

# **HEAD LETTUCE/ENDIVE/ESCAROLE/RADICCHIO GREENS - LOW RAINFALL OR FURROW IRRIGATION - COARSE AND MEDIUM**

## General Information

### PRODUCT INFORMATION

Willowood Pronamide 3.3SC is effective for the control of a wide range of grasses and certain broadleaf weeds. The product is a soil active herbicide with uptake by sensitive weeds occurring through the roots. Before using this herbicide for a specific crop use, study the following product use information that provides important instructions for the safe and effective application of the product.

**Use Restrictions:** Hand-spray applications of Willowood Pronamide 3.3SC may be made only to ornamentals and nursery stock of ornamentals.

**Chemigation:** Do not apply this product through any type of irrigation system except as specified on the label or in Willowood, LLC supplemental labeling.

### SPRAY DRIFT MANAGEMENT (AERIAL APPLICATION)

Avoiding spray drift at the application site is the responsibility of the applicator. The potential for spray drift is determined by the interaction of many equipment-and-weather-related factors. 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. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

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

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

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

### Aerial Spray Drift Advisory Information

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

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 Inversion section of the label).

#### 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 specified pressures. Use the lower spray pressures specified 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 backwards, parallel to the airstream will produce larger droplets than other orientations. Significant deflection from the 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 larger droplets and lower drift than other nozzle types.

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:** Do not make applications 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. Increase swath adjustment distance 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. Avoid application below 2 mph due to variable wind direction and high inversion potential. Note: Local terrain can influence wind patterns. Every applicator must 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:** Do not apply 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. The 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. The presence of inversion conditions can be indicated by ground fog. However, if fog is not present, the movement of smoke from a ground source or an aircraft smoke generator can also identify inversion conditions. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upwards and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas: Apply this pesticide 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).

## RESISTANCE MANAGEMENT

Willowood Pronamide 3.3SC is a Group 3 herbicide. Any weed population may contain or develop plants naturally resistant to this product and other Group 3 herbicides. The resistant biotypes may dominate the weed population if these herbicides are used repeatedly in the same field. Willowood Pronamide 3.3SC will not control known Group 3 resistant biotypes of labeled weeds. Other resistance mechanisms that are not linked to site of action, but specific for individual chemicals, such as enhanced metabolism, may also exist. Appropriate resistance management strategies should be followed.

To delay herbicide resistance consider:

- Where possible, rotate the use of Willowood Pronamide 3.3SC or other Group 3 herbicides with different herbicide groups that control the same weeds in a field.
- For best resistance management stewardship, avoid use more than once per season and use Willowood Pronamide 3.3SC in programs with other herbicides with different modes of action.
- Where possible, rotate the use of Willowood Pronamide 3.3SC or other Group 3 herbicides with different herbicide groups that control the same weeds in a field.
- Use tank mixtures with herbicides from a different group when such use is permitted.
- Herbicide use should be based upon an IPM program that includes scouting, historical information related to herbicide use and crop rotation, and considers tillage (or other mechanical), cultural, biological and other chemical control practices.
- Monitor treated weed populations for resistance development.
- Prevent movement of resistance weed seeds to other fields by cleaning harvesting and tillage equipment and planting clean seed.
- Contact your local extension specialist or certified crop advisers for any additional pesticide resistance management and/or integrated weed management requirements for specific crops and weed biotypes.

## DOSAGE

The rate of Willowood Pronamide 3.3SC required will vary depending on the crop culture involved and weed species to be controlled. See specific crop use directions for all dosage instructions. All dosage instructions listed in the label are in terms of pints of product or pounds of active ingredient per broadcast acre. For banded application, reduce the amount of Willowood Pronamide 3.3SC used per square acre according to the given formula.

## TIMING AND APPLICATION

Unless specific directions are given under the crop to be treated, apply Willowood Pronamide 3.3SC in the fall or early winter, when temperatures do not exceed 55°F, but prior to freeze-up. Best weed control results occur when Willowood Pronamide 3.3SC is applied preemergence to the weeds and when application is followed by rainfall or irrigation to move the product into the root zone of the germinating weeds.

Mix Willowood Pronamide 3.3SC thoroughly in clean water at the required concentration and apply uniformly as a spray.

For ground application, use a conventional low-pressure herbicide sprayer equipped with flat fan nozzles spaced and calibrated to uniformly deliver 20 to 50 gallons of spray per acre. For aerial applications, apply in a coarse droplet spray at 5 to 10 gallons per acre. Accurately calibrate spray equipment prior to each use.

