

62719-221

10/24/2003

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



OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

OCT 24 2003

Mr. Sterett Robertson
Dow AgroSciences
9330 Zionsville Road
Indianapolis, IN 46268-1054

Dear Mr. Robertson:

Subject: Labeling Submitted in Response to the Chlorpyrifos IRED
Lorsban 50W
EPA Reg. No. 62719-221
Your Submission Received April 17, 2003

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is acceptable provided you make the following changes before you release the product for shipment bearing the amended labeling:

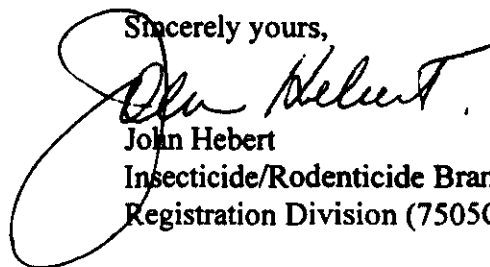
1. Changes in acute toxicity profile and precautionary labeling are not being addressed at this time. New acute toxicity data submitted in response to product reregistration have not been reviewed. Precautionary language and First Aid statements (if applicable) should be revised to what was accepted on the last EPA accepted label approved on August 16, 2001.
2. Under Aerial Drift Reduction Advisory, Ground Boom Application make the following changes: (a) Replace comment 2 with the following: "Apply with nozzle height no more than 4 feet above the ground or crop canopy;" and (b) Revise comment 3 as follows: "...exceeds 10 mph as measured by an anemometer."
3. Under Aerial Drift Reduction Advisory, Orchard Airblast Application revise comment 2 as follows: "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."
4. Under Spray Drift Management for Aerial Application add the following: "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. If application includes a no-spray zone, do not release spray at a height greater than 10 feet above the ground or crop canopy."

5. Under Spray Drift Management for Ground Boom Application revise the statement so that it reads as follows: "Do not apply product when wind speed exceeds 10 mph or less at the application site as measured by an anemometer.
6. The REI is 4 days for fruit trees and 24 hours for nut trees. These REIs must be reflected in the Directions for Use.

Approval of this labeling amendment does not constitute approval of your application for reregistration of this product. Product reregistration is currently pending and future labeling amendments and/or additional data may be necessary.

Submit two copies of your final printed labeling before you release the product for shipment. A stamped copy is enclosed for your records. If you have any questions, please contact me at (703) 308-6249 or hebert.john@epa.gov.

Sincerely yours,



John Hebert
Insecticide/Rodenticide Branch
Registration Division (7505C)

c: Tom Myers, SRRD
Venus Eagle, SRRD

56363406
ACCEPTED
with COMMENTS
In EPA Letter Dated: 3/24
OCT 24 2003
Under the Federal Insecticide,
Fungicide, and Rodenticide Act,
as amended, for the pesticide
Lorsban* under EPA Reg. No.
62719-221

Lorsban* 50W

in Water Soluble Packets
EPA Reg. No. 62719-221

To Whom It May Concern: The minimum package size for this product is 25 lb. For any package size less than 25 lb, a new registration for this product as a Restricted Use Pesticide is required.

ATTENTION (Packaging Artwork Coordinator): This text of this label is based on packages containing 1 lb water soluble packets. If, for any reason, the net contents of the water soluble packet is changed from the net contents stated in this document, the regulatory Labeling Specialist must be notified so that appropriate changes can be made to mixing directions and rate recommendations in the label booklet. (This box added to FPL on 24Feb00.)

Registration Notes:

Source label text based on EPA-accepted copy dated August 16, 2001.

Proposed changes by amendment contained in amended label coded "A1A / Lorsban 50W in Water Soluble Packets / Amend With Edits / 02-10-03" and submitted to the EPA February 11, 2003:

1. Based upon the following acute tox studies and PR Notice 2001-1, revised First Aid section and Precautionary Statements:

Acute Toxicity Category by Route of Exposure:

Route of Exposure	Lorsban* 50W
Oral LD ₅₀	Cat II
Dermal LD ₅₀	Cat IV
Inhalation	Cat IV
Ocular Irritation	Cat I
Dermal Irritation	Cat IV
Dermal Sensitization	Non-Sensitizer

2. Changed "Waterproof gloves" to "Chemical-resistant gloves made of any waterproof material."
3. Revised Environmental Hazards section.
4. Revised Storage and Disposal section.
5. Alphabetized Approved Uses section by crop.
6. Added Terms and Conditions of Use section.
7. Referral statements to Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies were revised per EPA correspondence from Joanne I. Miller dated August 31, 2000 and Dow AgroSciences response to Donald R. Stubbs dated November 20, 2000.
8. Minor revisions throughout for clarity.

