



VIRTUE™ 4SC

HERBICIDE

FOR POSTEMERGENCE WEED CONTROL IN RICE

ACTIVE INGREDIENT:

Propanil: 3', 4'-Dichloropropionanilide 41.4%

OTHER INGREDIENTS: 58.6%

TOTAL: 100.0%

This product contains 4 lb. of active ingredient per gallon.

KEEP OUT OF REACH OF CHILDREN CAUTION

See additional precautionary statements and directions for use inside booklet.

EPA Reg. No.: 89168-13-89391



HERBICIDE



Distributed By:
INNICTIS® CROP CARE, LLC
1880 Fall River Drive, Suite 100
Loveland, CO 80538

111512R122216A

FIRST AID

If inhaled:	<ul style="list-style-type: none">• Move person to fresh air.• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferable mouth-to-mouth, if possible.• Call a poison control center or doctor for further treatment advice.
If on skin or clothing:	<ul style="list-style-type: none">• Take off contaminated clothing.• Rinse skin immediately with plenty of water for 15-20 minutes.• Call a poison control center or doctor for treatment advice.
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 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.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	

PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION

Avoid contact with skin, eyes, or clothing. Avoid breathing vapor or spray mist. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some materials that are chemical-resistant to this product are natural rubber ≥ 14 mils. For more information, follow instructions in Supplement Three of PR Notice 93-7. If you want more options, follow the instructions for category A on an EPA chemical category selection chart.

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

- Coveralls over long-sleeve shirt and long pants,
- Chemical-resistant gloves made of any waterproof materials,
- Chemical-resistant footwear plus socks,
- Chemical-resistant headgear, if overhead exposure, and
- Chemical resistant apron, when mixing and loading.
- Protective eyewear if the system operates under pressure.

Pilots and handlers removing a triple rinsed probe must wear:

- Long-sleeved shirt and long pants,
- Shoes plus socks, and
- Chemical-resistant gloves made of any waterproof material such as butyl rubber, nitrile rubber, or neoprene rubber (all >14 mils)

See Engineering Controls for additional requirements and options.

USER SAFETY REQUIREMENTS

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. Discard clothing or other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. **DO NOT** reuse them.

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 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.

UN-RINSED PROBES

If an un-rinsed 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:

1. Equip the probe end of the hose with a shut off valve,
2. Install a dry break coupling between the valve and the probe,
3. Close the shut-off valve before disconnecting the probe.

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, wear protective eyewear, if the system operates under pressure, and when using a system that meets the requirements in the WPS as a closed system or using a probe system when the probe is not removed, chemical-resistant footwear must be provided, be immediately available, and be used in an emergency, such as a broken package, spill, or equipment breakdown.

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.

Flaggers: Human flagging is prohibited. Flagging to support aerial application is limited to use of the Global Positioning System (GPS) or mechanical flaggers.

Enclosed Cabs for Aerial Applicators: Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (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. **DO NOT** apply directly to water except as specified on this label. **DO NOT** contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical prior to flooding may result in 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

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 elsewhere on the label. If terms are unacceptable, return at once unopened.

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 over long-sleeve shirt and long pants
- Chemical-resistant gloves made of any waterproof materials,
- Chemical-resistant footwear plus socks,
- Protective eyewear

STORAGE AND DISPOSAL

DO NOT contaminate water, food, or feed by storage or 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. Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility. 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: NONREFILLABLE CONTAINER (EQUAL TO OR LESS THAN 5 GALLONS): DO NOT reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Offer for recycling, if available.

NONREFILLABLE CONTAINER (GREATER THAN 5 GALLONS): DO NOT reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth,

ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Offer for recycling, if available.

