borer, Climbing cutworms	

* Based on 200 to 600 gallons per acre as a dilute spray.

(1) Only one application of Chlorpyrifos 4EAG or other product containing chlorpyrifos may be made per year. The application may be either pre-bloom dormant/dormant delayed to the canopy or the trunk, or a post-bloom application to the lower 4 feet of the trunk. See directions for use for post bloom application to apple tree trunk in the section entitled "Post-bloom Application to Apple Tree Trunk for Borer Control" below.

For dilute spray, tank mix the specified dosage with 1 to 2 gallons of a petroleum spray oil recommended for dormant use in 100 gallons of water and spray the entire tree by application to runoff using suitable ground spray equipment. (See **Additional Precautions Specific to California** section for use in California).

For low volume (concentrate) sprays (less than 200 gallons of spray mixture per acre), use the same amount of Chlorpyrifos 4E AG as for a dilute spray and apply in a manner that will ensure thorough coverage of the trees. Use the higher dosage of Chlorpyrifos 4E AG for severe infestations. Use oil as recommended by your state agricultural experiment station or extension service specialist.

PRECAUTIONS: Because cold or dry conditions may cause Chlorpyrifos 4E AG plus oil sprays to infuse trees resulting in bud damage or drop, do not apply until winter rains or irrigation has replenished soil moisture such that bark and twigs are not desiccated. Do not use more than 4 pints of Chlorpyrifos 4E AG per acre.

Pears: Apply 4 pints (2 lbs. a.i.) per acre in 100 to 400 gallons of spray per acre. Apply using an airblast speed sprayer or other suitable ground equipment. For this use, do not make more than one post harvest application prior to dormancy per year, do not harvest or use treated fruit for food or feed, do not allow meat or dairy animals to graze in treated orchards.

Additional Precautions Specific to California: Use a minimum of 100 gallons of total spray volume per acre. Do not use more than 4 gallons of spray oil per acre on almonds, and 6 gallons per acre on peaches and nectarines. 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. Do not use more than 1% dormant oil in almond orchards less than 4 years old.

RESTRICTIONS: Make only one application during the dormant/delayed dormant season, applying no more than 4 pints (2 lbs. a.i.) per acre per season. Do not allow meat or dairy animals to graze in treated orchards. Do not make post-bloom applications on apples. Do not make a soil or foliar application within 10 days of a dormant/delayed dormant application of chlorpyrifos to the orchard.

Post-Bloom Application to Apple Tree Trunk for Borer Control: For Use Only in the States East of the Rockies
Directions for Use: Use and Dosage Recommendations

PESTS CONTROLLED	RATE CHLORPYRIFOS 4EAG	SPECIFIC USE DIRECTIONS
Dogwood borer, American plum borer, Apple bark borer, Roundheaded apple tree borer, Flatheaded Appletree Borer, Broad Necked Root Borer, Tilehorned Prionus	3 pints / 100 gal of spray	Mix with water and apply directly from a distance of no more than 4 ft using low volume handgun or shielded spray to contact foliage or fruit. Up to 2 applications may be made with a minimum spray interval of 14 days between applications.

Restrictions:

- Treat only the lower 4 feet of the apple tree trunk.
- Do not make more than two applications per year for borer control.
- Do not apply when wind speed is greater than 10 mph.
- Do not apply within 28 days of harvest.

TREE NUTS

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.

Use Chlorpyrifos 4E AG at the dosage indicated by application as a foliar spray 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. Insect control by aerial application may be less than control by ground application because of less coverage. Consult your state agricultural experiment station, certified pest control advisor, or extension service specialist for specific use information in your area. To avoid contamination of irrigation floodwaters, do not flood irrigate within 24 hours following an application of Chlorpyrifos 4E AG. 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.

ALMONDS, FILBERTS, PECANS, WALNUTS

Use Chlorpyrifos 4E AG at the rates indicated to control the listed pests.

CROP	PEST	DOSAGE
Almonds	Navel orangeworm, Peach twig borer, San Jose scale	4 pints/acre (2 lbs. a.i./acre)
Filberts	Eye-spotted bud moth, Filbert aphid, Filbert leafroller, Filbert worm, Obliquebanded leafroller, Omnivorous leaftier, Winter moth	3-4 pints/acre (1.5 - 2 lbs. a.i./acre)
Walnuts	Codling moth, Walnut scale, Walnut husk fly	4 pints/acre (2 lbs. a.i./acre)
Pecans	Pecan nut casebearer, Fall webworm	1½ - 4 pints/acre (0.75 - 2 lbs. a.i./acre)
	<i>Phylloxera</i> spp. ¹ , Black pecan aphid, Hickory shuckworm ² , Pecan leaf scorch mite (suppression) ³ , Ant species (excluding fire, carpenter, harvester, and pharaoh ants) ⁴	2-4 pints/acre (1-2 lbs. a.i./acre)
	Yellow pecan aphid ⁵ , Black margined aphid ⁵ , Spittlebugs	1-4 pints/acre (0.5-2 lbs. a.i./acre)

- For best *Phylloxera* spp. control, make 2 applications at 10 day interval using a minimum of 1.0 pint of Chlorpyrifos 4E AG per acre starting at bud swell.
- For best results make 2 applications, 10-14 days apart.
- To suppress pecan leaf scorch mite, use a preventative program.
- For ant control, apply as an orchard floor spray. Do not apply where weed growth or other obstructions prevent uniform coverage of the orchard floor.
- For control of yellow pecan aphid and blackmargined aphid, apply in tank mix combination with the recommended rate of a pyrethroid insecticide labeled for control or suppression of these aphids.

RESTRICTIONS: Make no more than 3 foliar applications per season on almonds, filberts, and pecans and no more than 2 applications per season on walnuts. Do not apply within 14 days of harvest of almonds, filberts, and walnuts, or 28 days of harvest of pecans. Do not allow livestock to graze in treated orchards. Do not apply more than 8 pints (4 lbs. a.i.) per acre per season as a foliar spray. Do not make a second application within 10 days of the first application.

ALMOND, PECAN, WALNUT ORCHARD FLOORS

Use Chlorpyrifos 4E AG to control ants (excluding fire, carpenter, harvester, and pharaoh ants) and pavement ant by applying the specified dose with ground application equipment that will uniformly apply the spray to the orchard floor. Use when ant activity becomes evident within the orchard.

