

# **WEEDS CONTROLLED ON BERMUDAGRASS AND ZOYSIAGRASS GOLF COURSES AND SOD FARMS - FLORIDA (MANUSCRIPT)**

## General Information

### USE INSTRUCTIONS AND INFORMATION

Do not apply this product through any type of irrigation system.

When Gramoxone SL 2.0 is applied at less than 10 gallons per acre finished spray volume, a drift control or spray deposition additive SHOULD be used. Refer to the additive label for use directions.

### Spray Drift Information

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors determine the potential for spray drift. The applicator 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.

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

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

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

### USE INFORMATION

Gramoxone SL 2.0 is a contact herbicide used to control or suppress a broad spectrum of emerged weeds. Gramoxone SL 2.0 controls most small annual weeds -

both broadleaves and grasses, and suppresses perennial weeds by destroying green foliage. Gramoxone SL 2.0 can also be used as a desiccant/defoliant at harvest.

Gramoxone SL 2.0 is formulated as a liquid which contains 2 pounds of active ingredient per gallon. The formulation contains a nontoxic odor and an emetic (an agent which will induce vomiting if the product is swallowed). The odor is included in the formulation to help prevent accidental ingestion of Gramoxone SL 2.0.

Gramoxone SL 2.0 is rapidly absorbed by green plant tissue and interacts with the photosynthetic process to produce superoxides which destroy the plant cells. Gramoxone SL 2.0 requires actively growing green plant tissue to function. Thorough coverage of all green foliage is essential for effective weed control and for effective crop desiccation/defoliation. Gramoxone SL 2.0 is not as effective on drought-stressed weeds, weeds with little green foliage (i.e., mowed or cut weeds), or mature woody bark of trees and vines.

Clay and organic matter rapidly tie up Gramoxone SL 2.0. As a result, Gramoxone SL 2.0 has no residual soil activity to affect later-planted crops or later germinating weeds.

#### ROTATIONAL CROPS

All rotational crops may be planted immediately after the last application of Gramoxone SL 2.0.

#### RAINFASTNESS

Because Gramoxone SL 2.0 is rapidly absorbed by the weed foliage, rain occurring 15-30 minutes or more after application will have no effect on the activity of Gramoxone SL 2.0.

#### APPLICATION

Since Gramoxone SL 2.0 is a contact-type herbicide, it is essential to obtain complete coverage of target weeds to get good control. Improper application technique and/or application to large, stressed, or mown weeds will usually result in unacceptable weed control and unacceptable crop desiccation/defoliation. Complete coverage is also essential for good crop desiccation/defoliation.

## USE OF A NONIONIC SURFACTANT OR CROP OIL CONCENTRATE/METHYLATED SEED OIL

Always add one of the following (failure to use one of the following at recommended rates will result in reduced performance of Gramoxone SL 2.0).

**Nonionic Surfactant:** For ground and aerial application, add nonionic surfactant containing 80% or more surface-active agent at a minimum of 0.25% v/v (2 pt/100 gal) of the finished spray volume.

**Crop Oil Concentrate:** Add a nonphytotoxic crop oil concentrate or methylated seed oil containing 15-20% approved emulsifier, at 1.0% v/v (1 gal/100 gal) of the finished spray volume for ground applications. For aerial applications, add 1 pint of crop oil concentrate per acre. Do not use crop oil concentrate when using Gramoxone SL 2.0 for cotton harvest aid.

Use an adjuvant that meets the requirements of the Chemical Producers and Distributors Association (CPDA) adjuvant certification program.

## NOZZLE SELECTION

The use of flat-fan nozzles will result in the most effective application of Gramoxone SL 2.0. Flood nozzles are generally not as good as flat fans since they produce large uneven droplets. The use of flood nozzles may result in reduced weed control due to inadequate coverage.

## SPRAY CARRIER

Always use clean water (free of mud or clay), clear liquid nitrogen, or complete clear liquid fertilizers as the carrier when spraying Gramoxone SL 2.0. Muddy water, or suspension-type fertilizers containing clay, can inactivate Gramoxone SL 2.0. Never use suspension-type fertilizers containing clay as the spray carrier. If using a complete clear liquid fertilizer containing high phosphate levels as the spray carrier, always use the higher rate of Gramoxone SL 2.0 and surfactant.