REFILLABLE CONTAINER: Refill this container with pesticide only. **DO NOT** reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

PRODUCT INFORMATION

VIRTUE 43C for postemergence weed control in rice is formulated as a suspension concentrate containing 4 lb active ingredient per gallon. *VIRTUE 43C* is not a hormone-type herbicide, but kills susceptible weeds by direct contact action. For this reason, thorough coverage of emerged weeds is essential for best results. *VIRTUE 43C* has no preemergence or residual herbicidal activity. Only weeds that have emerged and are exposed at time of application will be controlled. Apply *VIRTUE 43C* only to fields that have been drained of floodwater. *VIRTUE 43C* 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.

Chemigation: DO NOT apply this product through any type of irrigation system.

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 aerial applications to agricultural field crops.

1. The distance of the outer most operating nozzles on the boom must not exceed 3/4 the length of the wingspan or 90% of the rotor blade diameter.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.

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

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.

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. 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 cross wind, 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 2-10 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 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, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

Spray Drift Restrictions for All States

- 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 (ASAE standard 572).
- For ground applications, apply using a nozzle height of no more than 4 feet above the ground or crop canopy.
- 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. **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.

FOR USE ON RICE GROWN IN CALIFORNIA ONLY

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 **VIRTUE 4SC** (6 lb active ingredient) per acre in a single application or exceed 8 quarts of **VIRTUE 4SC** (8 lb of active ingredient) per acre total dosage per season.
- **In California:** Use **VIRTUE 4SC** only where rice fields are completely drained or a minimal amount of water remains. If high water level is desired, re-flood field after 12 hours and before 7 days after treatment. This will discourage new weed infestations.
- **DO NOT** apply this product to any crop other than rice. **VIRTUE 4SC** 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.).
- Avoid drift or accidental application from turning aircraft on cotton, soybeans, corn, safflower, seedling legumes, vegetables, orchards, vineyards, gardens, shrubs and ornamentals. Once applied, **VIRTUE 4SC** does not release fumes hazardous to nearby crops.
- **DO NOT** apply to fields nor drain water from treated fields into areas where commercial catfish or crayfish (crawfish) farming is practiced.
- **DO NOT** graze treated fields or feed treated forage within 60 days of the last application.
- **DO NOT** rotate treated land to other crops or transplant to crops other than rice for 60 days following treatment of this product.
- **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 mile upstream of a potable water intake in flowing water (e.g. river, stream, etc.) or within 1/2 mile of a potable water intake in a standing body of water, such as a lake, pond, or reservoir.
- **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.

Emergency Release Provisions

DO NOT discharge water from treated rice paddies in California following treatment, unless excessive rainfall completely submerges the rice crop and forces premature release, for:

- 7 days in dry seeded rice in California
- 7 days for water-seeded rice in California

WEEDS CONTROLLED

Annual sedges	<i>Cyperus</i> spp.	Late watergrass ^{a,b}	<i>Echinochloa phyllagopon</i>
Barnyardgrass ^a	<i>Echinochloa crus-galli</i>	Ricefield bullrush	<i>Scirpus mucronatus</i>
Crabgrass	<i>Digitaria</i> spp.	Rice flatsedge	<i>Cyperus iria</i>
Early watergrass ^{a,b}	<i>Echinochloa oryzoides</i>	Smallflower umbrella plant	<i>Cyperus difformis</i>
Junglerice ^a	<i>E. colonum</i>		

^a 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 **VIRTUE 4SC** is effective, tank mix **VIRTUE 4SC** at labeled rate with other rice herbicides that are labeled for control of barnyardgrass/watergrass (up to the 3 leaf stage).

^b Applications to early and late watergrass made past the 4 leaf stage will result in partial control.

TIMING AND DOSAGE DIRECTIONS

Early Timing and Rates

Apply **VIRTUE 4SC** when a satisfactory stand of rice has been established that will tolerate flooding. The amount of **VIRTUE 4SC** to apply depends upon the growth stage and condition of the target weeds. **VIRTUE 4SC** 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 labeled 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 *VIRTUE 4SC* 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. In order to insure satisfactory weed control, **DO NOT** apply less than 3 quarts of *VIRTUE 4SC* per acre in a single spray application.