Since worker ants cease most of their foraging activity at temperatures above 90°F, best results will be achieved with applications made at temperatures below 90°F at the time of application. Dosage of Chlorpyrifos 4E AG and spray volume may vary depending on the irrigation method employed in the orchard as follows:

Ant Control in Sprinkler- or Drip-irrigated Orchards

Apply Chlorpyrifos 4E AG as a broadcast spray to the entire orchard floor using ground spray equipment at 4 to 8 pints (2 -4 lbs. a.i.) per acre in 25 or more gallons of water. Use the high rate for heavy infestations and the low rate for light infestations. In orchards where ant activity is concentrated around the irrigation emitters, apply the high rate to a 6- to 8-foot band along the drip-irrigation line and the low rate to the rest of the orchard.

Ant Control in Flood-irrigated Orchards

Apply Chlorpyrifos 4E AG at 4 to 8 pints (2-4 lbs. a.i.) per acre in 25 or more gallons of water to the entire orchard floor using ground spray equipment. Apply the high rate to heavily infested areas and the low rate to lightly infested areas. Where ant colonies are abundant only in the berm areas, apply Chlorpyrifos 4E AG at 8 (4 lbs. a.i.) pints per treated acre in 50 or more gallons of water to a 6- to 10-foot band along the treeline (berm).

Do not apply where weed growth or other obstructions would impede uniform coverage of the orchard floor. Mow or chemically control weeds before the application of Chlorpyrifos 4E AG. Foliar applications of Chlorpyrifos 4E AG may be made in addition to the orchard floor treatment.

RESTRICTIONS: Do not make more than 2 applications per season. Do not apply more than 8 pints (4 lbs. a.i.) per acre per season to the orchard floor. Do not apply the last treatment within 14 days of harvest. Do not allow livestock to graze in treated orchards. Do not allow spray to contact fruit or foliage. Do not make a second application within 10 days of the first application.

TURF GRASS GROWN FOR SOD

Use Chlorpyrifos 4E AG to control the pests listed in the following table by application at the recommended dosages. Dilute Chlorpyrifos 4E AG in water and apply using suitable application equipment. For best results, turf should be moist at time of treatment.

PESTS	AMOUNT OF CHLORPYRIFOS 4E AG	
	1000 sq ft	Acre
Ants, armyworms (such as: beet, fall, yellowstriped), chinch bugs, crickets, cutworms, earwigs, European crane fly larvae, fiery skipper, gnats, grasshoppers, greenbug aphids, green June beetle grubs, leafhoppers, Lucerne moth, millipedes, mites (such as: clover, Bermudagrass stunt, winter grain), pillbugs, springtails, sod webworms (lawn moths) (1), sowbugs, ticks	¾ fl oz	1 qt (1 lb. a.i.)
Billbug adults (such as: bluegrass, Denver, hunting) (2)	¾ - 1 ½ fl oz	1-2 qt (1-2 lbs. a.i.)
Annual bluegrass weevil (Hyperodes) (3); black turfgrass ataenius adults (4), mole crickets (5)	1 ½ fl oz	2 qt (2 lbs. a.i.)
White grubs (such as: black turfgrass ataenius, European chafer, Japanese beetle larvae, and northern and southern masked chafers)(6)	1 ½ - 3 fl oz	2-4 qt (2-4 lbs. a.i.)

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

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. For billbugs, spray early in the season just prior to or coinciding with first appearance of adults as recommended by your local Agricultural Extension Service Specialist.
3. To control annual bluegrass weevil, spray suspected problem areas in mid-April and again in mid May, or as recommended by our local Agricultural Extension Service Specialist.
4. For black turfgrass ataenius adults, spray early in the season as recommended by your local Agricultural Extension Service Specialist. A repeat application may be needed 1 to 2 weeks later.
5. 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 manufacturers recommendation for calibration and the volume of spray per acre needed to provide control or as recommended by your local Agricultural Extension Service Specialist. For best results, apply when young nymphs are active.

6. For white grubs, spray when grubs are young and actively feeding near the soil surface, usually during late July and August or as recommended by your local Agricultural Extension Service Specialist, for best results, soil should be moist prior to treatment. For best results, immediately after spraying, irrigate the treated area with 1/2 to 1 inch of water to wash the insecticide into the thatch and underlying soil.

VEGETABLES

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

Use Chlorpyrifos 4E AG at the dosages indicated to control the pests listed in the following table. To avoid phytotoxicity in vegetables except Brussels sprouts, do not mix with other pesticide products or treat plants that are under extreme heat and drought stress.

CROP	PEST	DOSAGE CHLORPYRIFOS 4E AG	USE DIRECTIONS	RESTRICTIONS
Cauliflower-soil application	Root maggot	1.6-2.4 fl. oz./1000 linear ft. of row	For direct-seeded crops, apply the specified dosage in a water-based spray as a 4-inch wide band over the row at planting time. Shallow incorporation is necessary. Placement behind the planter shoe and in front of the press wheel is recommended. For transplanted crops, apply Chlorpyrifos 4E AG as a water-based spray directed to the base of the plants immediately after setting. Use a minimum of 40 gallons of total spray per acre. Do not add any additional adjuvants, surfactants, or spreader stickers. Do not apply as a foliage application.	Do not apply more than 2 pints of Chlorpyrifos 4E AG to cauliflower planted in 40-inch rows. Use proportional amounts for other row spacings not to exceed 4 pints of Chlorpyrifos 4E AG per acre. Do not apply more than 2.6 pints (1.3 lbs. a.i.) of Chlorpyrifos 4E AG per acre to broccoli, Brussels sprouts, cabbage, Chinese cabbage, collards, kale, kohlrabi, and turnips planted in 40-inch rows. Do not apply more than 4.5 pints (2.25 lbs. a.i.) of Chlorpyrifos 4E AG per acre to these crops in 20-inch rows (or two rows per bed). Use proportional amounts for other row spacings not to exceed 4 1/2 pints (2.25 lbs. a.i.) of Chlorpyrifos 4E AG per acre. Do not make more than one application per season within 30 days before harvest on broccoli, Brussels sprouts, cabbage, Chinese cabbage, collards, kale, kohlrabi, and turnips. Do not make more than one soil application per crop.
Broccoli, Brussels Sprouts, Cabbage, Chinese Cabbage, Collards, Kale, Kohlrabi, Turnips-soil application		1.6-2.75 fl. oz./1000 linear ft. of row		
Broccoli, Cabbage- soil application	Root aphid	1.2 fl. oz/1000 ft. of row for single row plantings, and 2.4 fl. oz/1000 linear ft. of row for double row plantings	Apply Chlorpyrifos 4E AG in a water emulsion or with liquid fertilizer injected as a sidedress on each side of the row after plants are established. Avoid mechanical damage to crop roots. Use a minimum of 15 gallons of total spray volume per acre. See MIXING DIRECTIONS section of the label for mixing instructions with liquid fertilizers.	Do not make more than one application per season within 30 days before harvest on broccoli, Brussels sprouts, cabbage, Chinese cabbage, collards, kale, kohlrabi, and turnips. Do not make more than one soil application per crop. Do not make a foliar application within 10 days of a soil application.
Brussels sprouts- foliar application	Armyworms, Cabbage aphid, Cutworms. Imported cabbage worm, Striped flea beetle (adult)	1-2 pints/acre (0.5-1 lb. a.i./acre)	Apply Chlorpyrifos 4E AG with conventional power-operated equipment in 20 to 150 gallons of water per acre. Apply when insects appear on foliage and at 10 to 14 day intervals or thereafter as needed. Consult your state agricultural station, extension service specialist, or integrated pest control advisor for proper time to treat in your area.	Do not make more than 3 applications per season. Do not apply within 21 days before harvest. Do not make a second application within 10 days of the first application. Do not make a foliar application within 10 days of a soil application.

