

87290-32

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U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Registration Division (7505P)
Ariel Rios Building
1200 Pennsylvania Ave., NW
Washington, D.C. 20460

NOTICE OF PESTICIDE:

☒ Registration
☐ Reregistration

(under FIFRA, as amended)

EPA Registration
Number:

87290-32

Date of Issuance:

FEB 7 2012

Term of Issuance: **Unconditional**

Name of Pesticide Product:

Willowood Propanil 4EC

Name and Address of Registrant (include ZIP Code):

Willowood, LLC

1600 NW Garden Valley Blvd., Ste. 120

Roseburg, OR 97471

c/o Wagner Regulatory Associates, Inc.

P.O. Box 640

Hockessin, DE 19707

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act. Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is registered in accordance with FIFRA provided that you:

1. Submit and/or cite all data required for registration review/reregistration of your product when the Agency requires all registrants of similar products to submit data.
2. Submit one-year Storage Stability (Guideline 830.6317) and Corrosion Characteristics (Guideline 830.6320) studies within eighteen (18) months from the date of this notice.

The Basic and Alternate Confidential Statement of Formula (CSF) dated January 6, 2012 are acceptable.

A stamped copy of the label is enclosed for your records. Submit one (1) copy of the revised final printed label before you release the product for shipment. If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA §6(e). Your release for shipment of the product constitutes acceptance of these conditions.

If you have any questions regarding this Notice, please contact Mindy Ondish at (703)605-0723 or at ondish.mindy@epa.gov.

Signature of Approving Official:

Kable Bo Davis
Product Manager 25
Herbicide Branch
Registration Division (7505P)

Date:

FEB 7 2012

Willowood Propanil 4EC

For postemergence weed control in rice

Active Ingredient

propanil: 3',4'-dichloropropionanilide 44.4%

Other Ingredients 55.6%**Total** 100.0%

Contains 4 lb active ingredient per gallon.

This product contains the toxic inert ingredient Isophorone.

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

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

FIRST AID

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

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

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center, doctor, or going for treatment. For emergency information concerning this product, call the National Pesticides Information Center (NPIC) at 1-800-858-7378 seven days a week, 6:30 am to 4:30 pm Pacific Time (NPIC Web site: www.npic.orst.edu)

EPA Reg. No. 87290-32**EPA Est. No.****Net Contents:**

Manufactured for:

Willowood, LLC

1600 NW Garden Valley Blvd., Suite 120

Roseburg, OR 97471

ACCEPTED

FEB 7 2012

Under the Federal Insecticide,
Fungicide, and Rodenticide Act
as amended, for the pesticide
registered under
EPA Reg. No. 87290-32

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.

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

Precautionary Statements

Hazards to Humans and Domestic Animals

WARNING. Causes substantial but temporary eye injury. Causes skin irritation. Harmful if swallowed. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals. Do not get in eyes, on skin or clothing.

[Editor's Note: The language in this PPE section will be included on the label if the product is packaged with a built in probe.]

Personal Protective Equipment (PPE)

Some materials that are chemical-resistant to this product are barrier laminate and butyl rubber ≥ 14 mils. If you want more options, follow the instructions for Category B on an EPA chemical resistance category selection chart.

Mixers, loaders, applicators and other handlers must wear the following:

- Coveralls over short-sleeved shirt and short pants
- Chemical-resistant gloves
- Chemical-resistant footwear plus socks
- Protective eyewear (goggles or face shield)
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when mixing/loading, cleaning up spills or equipment, or otherwise exposed to the concentrate.

See Engineering Controls for additional requirements.

Discard clothing or 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.

[Editor's Note: The language in this PPE section will be included on the label if the product is not packaged with a built-in probe.]

Personal Protective Equipment (PPE)

Some materials that are chemical-resistant to this product are barrier laminate and butyl rubber ≥ 14 mils. If you want more options, follow the instructions for Category B on an EPA chemical resistance category selection chart.