Mid-Timing and Rates

VIRTUE 4SC can be applied 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 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.

Use of Surfactants: The addition of a crop oil concentrate at 1 to 2 pints per acre, or other 80% active nonionic surfactant at a rate of 1 to 2 pints per 100 gallons of spray mixture, is recommended.

Rescue Timing and Rates

Apply *VIRTUE 4SC* at the rate of 5 to 6 quarts (5 to 6 lb active ingredient) in 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.

MIXING DIRECTIONS

VIRTUE 4SC will disperse more quickly if water temperature is 50 °F or warmer. Use only clean water for spraying. With the pump and agitator running, slowly add the labeled amount of *VIRTUE 4SC* into a partially filled mix tank. The jet or tank agitators must be positioned to create a rippling or rolling action on the liquid surface and to provide complete agitation at the bottom of the tank, preventing dead spots where the material can accumulate. A centrifugal pump is suggested to provide additional propeller shear action for dispersing and mixing this product. To avoid foaming, keep filling and bypass lines below the liquid surface. *VIRTUE 4SC* must be completely dispersed and mixed prior to application.

If a tank mixture is to be applied, always conduct a compatibility test prior to use by mixing proportional amounts of all spray ingredients in a test vessel (jar). The order of addition to water should be dry flowables or wettable powders first, flowables second, liquid formulations third, and crop oil concentrate last. Allow for each material to go into solution prior to the addition of the next material. Shake the mixture vigorously and allow it to stand for fifteen minutes. Rapid precipitation of the ingredients and failure to re-suspend when shaken indicates that the mixture is incompatible and should not be applied.

As each material is added to the spray mixture, always allow for complete mixing before adding the next ingredient. Add crop oil concentrate last and continue agitation while filling the mixing tank to the desired spray volume.

DO NOT add *VIRTUE 4SC* directly to the spray tank of aircraft. Once properly dispersed in mix tank, pump spray mixture to aircraft spray tank (include rinsate from mix tank). To ensure uniformity of sprays, maintain good agitation throughout application.

APPLICATION EQUIPMENT

Aircraft

Fixed wing aircraft or helicopters should have well-designed spray systems that produce a uniform pattern of medium-fine spray droplets. Apply *VIRTUE 4SC* 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 on 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 wing span 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-fine droplet 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 uniformly. Avoid raising boom too high.

Flush all equipment with clear water after each day's use. Clean all equipment, including nurse tanks, used for *VIRTUE 4SC*, with detergent wash followed by a water rinse, **before and after** spraying other pesticides or other crops.

Crop Tolerance and Growing Conditions

All leading commercial varieties of rice are exceptionally tolerant to *VIRTUE 4SC*. 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 *VIRTUE 4SC* sprays for optimum weed control.

Water Management

Before application of *VIRTUE 4SC*, drained or dry planted fields should be flushed as often as necessary to prevent drying and crusting. Flushing encourages uniform emergence and vigorous growth of grass, broadleaf 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 *VIRTUE 4SC* 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 *VIRTUE 4SC* 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 *VIRTUE 4SC* 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 *VIRTUE 4SC* 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 *VIRTUE 4SC* is done at the user's risk.

Liquid Fertilizer: Premixing this product in a ratio of 1 part *VIRTUE 4SC* to 2 parts water is recommended prior to mixing with liquid fertilizer.

Adverse Reaction to Insecticides

Rice plants may be severely injured or killed if *VIRTUE 4SC* is applied in tank mix combinations or sequentially before or after certain insecticides. **DO NOT** combine *VIRTUE 4SC* 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 *VIRTUE 4SC*. **DO NOT** use carbamate or systemic organophosphorus insecticides on rice fields to be treated with *VIRTUE 4SC*.