Radishes-soil application	Root maggot	1.0 fl. oz/1000 linear ft. of row	Apply the specified dosage as a water-based drench in the seed furrows with the seed at planting time. Use a minimum of 40 gallons of total drench per acre.	Do not apply more than 5½ pints (2.75 lbs. a.i.) of Chlorpyrifos 4E AG per acre or make more than one soil application per season. Do not make a foliar application within 10 days of a soil application.
Rutabagas-soil application	Root maggot	1.6-3.3 fl. oz/1000 linear ft. of row	Apply the specified dosage in a water-based spray as a 4-inch wide band over the row at planting time, behind the planter shoe and in front of the press wheel to achieve shallow incorporation. Use a minimum of 40 gallons of total spray volume per acre.	Do not apply more than 4½ pints (2.25 lb. a.i.) of Chlorpyrifos 4E AG per acre or make more than one soil application per season. Do not use rutabaga tops for food or feed purposes. Do not make a foliar application within 10 days of a soil application.

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.

For use to control aphids (including Russian wheat aphid), wheat midge, brown wheat mite, grasshoppers, army cutworms and to provide suppression of other cutworm species.

PEST	DOSAGE	TIMING/SPECIAL DIRECTIONS
Aphids (including Russian wheat aphid, Greenbug, English grain aphid), Brown wheat mite, Grasshoppers	½ to 1 pint per/ acre (0.25-0.5 lb. a.i./acre)	From emergence to flowering, treat when 15-20% of tillers are infested. From flowering to early milk stage, treat when 20% or more of tillers are infested.
Wheat midge (orange wheat blossom midge)	1 pint/acre (0.5 lb./acre)	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). Application timing is critical to ensure good control. If possible, apply in the late afternoon or early evening when temperatures exceed 50° F and wind speed is less than 7 mph.
Army cutworms, other cutworm species (suppression only)	1 pint/acre (0.5 lb./acre)	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. Treat when field counts or crop injury indicates that damaging pest populations are developing or present. A second application of 1 pint/acre may be made for additional control.

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

Restrictions: Do not make more than 2 applications per season. Do not apply within 14 days of harvest for forage and hay and within 28 days of harvest for grain and straw. Do not allow livestock 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.

TURF AND OTHER NONRESIDENTIAL OUTDOOR USES

Chlorpyrifos 4EAG is an emulsifiable concentrate for control of pests located around industrial buildings (turf and ornamental), road medians (turf and ornamentals), and golf course turf only. Pests controlled by Chlorpyrifos 4EAG are listed in the following tables. Chlorpyrifos 4EAG is compatible with fungicides, insecticides, and miticides commonly recommended except for alkaline materials such as Bordeaux mixtures and lime. A small jar compatibility test should always be conducted using proper proportions of chemicals and water to check for physical compatibility prior to tank mixing.

Precautions and Restrictions: Keep out of fish pools and other bodies of water. Do not treat vegetable gardens. Do not allow livestock to graze in treated areas. Do not feed treated grass cuttings (hay) or seed screenings to livestock or use hay for livestock bedding. Do not use Chlorpyrifos 4E AG in poultry houses.

ORNAMENTALS IN NURSERIES, AROUND INDUSTRIAL BUILDINGS AND ROAD MEDIANS

Chlorpyrifos 4E AG may be used to treat evergreens, vines, flowers, shrubs, shade and flowering trees, non-bearing fruit, nut and citrus trees found in nurseries, around industrial buildings and road medians infested with pests listed in the following table. Dilute Chlorpyrifos 4E AG with water according to the directions given in the table and apply using suitable hand- or power-operated spray equipment. Ensure complete and uniform coverage. Uniform coverage is critical for effective insect and mite control. Apply a coarse spray to thoroughly wet both upper and lower leaf surfaces and infested limb and trunk areas. Attempt to penetrate dense foliage but avoid over-spraying to the point of excessive runoff. Treat when pests appear and repeat at 7 to 10 day intervals, if needed. For application timing and other specific use information, consult your State Agricultural Experiment Station or Extension Service Specialist.

For nurseries, when using spray equipment delivering less than 200 gallons of finished spray, use the rate recommended in the "per acre" column.

Note: Environmental factors have significant effects on phytotoxic expression. Chlorpyrifos 4E AG has been tested on numerous ornamental plants without causing serious phytotoxicity at recommended use rates. Some varieties of azaleas, camellias, poinsettias, rose bushes, or variegated ivy have shown varying degrees of phytotoxicity following treatment with Chlorpyrifos 4EAG. Before treating large numbers of plants (especially those previously listed), treat a small block of plants and observe for 7 to 10 days to determine phytotoxic potential.

Note: The user assumes responsibility for determining if Chlorpyrifos 4E AG is safe to treated plants under commercial growing conditions.