Proposed changes by amendment in response to Chlorpyrifos IRED dated February 11, 2003:

1. Revised Personal Protective Equipment section.
2. Added Engineering Controls section.
3. Revised User Safety Recommendations.
4. Revised Environmental Hazards section.
5. Revised Agricultural Use Requirements section.
6. General Information: Added General Use Precautions and Restrictions, Spray Drift Management, Aerial Drift Reduction Advisory, and Application Guidelines sections.
7. Mixing Directions: Revised section.

Approved Crops (Listed in Alphabetical Order)

8. **Apples:** Moved section to Tree Fruits and Tree Nuts (Dormant/Delayed Dormant Sprays).
9. **Brassica (Cole) Crops:** Moved section to end under Vegetables.

10. **Christmas Trees (Nurseries and Plantations):** (1) Added REI statement in box directly under heading; (2) reformatted use directions, moving pest-specific comments below table; and, (3) moved precautions below table.
11. **Citrus Fruits:** (1) Restructured and condensed table to include only pest and rate; (2) eliminated specific directions for Florida, California, and Texas unless rate or pest was unique to geography; (3) reformatted use directions, moving pest-specific comments below table; (4) moved precautions below table; (5) removed tank mixture comment concerning ethion, dicofol, Agri-Mek or Vendex; (6) added minimum retreatment interval; (7) added REI statement in box directly under heading; and, (8) added maximum use rate for certain California counties.
12. **Sour Cherry:** Moved section to Tree Fruits and Tree Nuts (Foliar Sprays).
13. **Tree Fruits and Tree Nuts (Dormant/Delayed Dormant Sprays):** Contains use directions for apple and almond.
14. **Tree Fruits and Tree Nuts (Foliar Sprays):** Contains use directions for almond, filbert, sour cherry, pecan, and walnut.
15. **Orchard Floors (Ant Control in Pecan):** Contains use directions for pecan.
16. **Vegetables:** Contains use directions for *Brassica* (cole) crops.

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(Base label):

(Logo) Dow AgroSciences

Lorsban* 50W

in Water Soluble Packets

For control of various insects on certain fruit, nut and vegetable crops

Active Ingredient:

chlorpyrifos: O,O-diethyl O-(3,5,6-trichloro-
2 pyridinyl) phosphorothioate. 50%
Inert Ingredients. 50%
Total 100%

Keep Out of Reach of Children

DANGER PELIGRO

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

Precautionary Statements

Hazards to Humans and Domestic Animals

Corrosive • Causes Irreversible Eye Damage • May Be Fatal If Swallowed

Do not get in eyes or on clothing. Wear protective eyewear (goggles or face shield). Work to windward to stay out of spray drift or mist. Keep away from food, feedstuffs, and water supplies.

Personal Protective Equipment (PPE)

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

Mixers and loaders must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves
- Shoes plus socks
- Chemical-resistant apron

Applicators using aerial application equipment must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

See Engineering Controls for additional requirements.

All other handlers must wear:

- Coveralls over long-sleeved shirt and long pants
- Chemical-resistant gloves
- Chemical-resistant apron when mixing or loading
- Chemical-resistant footwear plus socks
- Chemical-resistant headgear for overhead exposure

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

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

Engineering Controls

Water soluble packets, when used correctly, qualify as a closed mixing/loading system under the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4)]. Mixers and loaders using water soluble packets must wear the PPE required above for mixer/loaders, and have immediately available for use in emergency (such as a broken package, spill or equipment breakdown) additional PPE. These PPE include coveralls and chemical-resistant footwear and 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.

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

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

When applicators use closed cab motorized ground equipment in a manner that meets the requirements listed in the WPS for agricultural pesticides [40 CFR 170.240(e)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations

Users should:

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

First Aid

Organophosphate

If 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 swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. 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.