## COMPATIBILITY WITH OTHER PESTICIDES

Willowood Pronamide 3.3SC is compatible with most commonly used agricultural pesticides, crop oil concentrate and adjuvants. When preparing tank mixes, consult spray compatibility charts or State Cooperative Extension Service Specialists prior to actual use. It is the pesticide user's responsibility to ensure that all products in the listed mixtures are registered for the intended use(s). Users must follow the most restrictive directions for use and precautionary statements of each product in the tank mixture.

## EFFECT OF SOIL TYPE, MOISTURE AND TEMPERATURE

Willowood Pronamide 3.3SC is most active in coarse to medium texture soils of low organic matter and relatively inactive in peat or muck soils or mineral soils high in

organic matter content at rates specified in the label. Herbicidal activity is best in soils containing less than 4 percent organic matter. Use in soils with higher organic matter may result in inconsistent or incomplete weed control.

The herbicidal activity of Willowood Pronamide 3.3SC is mainly through root absorption in sensitive weed species. Rain, melting snow or irrigation is essential following treatment to move Willowood Pronamide 3.3SC into the root zone of germinating weeds.

Under field conditions, Willowood Pronamide 3.3SC will remain relatively stable with little loss of herbicidal activity when soil temperatures are less than 55°F. As soil temperatures increase, degradation of the active ingredient takes place.

Willowood Pronamide 3.3SC may degrade rather quickly if left exposed on the soil surface in warm weather. If Willowood Pronamide 3.3SC is applied when air temperature exceeds 85°F, the treatment must be soil incorporated to a shallow depth (top two to three inches) or watered into the soil as soon as possible.

## CULTURAL CONSIDERATIONS

For best results, apply Willowood Pronamide 3.3SC to a trash-free soil surface. Clean cultivation before application is preferable, but not necessary. To obtain optimum weed control in areas not clean cultivated, the area to be treated must be free of surface litter (dead or decaying crop and weed debris, mowing clippings, etc.). Trash-free areas create ideal conditions for rapid movement of Willowood Pronamide 3.3SC into the weed root zone following rain or irrigation.

## Limitations, Restrictions, and Exceptions

### HEAD AND LEAF LETTUCE/ENDIVE/ESCAROLE/RADICCHIO GREENS INCLUDING SINGLE APPLICATION AND SPLIT APPLICATION AND CHEMIGATION

#### Use Information

Willowood Pronamide 3.3SC is a selective herbicide for the control of certain annual grasses and broadleaf weeds in direct seeded or transplanted head or leaf lettuce, endive, escarole and radicchio greens.

#### Dosage

For head lettuce, endive, escarole, and radicchio greens, Willowood Pronamide 3.3SC may be applied at the rate of 2.5 to 5.0 pints of product (1 to 2 lbs. active ingredient) per acre broadcast application. For leaf lettuce, Willowood Pronamide 3.3SC may be applied at the rate of 1.25 to 5.0 pints of product (1/2 to 2 lbs. active ingredient) per acre broadcast application. The dosage rate required is dependent on soil texture, target weeds, duration of control expected and method of irrigation. Lower rates may result in shorter duration of weed control or less efficacy on hard to control weeds. At rates specified on the label, Willowood Pronamide 3.3SC may not be as effective when applied for weed control on highly organic (peat and muck) soils.

### Crop Tolerance

Most varieties of head or leaf lettuce are highly tolerant of the specified rates of Willowood Pronamide 3.3SC. Do not use more than 3.5 pints (1.5 lbs. active ingredient) per acre on val temp, grande verde and prima verde varieties of crisp head lettuce, or on endive, escarole and radicchio greens.

### Timing and Application

Willowood Pronamide 3.3SC can be applied either pre-plant, post-plant or postemergence to head or leaf lettuce, endive, escarole or radicchio greens in banded, bed-topped or broadcast applications. Most applications will be made preemergence to the crop just before or after planting and preemergence to the weeds. Applications can be made before or after thinning of head or leaf lettuce but must be made prior to weed emergence. For split application, see directions below.

Mix the specified amount of Willowood Pronamide 3.3SC in clean water and apply uniformly with a ground sprayer in 20 to 50 gallons of water per treated acre. Reduce dosage and volume accordingly for banded treatments. Use a standard low pressure sprayer equipped with flat fan nozzles that provide uniform spray distribution.