PEST*	Amount of Chlorpyrifos 4E AG in Water to Make		Specific Directions
	Per Acre	100 Gallons	
Adelgids: (Cooley, Eastern spruce galls, Pine bark), Ants: excluding fire, harvester, carpenter and pharaoh ants), Aphids: (Apple, Chrysanthemum, Cottonwood, Elm leaf, Peach, Rose, Spirea, Woolly), Armyworms: (Fall, Yellowstriped), Bagworms ¹ , Boxelder bugs, Cankerworms, Catalpa sphinx, Chiggers (for control of chiggers in golf courses, road medians, and industrial sites only), mealy bugs, Elm spanworms, Fall webworms ² , Grasshoppers, Green fruitworms, Hornworms, Jackpine budworms, Juniper webworms, Katydid, Lace bugs, Leafhoppers, Leafrollers ³ , Maple leafcutters ⁴ , Mites ⁵ : (Clover, Red spider, Southern red, Spruce spider, Twospotted spider), Oleander caterpillars, Orange tortrix, Periodical cicada, Plant bugs, Poplar tentmaker, Psyllids, Puss caterpillars, Rose chafers, Sawflies, exposed: (Pin oak, Pine, Redheaded), Sowbugs, Spittlebugs, Spring elm caterpillars, Springtails, Spruce budworms: (Eastern, Western), Tent caterpillars: (Eastern, Western, Forest), Thornbug, Walnut caterpillars, Whiteflies, Yellownecked caterpillars	1 pt. - 1 qt. (0.5 - 1 lb. a.i.)	8-16 fl. oz.	¹ Treat when bagworm larvae are small and actively feeding. ² Direct spray into web and immediately adjacent foliage for control of fall webworms. ³ For effective control of leafrollers, spray before leaves are tightly rolled. ⁴ Apply spray to maple leafcutter larvae as cases are being formed for effective control. Do not treat sugar maple trees intended for maple syrup production. ⁵ For effective control of spider mites when large numbers of eggs are present, apply a 2 nd spray 3-5 days in the South or 7-10 days in the North after initial treatment to control newly hatched nymphs.
Armyworms: (Beet), Beetles: (Fuller rose, Native elm bark ¹), Browntail moth, Cutworms, Leafhoppers, Mahogany webworms, Mealbugs, Mimosa webworms, Moths: (Browntail, Cypress tip, Douglas fir tussock, European pine shoot, Gypsy ² , Holly bud, Nantucket pine tip, Pandora, Pitch pine tip, Subtropical pine tip, Tussock, Oakworms: (California, Orangestriped, Redhumped), Redhumped caterpillars, Thrips: (Exposed), Weevils: (Blackvine ³ , Pine production, Yellow poplar)	1 qt. (1 lb. a.i.)	1 pt. (0.5 lb a.i.)	¹ Make applications in the spring or early summer to reduce twig and branch feeding by bark beetles. ² To kill migrating and invading gypsy moth larvae, treat trunks and foliage. ³ Blackvine weevils are night feeders. Late afternoon spraying will maximize control.
Foliar feeding beetles: (Blister leaf, Cottonwood leaf ¹ , Elm leaf, Flea, Fuller rose, Japanese, June, Willow leaf)	1 qt. (1 lb. a.i.)	1 pt. (0.5 lb. a.i.)	¹ Use Chlorpyrifos 4E AG in water to control cottonwood leaf beetle larvae and adults infesting cottonwoods. Make the treatment when field counts indicate damaging beetle populations are developing or present.

PEST*	Amount of Chlorpyrifos 4E AG in Water to Make		Specific Directions
	Per Acre	100 Gallons	
Borers ¹ , Clearwing moths: (Ash, Dogwood, Lesser peachtree, Lilac, Oak, Rhododendron), Metallic wood: (Bronze birch, Flathead appletree, Twolined chestnut), Longhorned beetles: (Locust, Red oak), Cranberry girdler larvae ² , Leafminers, Needleminers: (Jeffrey pine, Lodgepole pine, Spruce), Scale insects ³ : (Cottonycushion, Cottony maple, Euonymus, Fletcher, Florida wax, Golden oak, Hemispherical, Lecanium, Magnolia, Oak kermes, Oak lacanium, Oystershell, Pine needle, San Jose, Tea, White birch, White peach)	1 qt. (1 lb. a.i.)	1 qt. (1 lb. a.i.)	¹ For borers, apply Chlorpyrifos 4E AG to the trunks and lower limbs of trees and shrubs when the adults begin to emerge. Consult your State Agricultural Experiment Station or Extension Service specialist for proper time to treat. Apply uniformly a coarse low-pressure spray. Pheromone traps may aid in detection of adult clearwing moths. ² Apply 1 qt. of Chlorpyrifos 4E AG for cranberry girdler larvae. Direct spray at the base of tree using 50 gallons of water per acre. Irrigate immediately after applications for soil penetration of 1-2 inches. Treat after egg laying during the summer. ³ Time applications for control of scale insects when crawlers or first two stages of settled nymphs are present.
Borers: (Cottonwood, Peactree ¹)	1 qt. (1 lb. a.i.)	3 qts. ** (3 lbs. a.i.)	¹ For peachtree borers, apply Chlorpyrifos 4E AG in water to flowering trees and shrubs of the genus <i>Prunus</i> as a trunk spray before newly-hatched larvae enter the trees. Apply as a coarse, low-pressure spray. Thoroughly wet all bark areas from ground level to scaffold limbs. ** When using the 3 qt. per 100 gallon dilution, do not exceed 1qt. of Chlorpyrifos 4E AG per acre.
Beetles ¹ : (Includes wood infesting, Ambrosia, Anobiidae, Black turpentine, Cottonwood leaf, Elm leaf, European elm bark, Flea, Fuller rose, Japanese, June, Native elm bark ² , Southern pine, Willow leaf)	1 qt. (1 lb. a.i.)	2 gals. ***	¹ For preventative treatment, apply the spray to the main trunk of trees in the early spring or when threat of attack exists from nearby infested trees. For remedial treatment, apply the spray to the main trunk of infested trees when damage occurs but before adult beetles begin to emerge. ² To prevent native elm bark beetles from overwintering in uninfested trees, apply Chlorpyrifos 4E AG in water to the bottom 9 ft. of the trunk. Wet the trunk thoroughly but do not spray to runoff. Care should be taken to apply the spray right to the base of the root flare. Application can be made with either a backpack mistblower or a hydraulic pressure sprayer from spring

		through early fall. *** When using the 2-gallon per 100-gallon dilution, do not exceed 1 qt. of Chlorpyrifos 4E AG per acre.
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ORNAMENTALS IN NURSERIES AND GREENHOUSES (SOIL TREATMENT)

Chlorpyrifos 4E AG may be used to treat containerized, potted, or balled and burlapped nursery stock to control the insects in the soil attached to the roots of these plants. Completely submerge the container with drain holes or root ball stabilized by burlap in a tank containing diluted Chlorpyrifos 4E AG. Do not remove burlap wrap or plastic containers with drain holes prior to submerging. Keep the container or root ball submerged until complete soil saturation has occurred, normally about 30 seconds.