DO NOT apply *VIRTUE 4SC* to rice fields planted with rice seed treated with bird repellents containing methiocarb. Consult local Extension specialist for current recommendations of approved insecticides on rice.

FOR USE ON RICE GROWN IN SOUTHERN UNITED STATES ONLY Arkansas, Louisiana, Mississippi, Missouri, Texas

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 *VIRTUE 4SC* (6 lb active ingredient) per acre in a single application or exceed 8 quarts of *VIRTUE 4SC* (8 lb of active ingredient) per acre total dosage per season.
- **DO NOT** plant or transplant crops in the treated area for at least 60 days following application.
- **DO NOT** apply this product to any crop other than rice. *VIRTUE 4SC* 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.).
- Avoid drift or accidental application from turning aircraft on cotton, soybeans, corn, safflower, seedling legumes, vegetables, orchards, vineyards, gardens, shrubs and ornamentals. Once applied, *VIRTUE 4SC* does not release fumes hazardous to nearby crops.
- **DO NOT** apply to fields nor drain water from treated fields into areas where commercial catfish or crayfish (crawfish) farming is practiced.
- **DO NOT** graze treated fields or feed treated forage within 60 days of the last application.

- **DO NOT** rotate treated land to other crops or transplant to crops other than rice for 60 days following treatment of this product.
- **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 mile upstream of a potable water intake in flowing water (e.g. river, stream, etc.) or within 1/2 mile of a potable water intake in a standing body of water, such as a lake, pond, or reservoir.
- **DO NOT** apply when weather conditions favor drift from area to be treated.

Emergency Release Provisions

Water holding (discharge) intervals for flood water from treated rice paddies following treatment in the southern United States (AR, LA, MS, MO, and TX):

- 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 will be 7 days.
- For delayed flood (water-seeded) rice in the 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 all other parts of the southern 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.

WEEDS CONTROLLED

VIRTUE 4SC provides selective postemergence control of the following weeds in rice:

Annual sedges	<i>Cyperus</i> spp.	Junglerice ^a	<i>E. colonum</i>
Barnyardgrass ^a	<i>Echinochloa crus-galli</i>	Mexicanweed	<i>Caperonia castanaefolia</i>
Beakrush (spearhead)	<i>Rhynchospora corniculata</i>	Paragrass	<i>Panicum purpurascens</i>
Broadleaf signalgrass	<i>Bracharia platyphytia</i>	Redroot pigweed	<i>Amaranthus retroflexus</i> .
Crabgrass	<i>Digitaria</i> spp.	Redweed	<i>Melochia corchorifolia</i>
Curly dock	<i>Rumex crispus</i>	Rice flatsedge	<i>Cyperus iria</i>
Foxtail	<i>Setaria</i> spp.	Smallflower umbrella plant	<i>Cyperus difformis</i>
Goosegrass	<i>Eleusine indica</i>	Spikerush (wiregrass)	<i>Eleocharis</i> spp.
Gulf cockspur	<i>Echinochloa crus-pavonis</i>	Texas panicum	<i>Panicum texanum</i>
Hemp sesbania (coffeebean)	<i>Sesbania herbacea</i>	Watergrass ^a	<i>Echinochloa</i> spp.
Hoorahgrass	<i>Fimbristylis miliaceae</i>	Woolly croton	<i>Croton</i> spp.

^a 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 **VIRTUE 4SC** is effective, tank mix **VIRTUE 4SC** at labeled rate with other rice herbicides that are labeled for control of barnyardgrass/watergrass (up to the 3 leaf stage).

TIMING AND DOSAGE DIRECTIONS

Early Timing and Rates

Apply **VIRTUE 4SC** when a satisfactory stand of rice has been established that will tolerate flooding. The amount of **VIRTUE 4SC** to apply depends upon the growth stage and condition of the target weeds. **VIRTUE 4SC** 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 labeled 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 **VIRTUE 4SC** 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

VIRTUE 4SC can be applied 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 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.