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

Note to physician: Probable mucosal damage may contraindicate the use of gastric lavage.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

Environmental Hazards

This pesticide is toxic to fish, aquatic invertebrates, small mammals and birds. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in water adjacent to treated sites. Do not contaminate water when cleaning equipment or disposing of equipment washwaters. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area. Refer to the Endangered Species Restrictions section of this label for any geographic restrictions.

Endangered Species Restrictions

The use of Lorsban 50W may pose a hazard to certain federally endangered fish species. This product cannot be used on sour cherry trees in the following counties:

Colorado: Delta, Larimer and Mesa

Ohio: Washington

Utah: Emery, Grand, Utah and Washington

Wisconsin: Iowa, Pierce, Richland and Vernon

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to label booklet under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

Refer to label booklet for Directions for Use including Storage and Disposal.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at www.dowagro.com.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

EPA Reg. No. 62719-221

EPA Est. _____

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Dow AgroSciences LLC • Indianapolis, IN 46268 U.S.A.

Insecticide

Net Contents _____

[Note to Label Editor: Minimum package size is 25 lbs per EPA Memorandum of Agreement Dated June 7, 2000.]

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(Datapack cover):

(Logo) Dow AgroSciences

Lorsban* 50W in Water Soluble Packets

For control of various insects on certain fruit, nut and vegetable crops**Active Ingredient:**chlorpyrifos: O,O-diethyl O-(3,5,6-trichloro-
2 pyridinyl) phosphorothioate. 50%

Inert Ingredients. 50%

Total 100%

Keep Out of Reach of Children**DANGER PELIGRO**

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

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Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to label booklet under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

Refer to label booklet for additional precautionary information including Personal Protective Equipment (PPE), User Safety Recommendations and Directions for Use including Storage and Disposal.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies at end of label booklet. If terms are unacceptable, return at once unopened.**

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[Note to Label Editor: Minimum package size is 25 lbs per EPA Memorandum of Agreement Dated June 7, 2000.]

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(Page 1 through end):

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Limitation of Remedies	-

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Precautionary Statements

Hazards to Humans and Domestic Animals**DANGER**

Corrosive • Causes Irreversible Eye Damage • May Be Fatal If Swallowed

Do not get in eyes or on clothing. Wear protective eyewear (goggles or face shield). Work to windward to stay out of spray drift or mist. Keep away from food, feedstuffs, and water supplies.

Personal Protective Equipment (PPE)

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

Mixers and loaders must wear:

- Long-sleeved shirt and long pants
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- Shoes plus socks
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Applicators using aerial application equipment must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks

See Engineering Controls for additional requirements.

All other handlers must wear:

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

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

Engineering Controls

Water soluble packets, when used correctly, qualify as a closed mixing/loading system under the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4)]. Mixers and loaders using water soluble packets must wear the PPE required above for mixer/loaders, and have immediately available for use in emergency (such as a broken package, spill or equipment breakdown) additional PPE. These PPE include coveralls and chemical-resistant footwear and 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.

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Organophosphate

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

Note to physician: Probable mucosal damage may contraindicate the use of gastric lavage.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

Environmental Hazards

This pesticide is toxic to fish, aquatic invertebrates, small mammals and birds. Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in water adjacent to treated sites. Do not contaminate water when cleaning equipment or disposing of equipment washwaters. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area. Refer to the Endangered Species Restrictions section of this label for any geographic restrictions.

Endangered Species Restrictions

The use of Lorsban 50W may pose a hazard to certain federally endangered fish species. This product cannot be used on sour cherry trees in the following counties:

Colorado: Delta, Larimer and Mesa

Ohio: Washington

Utah: Emery, Grand, Utah and Washington

Wisconsin: Iowa, Pierce, Richland and Vernon

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read all Directions for Use carefully before applying.

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.

Agricultural Use Requirements

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

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI). The REI for each crop is listed in the directions for use associated with each crop.

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

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

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

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

Storage and Disposal

Do not contaminate water, food or feed by storage and disposal. Open dumping is prohibited.

Pesticide Storage: Store in original container in secured dry storage area. Packets may become brittle when stored below 32°F. Handle carefully to avoid breakage. Prevent cross-contamination with other pesticides and fertilizers. Do not store above 100°F for extended periods of time. If container is damaged or spill occurs, use product immediately or dispose of product and damaged container as indicated below.