Mixers, loaders, ground applicators, and handlers cleaning up spills or equipment, or otherwise exposed to the concentrate and handlers removing an unrinsed probe must wear the following:

- Coveralls over long-sleeved shirt and long pants,
- Chemical-resistant gloves,
- Chemical-resistant footwear plus socks,
- Protective eyewear,
- Chemical-resistant apron when mixing and loading, cleaning up spills or equipment, or otherwise exposed to the concentrate, and
- Chemical-resistant headgear for overhead exposure

Pilots and handlers removing triple-rinsed probe must wear:

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

See Engineering Controls for additional requirements.

Discard clothing or 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.

[Editor's Note: The language in this Engineering Controls section will be included on the label if the product is packaged with a built-in probe.]

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Engineering Controls

Mixers and loaders must use a closed system that meets the requirements listed in the Worker Protection Standards (WPS) for agricultural pesticides [40 CFR 170.240(d)(4)] for dermal protection and must:

- Wear the personal protective equipment required in the PPE section of this label for mixers and loaders.

Human flagging is prohibited. Flagging to support aerial application is limited to use of the Global Positioning System (GPS) or mechanical flaggers. Pilots must use an enclosed cockpit that meets the requirements listed in WPS for agricultural pesticides [40 CFR 170.240(d)(6)].

[Editor's Note: The language in this Engineering Controls section will be included on the label if the product is not packaged with a built-in probe.]

Engineering Controls

Mixers and loaders must either: (1) use a closed system that meets the requirements listed in the Worker Protection Standard (WPS) for dermal protection of agricultural pesticides [40 CFR 170.240(d)(4)] or (2) use the probe system described below.

Probe System

Specific requirements for use of the probe closed mixing/loading system:

- Remove plug from bung of drum containing this product only when drum is sitting on the ground or on a secure level platform with the bung end of the drum pointed up.
- Do not pour this product from its drum.
- Transfer product from the drum to the mixing tank by use of a suction hose connected at one end to the suction pump on the mixing tank and connected at the other end to a probe (dip tube) that is inserted through the bung opening into the drum.
- Do not handle the probe or bung in a manner that allows dripping or splattering of the product onto yourself or any other person.
- Do not touch the portion of the probe that has been in contact with this product until after the probe has been triple rinsed with water.
- If all of the product is removed from the drum, then triple rinse the probe while it remains inside the drum.

Unrinsed Probes

- If an unrinsed probe must be removed from the drum, then use an anti-drip flange and immediately transfer the probe into a container of rinse water. The anti-drip flange must be designed to remove excess propanil product from the probe as it is extracted from the drum.
- Take the following steps if the probe must be disconnected from the suction hose before both the probe and the hose have been triple rinsed:
 - Equip the probe end of the hose with a shut off valve.
 - Install a dry break coupling between the valve and the probe.
 - Close the shut off valve before disconnecting the probe.

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All Transfer Systems

In addition, mixers and loaders using all systems must:

- Wear the personal protective equipment required in the PPE section of this labeling for mixers and loaders.

All systems must be capable of removing the pesticide from the shipping container and transferring it into mixing tanks and/or application equipment. At any disconnect point, the system must be equipped with a dry disconnect or dry couple shut off device that is warranted by the manufacturer to minimize drippage.

Human flagging is prohibited. Flagging to support aerial application is limited to use of the Global Positioning System (GPS) or mechanical flaggers. Pilots must use an enclosed cockpit that meets the requirements listed in WPS for agricultural pesticides [40 CFR 170.240(d)(6)].

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.

Environmental Hazards

This pesticide is toxic to fish and aquatic invertebrates.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical prior to flooding may result in some shallow groundwater contamination due to cracks in the subsoil of the rice paddy.

This product may contaminate water through runoff following rainfall events and by seepage through levees. Runoff of this product will be reduced by avoiding application when rainfall is forecasted to occur within 48 hours. Levees should be constructed with adequate time prior to chemical application so that they are compacted to reduce seepage and to hold a 3- to 6-inch flood.

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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) of 24 hours.

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:

- Coveralls
- Chemical-resistant gloves made out of any waterproof material
- Chemical-resistant footwear plus socks
- Protective eyewear

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Storage and Disposal

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

Pesticide Storage: Ground all metal containers when transferring product. Protect from freezing. If stored below 32°F and crystals form, warm to 72°F for 24 hours, periodically shaking or rolling container to reconstitute.

Pesticide Disposal: 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 region office for guidance.