**Note:** When using liquid fertilizers such as 28% N as a spray carrier, it is important that nonionic surfactant still be used with Gramoxone SL 2.0. Liquid fertilizer carriers cannot substitute for surfactant.

## RATES OF GRAMOXONE SL 2.0

Follow rates listed with each use of Gramoxone SL 2.0. Use the higher label rates when weeds are dense or large. Also, use higher label rates for harvest aid when crop vegetation is dense. For broadcast applications of Gramoxone SL 2.0 with backpack sprayers, the application rate must not exceed 0.50 lb ai/A (one quart) in a minimum of 30 gallons of spray solution per acre.

## SPRAY VOLUME

Follow minimum spray volumes listed with each use of Gramoxone SL 2.0. These are minimum volumes only, and spray volumes should be increased as necessary to obtain complete coverage of the target weed or plant without runoff from the foliage.

WHEN SPRAYING LESS THAN 20 GALLONS OF SPRAY CARRIER PER ACRE, TARGET WEEDS SHOULD NOT EXCEED 6 INCHES IN HEIGHT.

## APPLICATION TIMING

Gramoxone SL 2.0 should be applied to emerged weeds when they are small. Weeds 1-6 inches in height are the easiest to control. Larger weeds may be more difficult to control. When weeds have been grazed or mowed, thus removing much of the green foliage, allow the weeds to regrow to a height of 2-4 inches before spraying if possible.

Similarly, when forage or grain crops have been harvested prior to spraying, weeds present in the field will also have been cut. To allow for adequate green foliage to remain on weeds in this situation, raise cutter bars as high as possible from the ground to cut stubble and weeds at a greater height.

## BURNDOWN OF GRASS COVER CROPS OR VOLUNTEER CEREALS

When using Gramoxone SL 2.0 for control of grass cover crops or volunteer cereals, best results are obtained when Gramoxone SL 2.0 is applied prior to tillering or after boot stage. This is especially important with a wheat cover crop or volunteer wheat. Treatments made between tillering and boot stage will generally not provide complete control. Do not expect complete control of perennial cover crops.

## PRECAUTIONS AND RESTRICTIONS

### EQUIPMENT/CONTAINER

Flush all spray equipment with water after use each day. Gramoxone SL 2.0 is corrosive to aluminum. Aluminum spray equipment and aluminum aircraft structures that are exposed to spray solution or spray drift should be flushed thoroughly with water immediately after use.

In dry areas, dust stirred up by high winds or equipment tires can coat weed or plant leaves and reduce Gramoxone SL 2.0 activity. Avoid applying Gramoxone SL 2.0 in extremely dusty conditions.

### LIMITATIONS AND PRECAUTIONS

- For Cotton Harvest Aid: Do not pasture livestock in treated fields or feed treated foliage.
- DO NOT use around home gardens, schools, recreational parks, or playgrounds.
- In preplant and preemergence (to the crop) uses, do not apply to soils lacking clay minerals, e.g., peat, muck, pure sand, artificial planting media.
- Seedbeds and plantbeds should be formed as far ahead of planting and treatment as possible to permit maximum weed and grass emergence prior to treatment.
- To reduce germination of new weeds, seeding or transplanting should be done with a minimum amount of soil disturbance.
- Gramoxone SL 2.0 used for preplant weed control over the top of plastic mulch may damage transplants which come in contact with the plastic. Sufficient rainfall or sprinkler irrigation to cause wash-off prior to planting may be needed to prevent damage to the crop.
- Weeds and grasses emerging after application of Gramoxone SL 2.0 will not be controlled or suppressed.
- Unless otherwise indicated, crop plants emerged at time of application may be severely injured or killed if contacted by sprays of Gramoxone SL 2.0.

### PARAQUAT-RESISTANT WEED MANAGEMENT

Some naturally occurring weed biotypes resistant to paraquat may exist through normal genetic variability in any weed population. The repeated use of herbicides with the same mode of action is known to lead under certain conditions to a

selection of resistant weeds. Certain agronomic practices reduce the likelihood that resistant weed populations will develop and integrated strategies are known to manage such problem weeds.