Pesticide Disposal: Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Container Disposal: When all packets are used dispose of empty package in a sanitary landfill or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

General Information

Lorsban* 50W insecticide in water soluble packets is designed for use as a cover or foliar spray to control various pests. The pests controlled are listed in the accompanying table. Generally, Lorsban 50W is compatible with insecticides, miticides, and fungicides commonly recommended for agricultural crops except for alkaline materials such as Bordeaux mixture and lime. Prepare a small amount of the spray mixture and check for compatibility before mixing a large volume of spray.

General Use Precautions and Restrictions

- Insect control may be reduced at low spray volumes under high temperature and wind conditions.
- Some reduction in insect control may occur under unusually cool conditions.

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- **Flood Irrigation:** To avoid contamination of irrigation tail waters, do not flood irrigate within 24 hours following application of Lorsban 50W.
- **Chemigation:** Do not apply this product through any type of irrigation system.

Handling Precautions for Water Soluble Packets: Do not remove water soluble packet from the overpack except for immediate use. Do not allow packets to come into contact with water prior to use. Do not handle water soluble packets with wet hands or wet gloves. Do not open water soluble packets. Partial use of packets is not allowed. Carefully reseal package containing unopened water soluble packets and protect package from moisture.

Spray Drift Management

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

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather-related factors determine the potential for spray drift. The applicator is responsible for considering all of these factors when making decision to apply this product.

Observe the following precautions when spraying Lorsban 50W adjacent to permanent bodies of water such as rivers, natural ponds, lakes, streams, reservoirs, marshes, estuaries, and commercial fish ponds.

The following treatment setbacks or no-spray buffer zones must be utilized for all applications from the above listed aquatic areas with the following application equipment:

Application Method	Required Setback (Buffer Zone)
Ground Boom	25 feet
Orchard Airblast	50 feet
Aerial (fixed wing or helicopter)	150 feet

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

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

Aerial Application

1. The distance of the outermost nozzles on the boom should not exceed 3/4 of the length of the wing span or rotor.
2. Nozzles must always point backward, parallel with the air stream, and never be pointed downward more than 45 degrees.
3. Nozzles must produce a medium or coarser droplet size (255-340 microns volume median diameter) per ASE Standard 572 under application conditions. Airspeed, pressure, and nozzle angle can all effect droplet size. See manufacturer's catalog or USDA/NAAA Applicator's Guide for spray size quality ratings.
4. Applications must not be made at a height greater than 10 feet above the top of the target plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.
5. Do not apply product when wind speed exceeds 10 mph.

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

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

Aerial Drift Reduction Advisory

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

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

Controlling Droplet Size:

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

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

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

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

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

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

Temperature Inversions: Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a

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concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

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

Ground Boom Application

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

1. Choose only nozzles and pressures that produce a medium or coarse droplet size (255-400 microns volume median diameter) per ASE Standard 572. See manufacturer's catalog or USDA/NAAA Applicator's Guide for spray size quality ratings.
2. Make applications with nozzle tips no more than 2 feet above the ground or crop canopy. Making applications at the lowest height reduces exposure of droplets to evaporation and wind.
3. Do not apply product when wind speed exceeds 10 mph.

Orchard Airblast Application

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

1. Nozzles must be directed so spray is not projected above the canopies.
2. Do not apply product when wind speed exceeds 10 mph for aerial and ground applications.
3. Outward pointing nozzles must be shut off when turning corners at row ends.

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

1. Number of nozzles, nozzle orientation and spray volume, air speed and wind direction are key factors in adjusting airblast spray delivery to match the height and density of the crop canopy. Airblast equipment should be adjusted to provide uniform coverage while minimizing the amount of spray movement over-the-top or completely through the crop canopy.
 - High air volumes deliver spray more efficiently than air at high speed. Reducing forward travel speed decreases the air speed necessary to deliver the spray to the top of the crop canopy.
 - Use air guides along with the number and orientation of spray nozzles to achieve the desired spray coverage and directional control.
2. The following steps should be taken to minimize drift and the amount of non-target spray.
 - Orient nozzles and adjust air speed/volume/direction to minimize spray movement over-the-top and avoid forcing the spray completely through the crop canopy.
 - Shut off spray delivery when passing gaps in crop canopy within rows.
 - Spray the outside rows of orchards from outside in, directing the spray into the orchard and shutting off nozzles on the side of the sprayer away from the orchard.
 - When treating smaller trees, vines or bushes, shut off top nozzles to minimize over-the-top spray movement.