Container Handling: [Equal to or Less Than 5 Gallons]

Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or mix tank. Drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or mix tank or store rinsate for later use and disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Container Handling: [Greater than 5 gallons] Nonrefillable container. Do not reuse or refill this container. Clean container promptly after emptying. Triple rinse [or pressure rinse] as follows: Triple rinse: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container back on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use and disposal. Repeat this procedure two more times. Then offer for recycling or reconditioning if available, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. Do not cut or weld metal containers.

Pressure rinse: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after flow begins to drip. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by other procedures allowed by state and local authorities.

Steps to be Taken if Material is Released or Spilled: Eliminate ignition sources. Ventilate area. Avoid breathing vapors. Use MSHA/NIOSH self-contained breathing

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apparatus or air mask for large spills in confined areas. Dike the spill with inert material (sand, earth, fuller's earth, etc.) and if appropriate transfer the liquid and solid diking material to separate containers for recovery or disposal. Remove contaminated clothing promptly and wash affected skin areas with soap and water. Wash clothing before reuse. Keep out of all sewers and open bodies of water. Refer to Precautionary Statements.

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Product Information

(For Rice Grown in Southern United States Only - Arkansas, Florida, Louisiana, Mississippi, Missouri, South Carolina, Tennessee, Texas)

Willowood Propanil 4EC for postemergence weed control in rice is formulated as an emulsifiable concentrate containing 4 lb active ingredient per gallon. Willowood Propanil 4EC is not a hormone-type herbicide, but kills susceptible weeds by direct contact action. For this reason, thorough spray coverage of emerged weeds is essential for best results. Willowood Propanil 4EC has no preemergence or residual herbicidal activity in soil. Only weeds that have emerged and are exposed at time of application will be controlled. Apply Willowood Propanil 4EC only to fields that have been drained of floodwater. Willowood Propanil 4EC is most effective if applied when susceptible grasses and broadleaf weeds are small and growing actively under favorable soil moisture and weather conditions. Early weed control removes weed competition from the rice crop, saves moisture, and generally contributes to increased yields.

Read Mixing and Equipment label instructions before application. When tank mixing, always read all individual manufacturers' labels. In interpreting all labels for the tank mixture, the most restrictive situations must apply.

Restrictions

- **Preharvest Interval:** Do not apply this product within 60 days of rice harvest.
- **Chemigation:** Do not apply this product through any type of irrigation system.
- **Do not** apply more than a maximum of 6 quarts of Willowood Propanil 4EC (6 lb active ingredient) per acre in a single application or exceed 8 quarts of Willowood Propanil 4EC (8 lb active ingredient) per acre total dosage per season.
- **Do not** apply this product to any crop other than rice. Willowood Propanil 4EC will cause injury to most crops except cereal grains and perennial grasses.
- **Do not** apply this product (directly or indirectly) to wild rice (*Zizania* spp.).
- **Do not** allow drift or accidental application from turning aircraft on beans, cotton, soybeans, corn, safflower, seedling legumes, cucurbits, vegetables, orchards, vineyards, gardens, shrubs and ornamentals. Once applied, Willowood Propanil 4EC does not release fumes hazardous to nearby crops.
- Applications to fields where catfish farming is practiced and drain water from treated fields into areas where catfish farming is practiced is prohibited **during 12 months following treatment.**
- **Do not** graze treated fields or feed treated forage within 60 days of the last application.
- **Do not** apply when weather conditions favor drift from area to be treated.
- **Do not** plant or transplant crops in the treated area for at least 60 days following an application of this product.
- **Do not** rotate treated land to other crops or transplant to crops other than rice for 60 days following treatment of this product.

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- **Do not** apply this product within 14 days before or after carbamate or organophosphate insecticide applications. Otherwise, serious injuries to rice may occur.
- Water drained from treated rice fields must not be used to irrigate other crops or released within 1/2 miles upstream of a potable water intake in flowing water (e.g., river, stream, etc.) or within 1/2 miles of a potable water intake in a standing body of water, such as a lake, pond or reservoir.