Use of Surfactants: The addition of a crop oil concentrate at 1 to 2 pints per acre, or other 80% active nonionic surfactant at a rate of 1 to 2 pints per 100 gallons of spray mixture, is recommended.

RESCUE TIMING AND RATES

Apply *VIRTUE 4SC* at the rate of 5 to 6 quarts (5 to 6 lb active ingredient) in 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.

MIXING DIRECTIONS

VIRTUE 4SC will disperse more quickly if water temperature is 50 °F or warmer. Use only clean water for spraying. With the pump and agitator running, slowly add the labeled amount of *VIRTUE 4SC* into a partially filled mix tank. The jet or tank agitators must be positioned to create a rippling or rolling action on the liquid surface and to provide complete agitation at the bottom of the tank, preventing dead spots where the material can accumulate. A centrifugal pump is suggested to provide additional propeller shear action for dispersing and mixing this product. To avoid foaming, keep filling and bypass lines below the liquid surface. *VIRTUE 4SC* must be completely dispersed and mixed prior to application.

If a tank mixture is to be applied, always conduct a compatibility test prior to use by mixing proportional amounts of all spray ingredients in a test vessel (jar). The order of addition to water should be dry flowables or wettable powders first, flowables second, liquid formulations third, and crop oil concentrate last. Allow for each material to go into solution prior to the addition of the next material. Shake the mixture vigorously and allow it to stand for fifteen minutes. Rapid precipitation of the ingredients and failure to re-suspend when shaken indicates that the mixture is incompatible and should not be applied.

As each material is added to the spray mixture, always allow for complete mixing before adding the next ingredient. Add crop oil concentrate last and continue agitation while filling the mixing tank to the desired spray volume.

DO NOT add *VIRTUE 4SC* directly to the spray tank of aircraft. Once properly dispersed in mix tank, pump spray mixture to aircraft spray tank (include rinsate from mix tank). To ensure uniformity of sprays, maintain good agitation throughout application.

APPLICATION EQUIPMENT

Aircraft

Fixed wing aircraft or helicopters should have well-designed spray systems that produce a uniform pattern of medium-fine spray droplets. Apply *VIRTUE 4SC* 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 on 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 wing span 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-fine droplet 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 uniformly. Avoid raising boom too high.

Flush all equipment with clear water after each day's use. Clean all equipment, including nurse tanks, used for *VIRTUE 4SC*, with detergent wash followed by a water rinse, **before and after** spraying other pesticides or other crops.

Crop Tolerance and Growing Conditions

All leading commercial varieties of rice are exceptionally tolerant to *VIRTUE 4SC*. 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 Seeded 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 *VIRTUE 4SC* sprays for optimum weed control.

Water Management

Before application of *VRTUE 4SC*, drained or dry planted fields should be flushed as often as necessary to prevent drying and crusting. Flushing encourages uniform emergence and vigorous growth of grass, broadleaf 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 *VRTUE 4SC* 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 *VRTUE 4SC* 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 *VRTUE 4SC* 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 *VRTUE 4SC* 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 *VRTUE 4SC* is done at the user's risk.

Liquid Fertilizer: Premixing this product in a ratio of 1 part *VRTUE 4SC* to 2 parts water is recommended prior to mixing with liquid fertilizer.

Adverse Reaction to Insecticides

Rice plants may be severely injured or killed if *VRTUE 4SC* is applied in tank mix combinations or sequentially before or after certain insecticides. **DO NOT** combine *VRTUE 4SC* 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 *VRTUE 4SC*. **DO NOT** use carbamate or systemic organophosphorus insecticides on rice fields to be treated with *VRTUE 4SC*.

DO NOT apply *VRTUE 4SC* to rice fields planted with rice seed treated with bird repellents containing methiocarb. Consult local Extension specialist for current recommendations of approved insecticides on rice.

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