Precautions: During all operations (submerging, drenching, injecting), wear a chemical-resistant apron in addition to other PPE listed for applicators and other handlers. Make applications in a well-ventilated area.

Note: Environmental factors have significant effects on phytotoxicity expression. Chlorpyrifos 4E AG has been tested on numerous ornamental plants without causing serious phytotoxicity at recommended use rates. However, because of the numerous varieties grown, treat a small group of plants at the recommended rate under the anticipated growing conditions and observe for at least 7 days to determine phytotoxic potential before treating a larger number of plants.

Note: The professional user assumes responsibility for determining if Chlorpyrifos 4E AG is safe to treated plants under commercial growing conditions.

PEST*	Amount of Chlorpyrifos 4E AG in Water to Make		Specific Directions
	1 Gallon	100 Gallons	
Fire Ants ¹	1/25 fl. oz.	4 fl. oz.	¹ As an alternative to submerging potted plants, dilute 4 oz. of Chlorpyrifos 4E AG in 100 gallons of water. Apply this dilution to the point of runoff twice daily for 3 consecutive days. Do not remove burlap wrap or container from plants prior to treatment.
White Grubs ² Weevils ³ (such as Blackvine)	3/8 fl. oz.	2 qts. ** (2 lbs. a.i.)	² An alternative treatment to submerging containerized plants is to drench the container with the diluted insecticide solution applying approximately 10 to 12 fl. oz. of diluted insecticide solution per gallon of container size (4-5 fl. oz./100 cubic inches of container). The container media should be pre-moistened by irrigation or rainfall before drenching. Do not remove container from plants prior to treatment.
Coffee root mealybug ²	1/6 fl. oz.	1 pt. (0.5 lb. a.i.)	³ An alternate treatment to submerging balled and burlapped plants is to inject Chlorpyrifos 4E AG into the root ball. Equally distribute 1 to 3 quarts of the dilute Chlorpyrifos 4E AG solution per cubic foot of soil volume through an injection rod inserted into the soil ball surrounding the plant roots. Uniform distribution of the insecticide throughout the soil of the root ball is critical for effective control. It is recommended that the injection rod be inserted in at least 4 equally spaced locations around the stem of the plant at a 30-45 degree angle from the plant between the stem and the upper, outer perimeter of the ball. This technique has been shown to be most effective with small root balls (up to 1.5 ft in diameter). Larger root balls may require more injection points to ensure thorough soil distribution of the insecticide. The injection rod should be coupled to a flow meter to monitor the correct volume applied per root ball using an injection pressure of at least 30 psi. The application should be made such that splash-back and runoff are minimized. **Do not exceed more than 1 quart (1 lb. a.i.) of Chlorpyrifos 4E AG per acre.

*Superscripts refer to specific directions.

ORNAMENTALS IN NURSERIES, GREENHOUSES, INDUSTRIAL PLANT SITES AND ROAD MEDIANS (DORMANT SPRAY OF TREE PESTS)

Chlorpyrifos 4E AG may be used as a dormant or delayed dormant spray at the rates indicated to control the listed insects. Chlorpyrifos 4E AG may be used without oil; however, oil is recommended to control additional pests such as the European red mite.

For high volume (dilute) sprays (200 to 600 gallons of spray mixture per acre), tank mix the specified dosage with 1 to 2 gallons of a petroleum spray oil recommended for dormant use in 100 gallons of water. Spray the entire tree to runoff using suitable ground spray equipment.

For low volume (concentrate) sprays (less than 200 gallons of spray mixture per acre), use the same amount of Chlorpyrifos 4E AG as for a dilute spray and apply in a manner that will ensure thorough coverage of the trees. Use oil as recommended by your State Agricultural Experiment Station or Extension Service specialist.

Precautions: Do not apply until rain or irrigation have replenished soil moisture such that bark and twigs are not desiccated since cold dry conditions may cause Chlorpyrifos 4E AG plus oil to infuse trees resulting in bud damage or drop.

For nurseries: Do not use more than 2 pints of Chlorpyrifos 4E AG per acre.

Restrictions: Make only one application during the dormant season except for the control of the apple ermine moth. Do not allow meat or dairy animals to graze in treated areas.

PEST*	Amount of Chlorpyrifos 4E AG in Water to Make			Specific Directions
	1 Gallon	3 Gallons	100 Gallons	
Aphids: (Mealy plum, Rosy Apple, Woolly apple), Borers: (Peach twig), Cutworms: (Climbing), Leafrollers: (Pandemis), Pear psylla adults, Plant bugs, Scale: (San Jose)	1/12 - 1/6 fl. oz.	1/4 - 1/2 fl. oz.	1/2 - 1 pt.	Tank mix with 1-2 gallons of a petroleum spray oil recommended for dormant use in 100 gallons of water.
Apple ermine moth	1/12 fl. oz.	1/4 fl. oz.	1/2 pt.	For control on <i>Malus</i> species make 2 applications at a 7-14 day interval in combination with a petroleum spray oil at the rate of 2-4% (v/v) in a spray to wet application to ensure thorough coverage of all stems and branches. When using tank mixtures, follow all label directions for the mixing partner (oil). Use appropriate application equipment and spray volumes to ensure complete coverage of the plant(s) or control will be compromised.

ORNAMENTALS IN NURSERIES AND GREENHOUSES (PREPLANT INCORPORATION TREATMENT OF FIELD GROWN NURSERY STOCK)

White Grubs and White Fringed Beetles: To control white grubs and white fringed beetles during transplant or seedling establishment, apply Chlorpyrifos 4E AG to soil and incorporate before transplanting or planting. Apply to the soil surface as a broadcast spray at a rate of 1 quart per acre using sufficient water to obtain adequate coverage. Do not make aerial applications. On the same day of treatment, incorporate the insecticide into the top 2 to 4 inches of the soil using a tandem disc, field cultivator, or equivalent incorporation equipment capable of thorough soil mixing.