Emergency Release Provision:

Water holding (discharge) intervals for flood water from treated rice paddies following treatment in all states:

- For delayed flood (water-seeded) rice grown south of Interstate Highway 10 from the Texas/Louisiana border to Houston and east of State Highway 35 from Houston to Port Lavaca - Flood water must be held for 10 days after application unless excessive rainfall completely submerges the rice crop and forces premature release. For Texas rice grown in areas north or west of these boundaries, the water holding interval is 7 days.
- For delayed flood (water-seeded) rice in southern Louisiana south of Highway 14 - Flood water must be held for 15 days after propanil application unless excessive rainfall completely submerges the rice crop and forces premature release. For delayed flood (water-seeded) rice in Louisiana, north of the Highway 14 boundary, the water holding interval is 7 days.
- For rice in California and all other parts of the United States not mentioned above - Flood water must be held for 7 days after application unless excessive rainfall completely submerges the rice crop and forces premature release.

Spray Drift Management

Avoiding spray drift at the application site is the responsibility of the applicator and the grower. The interaction of many equipment and weather related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target drift movement from applications to rice.

Requirements for Aerial and Ground Applications

- Apply only when the wind speed is less than or equal to 10 mph at the application site.
- Apply as a medium or coarser spray (ASABE standard S-572.1).

Additional Requirements for Ground Applications

- Apply using a nozzle height of no more than 4 feet above the ground or crop canopy.

Additional Requirements for Aerial Applications

- Do not apply by air if drift can occur to sensitive nontarget crops or plants that are within 100 feet of the application site.

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- Do not release spray at a height greater than 10 feet above the ground or crop canopy. The boom length must not exceed 75% of the wingspan or 90% of the rotor blade diameter.
- Do not make any type of application into temperature inversions.
- When applications are made with a cross-wind, the swath will be displaced downwind. The applicator must compensate for this displacement at the downwind edge of the application area by adjusting the path of the aircraft upwind.

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

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

Aerial Drift Reduction Advisory

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 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** - Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. 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 90% of the rotor blade diameter 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 largest plants unless a greater height is required for aircraft safety.

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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 must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.).

Wind: Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 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 shall not occur during a local, low level 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 temperature 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 the smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

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

Weeds Controlled

Willowood Propanil 4EC provides selective postemergence control of the following weeds in rice:

Common Name	Scientific Name
annual sedge	<i>Cyperus spp.</i>
barnyardgrass*	<i>Echinochloa crus-galli</i>
beakrush (spearhead)	<i>Rhynchospora corniculata</i>
broadleaf signalgrass	<i>Brachiaria platyphylla</i>
crabgrass species	<i>Digitaria spp.</i>

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curly dock	<i>Rumex crispus</i>
foxtail species	<i>Setaria</i> spp.
goosegrass	<i>Eleusine indica</i>
gulf cockspur	<i>Echinochloa crus-galli</i>
hemp sesbania (coffeebean)	<i>Sesbania exaltata</i>
hoorahgrass	<i>Fimbristylis miliacea</i>
junglerice*	<i>Echinochloa colonum</i>
Mexicanweed	<i>Caperonia castaniifolia</i>
paragrass	<i>Panicum purpurascens</i>
redroot pigweed	<i>Amaranthus retroflexus</i>
redweed	<i>Melochia corchorifolia</i>
rice flatsedge	<i>Cyperus iria</i>
smallflower umbrella plant	<i>Cyperus difformis</i>
spikerush (wiregrass)	<i>Eleocharis</i> spp.
Texas panicum	<i>Panicum texanum</i>
watergrass*	<i>Echinochloa</i> spp.
woolly croton	<i>Croton capitatus</i>

* In isolated instances, biotypes of barnyardgrass/watergrass may develop that cannot be effectively controlled by propanil alone. Where these biotypes are known or suspected to be present, and are found in a mixed weed population in which Willowood Propanil 4EC is effective, tank mix Willowood Propanil 4EC at labeled rate with other rice herbicides that are recommended for control of barnyardgrass/watergrass (up to the 3 leaf stage).