Application Guidelines

Broadcast Follar Application

Apply with conventional power-operated spray equipment using nozzles and spray pressures recommended for insecticides. Apply Lorsban 50W in a spray volume of not less than 2 gallons per acre (gpa) for aerial application equipment (fixed wing or helicopter) or not less than 10 gpa for ground equipment, unless otherwise specified. Increase spray volume to ensure adequate coverage with increased density and height of crop canopy. See Spray Drift Precautions section for recommendations on droplet size.

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

Broadcast Soil Application

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

Aerial Application

Use a minimum spray volume of 2 gpa and follow recommendations for **best management practices** for aerial application, above.

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

Mixing Directions

Mixing – Lorsban 50W Alone

Lorsban 50W mixes readily with water to form a suspension. Do not apply Lorsban 50W (in water soluble packets) with liquid fertilizer or oil as a carrier. Thorough mixing is required. To prepare the spray mixture:

1. Fill the tank with 1/3 full of the total amount of water required for the load.
2. Start agitation. **Maintain agitation throughout mixing and application.**
3. Add the required number of water soluble packets (product in transparent film) directly into the spray tank. Water soluble packets will float on the surface until the water soluble film dissolves and releases the product. Handling packets with hands should be minimized. **Important: Do not open water soluble packets.**
4. Continue agitation and complete filling the tank.
5. Before spraying, make sure packets have completely disintegrated and product is thoroughly and uniformly mixed. Depending on the water temperature and the degree of agitation, the packet and product should be completely dispersed within 10 minutes from the time they were added to the water.

To ensure a uniform spray mixture, continuous agitation is required during mixing and spraying. Apply the same day as mixing, especially at high concentrations (low carrier rates). If product is allowed to settle, thoroughly agitate to resuspend the mixture before spraying.

Lorsban 50W in Tank Mix

Vigorous, continuous agitation during mixing, filling and throughout application is required for all tank mixes. Sparger pipe agitators generally provide the most effective agitation in spray tanks. To prevent foaming in the spray tank, avoid stirring or splashing air into the spray mixture.

Apply within the same day of mixing. If spraying and agitation must be stopped before the spray tank is empty, the materials may settle to the bottom. If product is allowed to settle, thoroughly agitate to resuspend the mixture before spraying, especially if held overnight. Settled materials may be more difficult to resuspend than when originally mixed.

In liquid sprays, this product is **not compatible with mixtures containing boron**. Spray equipment used to apply any spray mixture containing boron should be thoroughly cleaned before applying this product.

Note: When tank mixing Lorsban 50W with other products, a compatibility (jar) test using relative proportions of tank mix ingredients should be conducted prior to mixing ingredients in the spray tank. When tank mixing, always mix Lorsban 50W first, allowing time for complete dispersion and uniform mixing, before adding other products.

Tank Mixing Precautions:

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- Read carefully and follow all applicable use directions, precautions, and limitations on the respective product labels.
- Do not exceed recommended application rates. Do not tank mix with another pesticide product that contains the same active ingredient as this product unless the label of either tank mix partner specifies the maximum dosages that may be used.

Crop Uses

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 unless PPE required for early entry is worn.

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

Target Pests		Lorsban 50W
adelgids (cooley) (eastern spruce gall)	pales weevil (adult) pine needle midge pine spittlebug	2 lb/acre
ants	plant bugs	
aphids	scale (2)	
Douglas fir needle midge	(black pine)	
European pine sawfly	(pine needle)	
European pine shoot moth	(pine tortoise)	
grasshoppers	(spruce bud)	
gypsy moth	(striped pine)	
mites (1) (European red spider)	spittlebugs spruce budworm	
(two spotted spider)	spruce needleminer	
pales weevil (3)		6 lb/100 gal

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

Pest-Specific Use Directions:

1. **Spider mites:** When large numbers of eggs are present at the time of the first application, a second application after 7 to 10 days may be required to control newly hatched nymphs and maintain effective control. **Not for control of mites in Washington and Oregon.**
2. For **scale control**, apply when scale crawlers are active.
3. Apply as a cut stump drench. Do not exceed 2 lb of Lorsban 50W (1 lb ai chlorpyrifos) per acre per application.