Precaution: Environmental factors and varietal variation can significantly affect the potential for phytotoxicity from pesticide use. Chlorpyrifos 4E AG has been evaluated at the above indicated rate on loblolly pine without phytotoxic effects. Prior to making large-scale applications, growers should prepare and observe a small test plot as above in order to determine the potential phytotoxicity in species or varieties other than loblolly pine. Use the following procedure: (1) Treat a small test block as above; (2) Seed or transplant the test species or variety and observe for symptoms of phytotoxicity for a minimum of 14 days following emergence or transplanting.

Note: The professional user assumes responsibility for determining if Chlorpyrifos 4E AG is safe to treated plants under commercial growing conditions.

Garden Symphylans: Apply Chlorpyrifos 4E AG as a preplant incorporated treatment to suppress garden symphylans on land to be planted to field grown ornamentals. Apply as a broadcast application to the soil surface at the maximum rate of 1 quart per acre in at least 10 gallons of water per acre. On the same day of treatment, incorporate the insecticide to a depth of up to 8 inches using a disc, rotovator or other suitable equipment. Use the higher rate range for longer residual control or where deeper incorporation is necessary.

Precaution: Environmental factors significantly affect phytotoxicity. Chlorpyrifos 4E AG has been tested on numerous ornamental plants without causing serious phytotoxicity. However, because of the numerous varieties grown, treat a small group of plants at the recommended rate under the anticipated growing conditions and observe for phytotoxic symptoms for at least 7 days, before a large number of plants are treated. Do not blend Chlorpyrifos 4E AG with dry bulk fertilizer materials.

Note: The professional user assumes responsibility for determining if Chlorpyrifos 4E AG is safe to treated plants under commercial growing conditions.

TREE PESTS IN NURSERIES AND GREENHOUSES

Chlorpyrifos 4E AG may be used to treat shade and flowering trees, and evergreens infested with pests listed in the following table. Dilute Chlorpyrifos 4E AG with water according to the directions given in the table and apply using suitable hand-or power operated spray equipment in a manner to provide complete and uniform coverage. Apply a coarse spray to thoroughly

wet both the upper and lower leaf surfaces and to infested limb and trunk areas. Attempt to penetrate dense foliage, but avoid overspraying to the point of excessive runoff. Treat when pests appear and repeat application at 7- to 10-day intervals, if needed. Consult your State Agricultural Experiment Station or Extension Service specialist for application timing and other specific use information applicable to your area.

PEST*	Amount of Chlorpyrifos 4E AG in Water to Make			Specific Directions
	1 Gallon	3 Gallons	100 Gallons	
Adelgids: (Cooley, Eastern spruce gall, Pine bark), Aphids: (Apple, Chrysanthemum, Cottonwood, Elm leaf, Peach, Rose, Spirea, Woolly), Bagworms ¹ , Boxelder bugs, Cankerworms, Catalpa sphinx, Citrus mealybugs, Elm spanworms, Fall webworms ² , Greenstriped mapleworms, Jackpine budworms, Juniper webworms, Katydid, Lace bugs, Leafhoppers, Leafrollers ³ , Maple leafcutters ⁴ , Mites ⁵ : (Clover, Red spider, Southern red), Oak skeletonizers, Poplar Tentmakers, Puss caterpillars, Sawflies, exposed: (Pin oak, Pine), Spring elm caterpillars, Spruce budworms, Tent caterpillars: (Eastern, Forest, Western), Walnut caterpillars, Western spruce budworms, Yellownecked caterpillars	1/12 oz.	¼ fl. oz.	8 fl. oz. (0.25 lb. a.i.)	¹ Treat when bagworm larvae are small and actively feeding. ² For effective control of fall webworms, direct spray into web and immediately surrounding foliage. ³ For control of leafrollers, apply spray before leaves are tightly rolled. ⁴ Apply spray to maple leafcutter larvae as cases are being formed. Do not treat sugar maple trees intended for maple syrup production.
Beetles: (Fuller rose, Native elm bark ¹), Leafhoppers, Mahogany webworms, Mealybugs, Mimosa webworms, Moths: (Browntail, Cypress tip, Douglas fir tussock, European pine shoot, Gypsy ² , Holly bud, Nantucket pine tip, Pandora, Pitch pine tip, Subtropical pine tip, Tussock), Oakworms: (California, Orangestriped, Redhumped), Redhumped caterpillars, Thrips-exposed, Weevils: (Blackvine ³ , Pine reproduction, Yellow poplar)	1/6 fl. oz.	½ fl. oz.	1 pt. (0.5 lb a.i.)	¹ To reduce foliar feeding on twigs and branches by beetles, apply in the spring or early summer. ² To kill migrating and invading gypsy moth larvae, treat trunk and foliage. ³ Blackvine weevils are night feeders. Late afternoon spraying will maximize control.
Beetles: (Cottonwood leaf ¹ , Elm leaf, Flea, Willow leaf)	1/6-1/3 fl. oz.	½ fl. oz. to 1 fl. oz.	1 pt. - 1 qt. (0.5 - 1 lb. a.i.)	¹ For cottonwood leaf beetles, use Chlorpyrifos 4E AG in water to control larvae and adults infesting cottonwoods. Apply when field counts indicate damaging beetle populations are developing or are present. For seedlings, use 8-20 gallons of spray volume per acre.
Borers ¹ , Clearwing moths: (Ash, Dogwood, Lesser peachtree, Lilac, Oak, Rhododendron), Metallic wood: (Bronze birch, Flatheaded appletree, Twolined chestnut, Longhorned beetles: (Locust, Red oak), Cranberry girdler larvae ² , Leafminers, Needleminers: (Jeffery pine, Lodgepole pine, Spruce), Scale insects ³ : (Cottonycushion, Cottony maple, Euonymus, Fletcher, Florida wax, Golden oak, Hemispherical, Lecanium, Magnolia, Oak kermes, Oystershell, Pine needle, San Jose, Tea, White birch)	1/3 fl. oz.	1 fl. oz.	1 qt. (1 lb. a.i.)	¹ For borers, apply Chlorpyrifos 4E AG to the trunks and lower limbs of trees and shrubs when the adults begin to emerge. Consult your State Agricultural Experiment Station or Extension Service specialist for proper time to treat in your area. Apply uniformly as a coarse low-pressure spray. Pheromone traps may aid in detection of adult clearwing moths. ² Apply 1 quart of Chlorpyrifos 4E AG per acre to cranberry girdler larvae infesting Douglas fir seedlings. Direct