Timing and Dosage

Early Timing and Rates

Apply Willowood Propanil 4EC when a satisfactory stand of rice has been established that will tolerate flooding. The amount of Willowood Propanil 4EC to apply depends upon the growth stage and condition of the target weeds. Willowood Propanil 4EC is most effective if applied when susceptible grasses and broadleaf weeds are small and actively growing under favorable soil moisture and weather conditions. Use a higher rate in the rate range for heavy weed infestations, weeds in advanced stages of growth, or when growing conditions are less than optimum. Emergency treatments made to weeds in advanced growth stages, such as when grass weeds are tillering, must occur at least 60 days before harvest.

For best results apply Willowood Propanil 4EC at the rate of 3 to 4 quarts (3 to 4 lb active ingredient) per acre when the grasses are actively growing in the 1 to early 4 leaf stage. This rate will also control many seedling broadleaf and aquatic weeds. Generally, this will be 15 to 25 days after planting.

Mid-Timing and Rates

Apply Willowood Propanil 4EC at the rate of 4 to 6 quarts (4 to 6 lb active ingredient) per acre to actively growing grasses in the 4 to 6 leaf and early tillering stage, or when

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they are in the 2 to 4 leaf stage but stressed under dry soil conditions. Generally, this will be 20 to 30 days after planting.

Rescue Timing and Rates

Apply Willowood Propanil 4EC at the rate of 5 to 6 quarts (5 to 6 lb active ingredient) in 12 to 15 gallons of spray per acre for emergency control of older tillering grass. Generally, this will be 30 to 40 days after planting. If the field is already flooded, the water should be lowered or drained before spraying to expose more of the grass and weeds. Emergency treatment should be considered as a salvage operation only and cannot be relied upon for total control of grass and weeds.

Application Equipment

Aircraft

Fixed wing aircraft or helicopters should have well-designed spray systems that produce a uniform pattern of medium or coarser spray droplets. Apply Willowood Propanil 4EC in no less than 10 gallons of total spray per acre with boom-nozzle sprayers. Increase volume to 12 to 15 gallons per acre for larger or denser stands of grass or during periods of low humidity.

The optimum effective spray swath width depends upon operating conditions and type of aircraft being used. For uniform spray coverage with fixed wing aircraft or helicopter, spray swath width should not exceed the width of wingspan or rotor plus 10%. Measure the swaths accurately for flagging.

Ground Sprayers

Use standard low-pressure herbicide boom sprayers equipped with flat fan nozzles. Use nozzle sizes that deliver a medium or coarser spray droplets in 15 to 20 gallons total spray per acre at 40 to 50 psi and at ground speeds not in excess of 3 to 4 mph. Adjust boom height so nozzle spray patterns meet uniformity. Avoid raising boom too high.

Flush all equipment with clear water after each day's use. Clean all equipment using the procedures below, before and after spraying other pesticides or other crops.

Sprayer Cleanup

Before using equipment exposed to this product to treat another crop, clean the sprayer and any other equipment (loading hoses, batch tanks, etc.) using the following procedure:

1. Steam-clean tank using a non-chlorine-based detergent, taking care to remove all physical residues.
2. Thoroughly rinse sprayer, tanks, boom, and hoses with clean water (free of sediment and agricultural chemicals).
3. Fill the tank one-half full with clean water and add Nutrasol at 32 oz. per 100 gallons water. Fill the tank to capacity with clean water. Flush the nozzles, boom, and hoses, and agitate (and recirculate, if possible) the sprayer for 15 minutes. Drain the equipment, taking care to flush the boom and hoses thoroughly.

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4. Rinse tanks, hoses and nozzles with clean water to remove Nutrasol.
5. Fill the tank one-half full with clean water and add 1 gallon 21 % ammonia or 7 gallons 3% ammonia per 100 gallons water. Fill the tank to capacity with clean water. Flush the nozzles, boom, and hoses and agitate (and recirculate, if possible) the sprayer for 15 minutes. Drain the equipment, taking care to flush the boom and hoses thoroughly.
6. Remove nozzles, screens, and strainers, and clean them separately.
7. Rinse tanks, booms, and hoses with clean water.
8. Repeat steps 5 and 7 an additional 3 times.
9. Rinse tanks, booms, and hoses to remove all traces of ammonia.
10. Water rinses may be applied to rice fields. Dispose of bleach rinses at an approved waste disposal facility.

NOTE: When applying multiple loads of this product several days in a row, the following procedure must be performed at the end of each day: partially fill the tank with fresh water, flush the boom and hoses, and allow to set overnight.