Specific Use Precautions:

Phytotoxicity: Do not apply under conditions of extreme heat or drought stress. Environmental factors and varietal differences significantly influence potential phytotoxic expression. **Testing has shown that Lorsban 50W may be used at recommended rates on the following conifer species without serious phytotoxicity: balsam fir, concolor fir, Douglas fir, eastern white pine, Fraser fir, grand fir, noble fir, Scotch pine, white spruce.** Before treating large numbers of other conifer species, it is recommended that a small block of plants be treated and observed 7 to 10 days for symptoms of phytotoxicity. **Note:** The user assumes responsibility for determining if it is safe to treat other conifer species with Lorsban 50W under commercial growing conditions.

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Specific Use Restrictions:

- Do not make more than 3 applications of Lorsban 50W or other product containing chlorpyrifos per season.
- Do not make a second application of Lorsban 50W or other product containing chlorpyrifos within 7 days of the first application.
- Do not allow livestock to graze in treated areas.

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 Lorsban 50W to control the pests listed in the following table at the rates indicated. Treat when pests become a problem or in accordance with the local spray schedule as recommended by your state agricultural experiment station, certified pest control advisor, or extension service specialist.

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

Target Pests	Lorsban 50W (lb/acre)
aphids (including brown citrus aphid) grasshoppers (1) katydids Lepidopterous larvae, such as: avocado leafroller cutworms fruittree leafroller orange dogs orange tortrix western tussock, moth mealybugs (except California and Arizona)	scale insects, including, but not limited to: black scale brown soft scale California red scale (except California and Arizona) chaff scale Florida red scale long scale purple scale snow scale thrips (except California and Arizona)
citrus rust mites (2) (Florida only)	2 - 7
mealybugs (California and Arizona only)	4 - 7
thrips (suppression) (California and Arizona only)	6 - 12
California red scale (California and Arizona only)	8 - 12

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

Pest-Specific Use Directions:

1. **Lubber grasshoppers:** Effective control requires direct contact with spray when grasshoppers are small (less than 1 inch in length).
2. For control of **citrus rust mites**, use a spray concentration of at least 1 lb per 100 gallons.

Specific Use Precautions:

- Observe local recommendations for tank mix combinations especially with regard to use of Lorsban 50W with spray oil. Consult with a county farm advisor, county agency, extension service personnel, agricultural commissioner, pest control advisor, or local Dow AgroSciences representative for local recommendations.
- Do not apply when trees are under stress from drought or high temperatures.

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- Lorsban 50W 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 1 hour after sunset until 2 hours before sunrise.
- **Additional Precautions for California and Arizona:** Lorsban 50W 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.

Specific Use Restrictions:

- **Preharvest Interval:** Do not treat within 21 days of harvest for applications of up to 7 lb per acre of Lorsban 50W or within 35 days of application rates above 7 lb per acre.
- The use of a single application rate of 12 lb of Lorsban 50W (6 lb ai chlorpyrifos) per acre is allowed only in the following counties in California: Fresno, Tulare, Kern, Kings, and Madera.
- Do not make more than 2 applications or apply more than 15 lb of Lorsban 50W (7.5 lb ai chlorpyrifos) per acre per year (does not include citrus orchard floors).
- Do not make a second foliar application of Lorsban 50W or other product containing chlorpyrifos within 30 days after the first application.
- Do not allow meat or dairy animals to graze in treated areas.
- **Minimum Re-treatment Interval:** Do not reapply Lorsban 50W or other product containing chlorpyrifos within 30 days.

Tree Fruits and Tree Nuts (Dormant/Delayed Dormant Sprays)

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

Apple

Apply as a dormant or delayed dormant spray or foliar spray through petal fall. Additional wetting agents, spreaders, or stickers are not necessary and should only be used if previous experience with the combination indicates that undesirable fruit finish effects will not occur under current conditions of use.

Post-bloom application to apples is prohibited.

Target Pests	Lorsban 50W (lb/acre)
climbing cutworms	3
dogwood borer (trunk spray)	(3 1-lb packets)
obliquebanded leafroller	
pandemis leafroller	
rosy apple aphid	
San Jose scale	

Specific Use Precautions:

- Cold or dry conditions may cause Lorsban 50W plus oil sprays to infuse into trees, resulting in bud damage or bud drop. Do not apply until winter rains or irrigation has replenished soil moisture such that bark and twigs are not dessicated.
- To avoid contamination of irrigation tail waters, do not flood irrigate within 24 hours of application of Lorsban 50W.