### Split Application:

Willowood Pronamide 3.3SC application can be split so that part of the maximum application rate of the product can be initially applied to head or leaf lettuce, endive, escarole or radicchio greens, and the balance of the maximum application

rate can be applied up to 10 days later. Total amount of Willowood Pronamide 3.3SC applied must not exceed the maximum rates indicated on the label, up to 5 pints of product (2 lb. active ingredient) per acre per crop. For leaf lettuce, total amount of Willowood Pronamide 3.3SC applied must not exceed the maximum rates indicated on the label, up to 5 pints per acre of product (2 lbs./acre active ingredient) per crop, or more than 10 pints of product (4 lbs. active ingredient) per acre per year. The value of split applications and optimal timing for the second application will vary depending on season, weed species present and environmental conditions.

### Application Moisture Requirements

Willowood Pronamide 3.3SC acts mainly through root absorption, therefore it is necessary to move Willowood Pronamide 3.3SC into the root zone of germinating weeds to provide effective control. This can be accomplished by overhead sprinkler irrigation, by rainfall or by shallow mechanical incorporation.

### Sprinkler Irrigation

Willowood Pronamide 3.3SC can be applied to the soil surface without mechanical incorporation after planting or transplanting if overhead irrigation is used. An initial irrigation of 1 to 2 inches must promptly follow the application of Willowood Pronamide 3.3SC, especially in hot weather.

### Applications Dependent on Natural Rainfall

In areas of dependable natural rainfall, Willowood Pronamide 3.3SC can be applied as a surface treatment preemergence to the weeds. Applications to direct seeded or transplanted head or leaf lettuce, endive, escarole or radicchio greens are most successful when followed by 1/2 to 1 inch of rainfall within two to three days after application.

### Furrow Irrigation - Mechanical Incorporation

Where rainfall is not dependable or supplementary overhead irrigation is not used, shallow pre-plant incorporation is required. PTO-driven incorporators or rolling cultivators that thoroughly mix Willowood Pronamide 3.3SC into the top 2 inches of soil are suggested.

Incorporation must be simultaneous or immediately after application of Willowood Pronamide 3.3SC, especially in hot weather. Irrigation must be started as soon as



possible.

Where furrow irrigation is used, spray application and mechanical incorporation must be made after beds have been formed. Willowood Pronamide 3.3SC will not be as effective if disked in prior to bed shaping. Hoeing, thinning or shallow cultivation of soil treated with Willowood Pronamide 3.3SC will not destroy its herbicidal activity.

#### Temperature

Willowood Pronamide 3.3SC is not highly volatile, but it may degrade rather quickly if left exposed on the soil surface in warm weather. If applied when air temperatures exceed 85°F it must be shallow incorporated or watered into the soil as soon as possible, preferably within 1 or 2 days.

#### Rotation Crops

Follow the directions given in the Product Information section of the label under Rotation Crop Planting Information.

#### Head or Leaf Lettuce/Endive/Escarole/Radicchio Greens – Specific Use Restrictions

- Do not apply Willowood Pronamide 3.3SC to head lettuce, endive, escarole, radicchio varieties that will be harvested less than 55 days after treatment.
- For use on leaf lettuce, follow the table below for preharvest intervals based on the appropriate use rate.

#### Use Rate PHI

- Up to 1.25 pts/A (0.5 lb. ai/A): 25 days
- Up to 1.8 pts/A (0.75 lb. ai/A): 35 days
- Up to 3.75 pts/A (1.5 lbs. ai/A): 45 days
- Up to 5.0 pts/A (2.0 lbs. ai/A): 55 days

- Do not apply more than one application of Willowood Pronamide 3.3SC to each crop of head or leaf lettuce, endive, escarole or radicchio greens, or more than twice if split application is made.
- Do not apply more than 5.0 pints of Willowood Pronamide 3.3 SC (2 lbs. active ingredient) per acre per crop.
- For leaf lettuce, do not apply more than 2 lbs./active ingredient (5 pints/acre of Willowood Pronamide 3.3SC) per crop, or more than 4 lbs. active ingredient (10

pints/acre of Willowood Pronamide 3.3SC) per acre per year.

Method

[Broadcast/Foliar Ground](#)

[Soil incorporation](#)

Rates

[field rates 0](#)

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Restricted Entry Interval

24 hours

Soils

[Coarse](#)

[Loamy Sand](#)

[Sandy Loam](#)

[Medium](#)

[Loam](#)

[Silt](#)

[Sandy Clay Loam](#)

[Sand](#)

Timings

[Preemergence \(Weed\)](#)