The active ingredient in Gramoxone SL 2.0 is paraquat, a mechanism of action Group 22 herbicide, which inhibits Photosystem I.

Within the USA specific biotypes of a number of species, including horseweed/marestail (*Conyza canadensis*), hairy fleabane (*Conyza bonariensis*), goosegrass (*Eleusine indica*) and American black nightshade (*Solanum americanum*) have become resistant to paraquat.

General principles of herbicide resistance management:

Apply integrated weed management practices. Use multiple herbicide mechanisms of action with overlapping weed spectrums in rotation, sequences or mixtures. Use the full specified herbicide rate and proper application timing for the hardest to control weed species present in the field.

Scout fields after herbicide application to ensure control has been achieved. Avoid allowing weeds to reproduce by seed or to proliferate vegetatively.

Monitor site and clean equipment between sites.

For annual cropping situations also consider the following:

Start with a clean field and control weeds early by using a burndown treatment or tillage in combination with a preemergence residual herbicide as appropriate.

Use cultural practices, such as cultivation and crop rotation, where appropriate.

Use good agronomic principles that enhance crop competitiveness.

Contact your local extension specialist, certified crop advisor, and/or manufacturer for herbicide resistance management and/or integrated weed management recommendations for specific crops and resistant weed biotypes.

Since the occurrence of resistant weeds is difficult to detect prior to use, Syngenta accepts no liability for any losses that may result from the failure of Gramoxone SL 2.0 to control resistant weeds.

Refer to the label for tank mix and REI information.

Limitations, Restrictions, and Exceptions

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## Tropical Signalgrass

Apply Manuscript in a program approach with Monument 75WG. Once large patches of tropical signalgrass have been controlled by Manuscript these areas can quickly become infested with nutsedge, kyllinga and broadleaf weeds. Sequential applications of Monument 75WG following Manuscript will control these weeds.

Treatments should be initiated early to mid-summer when tropical signalgrass is actively growing and not under stress. Apply the following herbicide program:

- Manuscript at 19.2 fl oz per acre followed 14 days later by
- Monument 75WG at 0.53 oz per acre followed 14 days later by
- Monument 75WG at 0.53 oz per acre.

## Bull Paspalum and Thin Leaf Paspalum

Apply Manuscript early to mid-summer when bull and thin leaf paspalum are actively growing and not under stress. To control bull or thin leaf paspalum apply:

- Manuscript at 19.2 fl oz per acre once

OR

- Manuscript at 9.6 fl oz per acre followed 14 days later by
- Manuscript at 9.6 fl oz per acre.

## Comments

9.6 fl oz product per acre, 6.5 mL product per 1000 sq ft, 0.22 fl oz product per 1000 sq ft: Make 2 applications, 14 to 21 days apart.

19.2 fl oz product per acre, 13.0 mL product per 1000 sq ft, 0.44 fl oz product per 1000 sq ft: Apply once

Apply in a minimum water volume of 10 gallons per acre.

DO NOT apply more than 19.2 fl oz of Manuscript per acre per calendar year.

USE RESTRICTIONS AND PRECAUTIONS FOR GOLF COURSES AND SOD FARMS

- Manuscript may cause temporary discoloration of St. Augustine Grass and reduced growth rate. DO NOT use Manuscript on St. Augustine Grass sod production unless injury can be tolerated.
- DO NOT use on turfgrasses other than those listed above or severe injury may occur.
- DO NOT apply Manuscript to golf course greens.
- DO NOT apply Monument 75WG to newly seeded, sodded or sprigged turfgrass. Delay applications for at least 4 weeks after sprigging, seed emergence, or sodding.
- DO NOT apply by air or through any type of irrigation system.
  
- DO NOT apply more than 19.2 fl oz of Manuscript per acre per calendar year.
- Ornamental grasses and other landscape plants may be sensitive to Manuscript. Avoid direct application or spray drift to areas where these plants are grown.
- Manuscript is rainfast within 2 hour after application.

#### Method

[Broadcast Application](#)

#### Rates

[field rates 0](#)

[field rates 1](#)

[field rates 2](#)

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#### Timings

[Early to mid-summer when tropical signalgrass is actively growing and not under stress.](#)

[Early to mid-summer when tropical signalgrass is actively growing and not under stress.](#)