				<p>spray at the lower crown and stems using 50 gals. of water per acre. Irrigate immediately after application for soil penetration of 1-2 inches. Treat after egg laying during the summer.</p> <p>³ Time applications for control of scale insects when crawlers or first two stages of settled nymphs are present.</p>
Northern pine weevil, Pales weevil	1 fl. oz.	3 fl. oz.	3 qts. ** (3 lbs. a.i.)	<p>Apply as a cut stump spray or drench in winter or early spring.</p> <p>** Do not exceed 1 quart (1 lb a.i.) of Chlorpyrifos 4E AG per acre.</p>
Borers: (Cottonwood, Peachtree) ¹	1 fl. oz.	3 fl. oz.	3 qts. ** (3 lbs. a.i.)	<p>¹ For peachtree borers, apply Chlorpyrifos 4E AG in water to flowering trees and shrubs of the genus <i>Prunus</i> as a trunk spray before newly hatched larvae enter the trees. Apply as a coarse low-pressure spray. Thoroughly wet all bark areas from ground level to scaffold limbs.</p> <p>** Do not exceed more than 1 quart (1 lb. a.i.) of Chlorpyrifos 4E AG per acre.</p>
Beetles ¹ : (Cottonwood leaf, Elm leaf, Flea, Fuller rose, Native elm bark ² , Willow leaf)	1 1/2 fl. oz.	4 fl. oz.	1 gal. **	<p>¹ For preventative treatment, apply spray to the main trunk of trees in the early spring or when threat of attack exists from nearby infested trees. For remedial treatment, apply the spray to the main trunk of infested trees or logs when damage occurs but before adult beetles begin to emerge.</p> <p>² To prevent native elm bark beetles from overwintering in uninfested trees, apply a dilution of 1 gallon per 100 gals. of water (1 1/2 fl. oz. per gallon) as a spray to the bottom 9 ft. of the trunk. Wet the trunk thoroughly but do not spray to runoff. Care should be taken to apply the spray to the base of the root flare. Applications can be made from spring to early fall. To reduce twig and branch feeding on trees deemed to be of high value, apply as spray to the tree crown using a dilution of 1 gallon per 100 gals. of water (1 1/2 fl. oz. per gallon). Applications should be made in the spring or early summer using a sprayer that will give thorough coverage to the tree crown.</p>

				** Do not exceed more than 1 quart of Chlorpyrifos 4E AG per acre.
Weevils: (such as Northern pine, Pitch eating, Twig)	5 1/8 fl. oz.	16 fl. oz.		Treat pine seedlings immediately after transplanting. Treat each seedling with enough spray to thoroughly wet the foliage and stem to the point of runoff. For nurseries, do not use more than 6 gals. of spray dilution per acre.

*Superscripts refer to specific directions.

TURF, INDUSTRIAL PLANT, AND ROAD MEDIAN OUTDOOR USES

Apply Chlorpyrifos 4E AG to control the pests listed in the following table at the recommended dosages and in accordance with the directions given below or as recommended by your local Agricultural Extension Service specialist. Dilute Chlorpyrifos 4E AG in water and apply as a coarse, low-pressure spray using suitable application equipment. Except as noted, thoroughly water immediately after treatment to wash the insecticide into the turf. The area to be treated should be moist at the time of treatment. Spray when pests first appear, retreat when needed.

PEST*	Amount of Chlorpyrifos 4E AG per		Specific Directions
	1,000 sq. feet	Acre	
Ticks: (American dog, Cattle fever, Gulf coast, Lone star)(for control of ticks in golf courses, road medians, and industrial plant sites only)	1/4 fl. oz.	1 1/2 pts.	1 For control of ticks, treat soil and other areas likely to serve as harborage sites for ticks that have removed themselves from their host. Spray surfaces to be treated until wet but do not create excessive runoff. Note: This application is intended as a premise spray only. Do not use as a direct spray on livestock or any sites that may come in contact with livestock.

<p>Ants (excluding fire , carpenter , harvester , and pharaoh ants), Armyworms: (Beet, Fall, Yellowstriped), Chiggers¹ (for control of chiggers in golf courses, road medians and industrial plant sites only), Chinch bugs, Clover mites, Cutworms, Crickets, Deer ticks² (for control of ticks in golf courses, road medians, and industrial sites only), Earwigs, Fiery skipper, Fire ants (mounds)³, Gnats, Grasshoppers, Greenbug aphids, June beetles, Leafhoppers, Lucerne moths, Millipedes, Mites: (Clover, Bermudagrass stunt, Formula grass, Winter grain), Pillbugs, Sod webworms⁴: (Lawn moths), Sowbugs, Ticks¹ (for control of ticks in golf courses, road medians and industrial plant sites only)</p>	<p>¾ fl. oz.</p>	<p>1 qt.</p>	<p>¹ Apply Chlorpyrifos 4E AG for area control of ticks and chiggers infesting golf course turf, turf in road medians, and industrial plant sites where these pests are present and create a nuisance or a possible public health problem. Do not allow public use of treated areas during application or until spray has dried. Apply Chlorpyrifos 4E AG in water at the rate of ½ pint/acre (equivalent to 1/6 fl. oz. per 1,000 sq. ft) using a hydraulic sprayer, mist applicator, knap sack sprayer, or other suitable hand or power-operated spray equipment. Treat low underbrush, grassy areas, weeds, and ground surface and debris using enough spray volume to obtain thorough coverage, usually 40-100 gals./acre. ² Apply Chlorpyrifos 4E AG in water at the rate of 1 quart per acre or ¾ fl. oz. per 1,000 sq. ft. for control of deer ticks. Treat low underbrush, turf, grassy areas, weeds, and ground surface and debris, using enough spray volume to obtain thorough coverage. ⁴ For sod webworms, watering or mowing of the treated area should be delayed for 24 hours after treatment.</p>
<p>European crane fly</p>	<p>1 fl. oz.</p>	<p>1 qt.</p>	
<p>Turfgrass weevil (<i>Hyperodes</i>)¹</p>	<p>1 ½ fl. oz.</p>	<p>1 qt.</p>	<p>¹ Make application to problem areas in mid-April and again in mid-May or as recommended by your local Agricultural Extension Service specialist.</p>
<p>PEST*</p>	<p>Amount of Chlorpyrifos 4E AG per</p>		<p>Specific Directions</p>
	<p>1,000 sq. feet</p>	<p>Acre</p>	
<p>White grubs¹: (Black turfgrass ataenius, European chafer, Japanese beetle larvae, Southern and Northernmasked chafer)</p>	<p>1 ½ - 3 fl. oz.</p>	<p>1 qt.</p>	<p>¹ Spray when white grubs are young and actively feeding near the soil surface, usually during late July and August or as recommended by your local Agricultural Extension Service specialist. Immediately after spraying, irrigate the treated area with ½ to 1 inch of water to wash the insecticide deep into the thatch or into the underlying soil.</p>
<p>Billbug adults, such as: (Bluegrass, Denver, Hunting)</p>	<p>¾ - 3 fl. oz.</p>	<p>1 qt.</p>	<p>Spray early in the season when adult billbugs first appear.</p>