ATTENTION: Do not use chlorine bleach with ammonia. All traces of liquid fertilizer containing ammonia, ammonium nitrate or ammonium sulphate must be rinsed from the mixing and application equipment using water before adding chlorine bleach solution. Failure to do so will release a gas with a musty chlorine odor that can cause eye, nose, and throat and lung irritation. Do not clean equipment in an enclosed area.

Perform cleanup procedures on batch tanks and any other mixing equipment separately from aircraft hoppers. Take care to clean loading hoses and any other equipment or surfaces exposed to Willowood Propanil 4EC.

Crop Tolerance and Growing Conditions

All leading commercial varieties of rice are exceptionally tolerant to Willowood Propanil 4EC. A temporary yellowing or tip burn of rice may be noted after treatment but new growth is normal. Severe leaf burn and partial killing of rice may occur if the product is applied when rice is under stress and in a weakened growth condition due to disease or insect infestations, excessive soil salts, overwatering, or prolonged drought and extremely hot weather. Growers are cautioned not to spray under such conditions and/or when maximum daily temperatures have been or are expected to exceed 100°F.

Effect of Climatic Conditions and Cultural Practices on Weed Control

Field and Seedbed Preparation

Fields should be accurately leveled and contoured and have well-prepared seedbeds free of clods. Such conditions encourage uniform and rapid emergence of rice, grass and broadleaf weeds, allowing more accurate timing and coverage of sprays of Willowood Propanil 4EC for optimum weed control.

Water Management

Before application of Willowood Propanil 4EC, drained or dry planted fields should be flushed as often as necessary to prevent drying and crusting. Flushing encourages

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uniform emergence and vigorous growth of grass, broad leaf weeds and rice, which is essential for optimum weed control. Flushing of fields should occur when weeds and rice are actively growing at time of treatment. Make sure the field is drained prior to treatment so that grasses and broadleaf weeds are fully exposed. Weeds that are partially submerged in standing water at time of application will not be satisfactorily controlled.

Treated fields should be flooded before a second infestation of grass develops. To prevent additional grass weed seed from germinating rice fields should be flooded within 24 hours after spraying or as soon as possible after 24 hours.

Temperature

The temperature a few days before and after applying Willowood Propanil 4EC has an important effect on the weed killing activity. The activity increases as daily maximum temperatures increase above 75°F and decreases as the daily maximum temperatures decline below 75°F. Do not apply Willowood Propanil 4EC when maximum temperatures have been or are expected to stay below 65°F or exceed 100°F. Less than optimum temperature at time of application is not critical so long as the temperature exceeds 75°F during the day.

Relative Humidity and Rain

Grasses and weeds are more responsive to Willowood Propanil 4EC during periods of high humidity when the foliage is moist or covered by dew. When the humidity is very low, spray tends to evaporate before reaching weed foliage. For best results under low relative humidity conditions, increase spray volume to 12 to 15 gallons per acre. Do not spray if rain is expected within 8 hours to avoid loss of deposited spray and herbicide adsorption by the weeds.

Wind

Do not apply when the wind speed exceeds 10 mph to avoid drift hazard to sensitive crops and the possibility of uneven (streaked) applications.

Compatibility With Other Chemicals

Tank mix applications of Willowood Propanil 4EC with other herbicides, insecticides, spray adjuvants or liquid fertilizers may reduce crop tolerance and/or weed control or impair mixing properties. Use of these products in tank mix applications with Willowood Propanil 4EC is done at the user's risk.

Adverse Reaction to Insecticides

Rice plants may be severely injured or killed if Willowood Propanil 4EC is applied in tank mix combinations or sequentially before or after certain insecticides. Do not tank mix Willowood Propanil 4EC with carbamate insecticides such as carbaryl, etc., or organophosphorus insecticides (such as malathion and methyl parathion, etc.). Do not apply any of the carbamate or organophosphorus insecticides to rice fields within 14 days before or after applying Willowood Propanil 4EC. Do not apply Willowood Propanil 4EC to rice fields planted with rice seed treated with bird repellents containing

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methiocarb. Consult local extension specialist for current recommendations of approved insecticides on rice.

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