Specific Use Restrictions:

- Do not use more than 24 lb of Lorsban 50W (12 lb ai chlorpyrifos) per acre as a dormant/delayed dormant application.
- Make no more than 8 applications per season.
- Post-bloom application to apples is prohibited.

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- Make only 1 chlorpyrifos application during the dormant season.
- **Minimum Re-treatment Interval:** Do not reapply Lorsban 50W or other product containing chlorpyrifos within 10 days.
- Do not allow meat or dairy animals to graze in treated orchards.

Almond

Complete coverage of the entire bark area is essential. If scale infestations are severe, dilute sprays should be used to ensure complete coverage.

Lorsban 50W will perform best in an almond pest control program that includes winter sanitation (removal of mummy nuts) and regular monitoring of target pests.

Consult your state agricultural experiment station, certified pest control advisor, or extension service specialist for specific use information in your area.

Target Pests	Lorsban 50W (lb/acre)
navel orangeworm peach twig borer San Jose scale	4 (4 1-lb packets)

Specific Use Precautions:

- Cold or dry conditions may cause Lorsban 50W plus oil sprays to infuse into trees, resulting in bud damage or bud drop. Do not apply until winter rains or irrigation has replenished soil moisture such that bark and twigs are not dessicated.
- To avoid contamination of irrigation tail waters, do not flood irrigate within 24 hours of application of Lorsban 50W.

Specific Use Restrictions:

- Do not apply more than 4 lb of Lorsban 50W (2 lb ai chlorpyrifos) per year.
- Maximum single application rate is 4 lb of Lorsban 50W (2 lb ai chlorpyrifos).
- Make only 1 chlorpyrifos application per season.
- **Minimum Re-treatment Interval:** Do not reapply Lorsban 50W or other product containing chlorpyrifos within 10 days.
- Do not allow meat or dairy animals to graze in treated orchards.

Tree Fruits and Tree Nuts (Foliar Sprays)

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

Apply Lorsban 50W as a foliar spray at the dosages indicated to control pests listed in the following table. Mix the required dosage in sufficient water to ensure thorough and complete coverage of the foliage and crop and apply as a concentrate or dilute spray using conventional, power-operated spray equipment. For dilute sprays applied to tree nut crops, mix the required dosage in sufficient water to allow for spray to runoff. For concentrate sprays, apply an equivalent amount of Lorsban 50W per acre. Treat when pests appear or in accordance with local conditions. Aerial application may result in less effective insect control because of reduced coverage. Consult your State agricultural experiment station, certified Pest control advisor, or Extension service specialist for specific use information in your area.

Crop	Target Pests	Lorsban 50W
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almond	navel orangeworm peach twig borer San Jose scale	4 lb/acre (4 1-lb packets)
cherry (sour)	<div> <div>borers, including: (American plum) (lesser peachtree) (Pacific flatheaded) (peach twig) (peachtree) (shot hole) climbing cutworm eyespot bud moth green fruitworm</div> <div>leafrollers, including: (fruittree) (obliquebanded) (pandemis) (redbanded) lesser appleworm mineola moth scales, including: (European fruit lecanium) (San Jose) stink bug</div> </div>	2 – 3 lb/acre (2 – 3 1-lb packets)
	black cherry aphid cherry fruit fly	2 lb/acre (3 1-lb packets)
filbert	<div>eye-spotted bud moth filbert aphid filbert leafroller filbertworm</div> <div>obliquebanded leafroller omnivorous leaf tier winter moth</div>	3 – 4 lb/acre (3 – 4 1-lb packets)
pecan	black pecan aphid hickory shuckworm pecan leaf scorch mite (1) (suppression)	2 lb/100 gal (2 1-lb packets)
	fall webworm pecan nut casebearer <i>Phylloxera</i> spp. (2) spittlebug	1 lb/100 gal (1 1-lb packet)
walnut	codling moth walnut husk fly walnut scale	4 lb/acre (4 1-lb packets)

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

Pest-Specific Use Directions:

1. For suppression of **pecan leaf scorch mite**, use a preventative program.
2. For best *Phylloxera* control, make 2 applications at 7 to 10 day interval starting at bud swell and ending by early leaf expansion.