Mole Crickets	1 ½ fl. oz.	1 qt.	For mole crickets in golf course turf, turf in road medians, and industrial plant site turfgrass, apply 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 local Agricultural Extension Service specialist. Apply when young nymphs are active.
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*Superscripts refer to Specific Directions.

OUTSIDE SURFACES AND AROUND INDUSTRIAL PLANT SITES (SUCH AS AROUND WAREHOUSES, FOOD PROCESSING AND FOOD MANUFACTURING SITES)

Chlorpyrifos 4E AG may be applied as a residual spray to and around outside surfaces of nonresidential buildings and structures. Permitted areas of use include, but are not limited to: fences, pre-construction foundations, refuse dumps, outside of walls, and other areas where pests congregate or have been seen. Do not allow adults, children, or pets to contact treated surfaces until sprays have dried. Keep out of fish pools and other bodies of water. Do not feed treated grass cuttings (hay) or seed screenings to livestock, or use treated hay for livestock bedding. Do not treat vegetable gardens. Repeat treatment as needed to maintain effectiveness. Unless prohibited by a products' label, users, at their own discretion, can tank mix pesticides currently labeled for similar use patterns. Always perform a small jar compatibility test using proper proportions to check for physical compatibility prior to tank mixing. Do not tank mix this product with products containing dichlorvos (DDVP).

PEST*	Amount of Chlorpyrifos 4E AG in Water to Make			Specific Directions
	1 Gallon	10 Gallons	50 Gallons	
	For Band Treatment			
Ants(excluding fire, harvester, carpenter, and pharaoh ants), Beetles, Boxelder bugs (for other true bugs), Clover mites, Crickets, Earwigs, Elf leaf beetles (adults), Firebrats, Millipedes, Pillbugs, Silverfish, Sowbugs, Spiders (excluding black widow and brown recluse spiders), Springtails, Ticks (for control of ticks in golf courses, road medians and industrial plant sites only	¼ tsp.	¾ fl. oz.	4 fl. oz.	To help prevent infestation of non-residential buildings, treat a band of soil 6-10 ft. wide around and adjacent to buildings including the building foundation to a height of 2-3 ft. where pests are active and may find entrance. Use 4 fl. oz. of Chlorpyrifos 4E AG per 50 gals. of water and apply as a coarse spray at the rate of about 10 gals. of spray mixture per 1,000 sq. ft. to thoroughly and uniformly wet the band area.
	For Outside Surfaces			
	1 ½ fl. oz.	13 ½ fl. oz.	2 qts.**	**Do not exceed 1 qt. of Chlorpyrifos 4E AG per acre.

*Superscripts refer to Specific Directions.

ANTS (EXCLUDING FIRE, CARPENTER, HARVESTER, AND PHAROAH ANTS) AND MISCELLANEOUS PESTS

PEST	Amount of Chlorpyrifos 4E AG in Water to Make			Specific Directions
	1 Gallon	3 Gallons	100 Gallons	
Ants (excluding fire, carpenter, harvester, and pharaoh ants), Cockroaches: (American, Asian, Brownbanded, German, Oriental, Smokey brown, Wood), Sowbugs, Springtails	1/6 fl. oz.	½ fl. oz.	1 pt.	

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Store in original container in secured dry storage area. Prevent cross-contamination with other pesticides and fertilizers. Do not store above 100°F for extended periods of time. Storage below 20°F may result in formation of crystals. If product crystallizes, store at 50°F to 70°F and agitate to redissolve crystals. If container is damaged or spill occurs, use product immediately or dispose of product and damaged container as indicated below.

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

CONTAINER DISPOSAL FOR REFILLABLE CONTAINERS: Replace the dry-disconnect cap, if applicable, and seal all openings that have been opened during use. Return the empty container to a collection site designated by Makhteshim-Agan of North America Inc. (MANA). If the container has been damaged and cannot be returned according to the recommended procedures, contact the MANA Customer Service Center at 1-866-MANAINC for proper handling instructions.

CONTAINER DISPOSAL FOR NON-REFILLABLE CONTAINERS: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. Or, triple rinse (or equivalent). Then puncture and dispose in a sanitary landfill, or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

LIMITATION OF WARRANTY AND LIABILITY

Read the entire Directions for Use, Conditions of Warranties and Limitations of Liability before using this product. If terms are not acceptable, return the unopened product container at once.

By using this product, user or buyer accepts the following Conditions, Disclaimer of Warranties and Limitations of Liability.

CONDITIONS: 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. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Makhteshim Agan of North America, Inc. All such risks shall be assumed by the user or buyer.

DISCLAIMER OF WARRANTIES: To the extent consistent with applicable law, Makhteshim Agan of North America, Inc. makes no other warranties, express or implied, of merchantability or of fitness for a particular purpose or otherwise, that extend beyond the statements made on this label. No agent of Makhteshim Agan of North America, Inc. is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. To the extent consistent with applicable law, Makhteshim Agan of North America, Inc. disclaims any liability whatsoever for special, incidental or consequential damages resulting from the use or handling of this product.

LIMITATIONS OF LIABILITY: To the extent consistent with applicable law, the exclusive remedy of the user or buyer for any and all losses, injuries or damages resulting from the use or handling of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid or at Makhteshim Agan of North America, Inc.'s election, the replacement of product.