Specific Use Precautions:

- Lorsban 50W is highly toxic to bees exposed to direct treatment and should not be applied when bees are actively foraging in the treated area.
- To avoid contamination of irrigation tail waters, do not flood irrigate within 24 hours of application of Lorsban 75WG.

Specific Use Restrictions:

Crop	Preharvest Interval (Days)	Total Number of Sprays	Maximum Single Application Rate (lb ai/acre)	Total Amount Chlorpyrifos per Season (lb ai/acre)	Total Amount Lorsban 50W per Season (lb/acre)
Almond	14	3	2	6	12
Filbert	14	2	2	4	8
Pecan	28	3	1	6	12
Sour cherry	14	8	1.5	12	24
Walnut	14	2	2	4	8

- Do not make a second application of Lorsban 75WG or other product containing chlorpyrifos within 10 days of the first application.
- Do not allow meat or dairy animals to graze in treated orchards.
- Do not use as a foliar spray on sweet cherries.

Orchard Floors (Ant Control in Pecan)

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

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

Target Pests	Lorsban 50W (lb/acre)
imported fire ant	2
other ant species	(2 1-lb packets)

Eliminate weed growth that would prevent uniform coverage of the orchard floor by mowing or herbicide treatment. Foliar applications of Lorsban 50W may be made in addition to the orchard floor treatment.

Specific Use Precautions:

- To avoid contamination of irrigation tail waters, do not flood irrigate within 24 hours of application of Lorsban 50W.

Specific Use Restrictions:

- **Preharvest Interval:** Do not apply the last treatment within 28 days of harvest.
- Do not apply more than 12 lb of Lorsban 50W (6 lb ai chlorpyrifos) per acre per season to pecan orchard floors.
- Maximum single application rate is 2 lb of Lorsban 50W (1 lb ai chlorpyrifos) per acre.
- Do not make more than 5 applications of Lorsban 50W or other products containing chlorpyrifos per season to the orchard floor.
- Do not make a second application of Lorsban 50W or other product containing chlorpyrifos within 10 days of the first application.
- Do not allow livestock to graze in treated orchards.

Vegetables

Including, but not limited to: Broccoli, Brussels Sprout, Cabbage, Cauliflower, Collards, Kale, and Kohlrabi

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

Foliar Application

Apply with conventional power-operated spray equipment in 20 to 150 gpa of water. For aerial applications, apply in a minimum of 5 gpa of water. Control may be reduced at low spray volumes. Consult your state agricultural experiment station, extension service specialist, or integrated pest control advisor for proper time to treat in your area.

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Crop	Target Pests	Lorsban 50W (lb/acre)
Brassica (cole) broccoli Brussels sprout cabbage cauliflower collards kale kohlraabi	armyworms (including beet armyworm) cabbage aphid cutworms diamondback moth (1) imported cabbage worm striped flea beetle (adult)	2 (2 1-lb packets)

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

Pest-Specific Use Directions:

1. Significant organophosphate insecticide resistance has been reported for **diamondback moth** populations in Texas. Lorsban 50W will not control organophosphate-resistant populations of diamondback moth. Consult your local extension service for resistance management information.

Specific Use Precautions:

- To avoid phytotoxicity in *Brassica* crops, do not treat plants that are under stress from extreme heat and/or lack of moisture.
- Tank mixing is recommended only if previous experience indicates that the combination will not result in phytotoxicity under the current conditions of use and the other pesticides and spray adjuvants are registered for this use. Read and carefully follow all applicable directions, restrictions, and precautions on labeling for other products used in combination with Lorsban 50W. For regional information regarding a specific tank mix, contact your local Dow AgroSciences representative. Tank mixes with Thiodan 3EC, Thiodan 50WP, or cottonseed oil are not recommended. Refer to the General Information section of this label for directions on testing tank mix compatibility.

Specific Use Restrictions:

- **Preharvest Interval:** Do not apply within 21 days before harvest.
- Do not make more than 3 applications of products containing chlorpyrifos per crop.
- **Maximum single application rate** is 2 lb of Lorsban 50W (1 lb ai chlorpyrifos) per acre.
- **Minimum Re-treatment Interval:** Do not make a second application of Lorsban 50W or other product containing chlorpyrifos within 10 days of the first application.
- Do not apply more than 12 lb of Lorsban 50W (6 lb ai chlorpyrifos) per acre per year.

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