



# PASTORA<sup>®</sup>

## Herbicide

**NICOSULFURON &  
METSULFURON-METHYL**

**GROUP**

**2**

**HERBICIDE**

**Dry Flowable**

**For Use on Established Bermudagrass Pastures and Hay Meadows, Bermudagrass Turf (Unimproved Only)**

**Active Ingredient**

**By Weight**

Nicosulfuron

2-[[[4,6-dimethoxypyrimidin-2-yl)aminocarbonyl]aminosulfonyl]-N,  
N-dimethyl-3-pyridinecarboxamide ..... 56.2%

Metsulfuron-Methyl

Methyl 2-[[[[4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]  
carbonyl]amino]sulfonyl]benzoate.....15.0%

**Other Ingredients** ..... 28.8%

**Total**

**100.0%**

**EPA Reg. No. 101563-179**

**EPA Est. No.**

**KEEP OUT OF REACH OF  
CHILDREN  
CAUTION**

See Back Panel for First Aid  
Instructions and Booklet for  
Complete Precautionary  
Statements and Directions for Use.

**85775081**

85849069E 221216AV1  
Nonrefillable Container  
Net Weight

**5 Ounces**

**PRODUCED FOR**  
**Environmental Science U.S., LLC**  
**5000 CentreGreen Way, Suite 400**  
**Cary, NC 27513**

For **MEDICAL** and **TRANSPORTATION** Emergencies  
**ONLY Call 24 Hours A Day 1-800-424-9300**  
For **PRODUCT USE** Information, Call 1-800-331-2867

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

### **FIRST AID**

**IF IN EYES:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**IF ON SKIN OR CLOTHING:** 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 SWALLOWED:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by 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. You may also contact 1-800-424-9300 for emergency medical treatment information.

## **PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

### **CAUTION.**

Causes moderate eye irritation. Harmful if absorbed through skin. Avoid contact with skin, eyes, or clothing. Avoid breathing dust or spray mist.

### **PERSONAL PROTECTIVE EQUIPMENT (PPE)**

Applicators and other handlers must wear:

Long-sleeved shirt and long pants

Shoes plus socks

Chemical resistant gloves (such as butyl rubber, natural rubber, neoprene rubber, or nitrile rubber), all > 14 mils

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

**ENGINEERING CONTROL STATEMENT:** When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS

## **USER SAFETY RECOMMENDATIONS**

**Users should:** Wash thoroughly with soap and water after handling and 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. Users should 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**

Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or when disposing of equipment washwaters or rinsate. Do not apply where/when conditions could favor runoff.

### **GROUNDWATER ADVISORY**

Nicosulfuron and metsulfuron-methyl are known to leach through soil into groundwater under certain conditions as a result of label use. This chemical may leach into groundwater if used in areas where soils are permeable, particularly where the water table is shallow.

### **SURFACE WATER ADVISORY**

This product may impact surface water quality due to runoff of rain water. This is especially true for poorly draining soils and soils with shallow ground water. This product is classified as having high potential for reaching surface water via runoff for several months or more after application. A level, well-maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential loading of nicosulfuron and metsulfuron-methyl from runoff water and sediment. Runoff of this product will be greatly reduced by avoiding applications when rainfall or irrigation is expected to occur within 48 hours.

## **DIRECTIONS FOR USE**

**It is a violation of Federal law to use this product in a manner inconsistent with its labeling.**

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.

PASTORA® HERBICIDE must be used only in accordance with instructions on this label. To the extent of applicable law, ENVIRONMENTAL SCIENCE U.S., LLC will not be responsible for losses or damages resulting from the use of this product in any manner not specified by ENVIRONMENTAL SCIENCE U.S., LLC

## **MANDATORY SPRAY DRIFT**

### Aerial Applications:

- Do not release spray at a height greater than 10 ft above the vegetative canopy, unless a greater application height is necessary for pilot safety.
- For applications prior to the emergence of crops and target weeds, applicators are required to use a Coarse or coarser droplet size (ASABE S572.1).
- For all other applications, applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- The boom length must not exceed 65% of the wingspan for airplanes or 75% of the rotor blade diameter for helicopters.
- Applicators must use ½ swath displacement upwind at the downwind edge of the field.
- Nozzles must be oriented so the spray is directed toward the back of the aircraft.
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- Do not apply during temperature inversions.

### Ground Boom Applications:

- Apply with the nozzle height recommended by the manufacturer, but no more than 3 feet

above the ground or target vegetation unless making pasture and rangeland applications, in which case applicators may apply with a nozzle height no more than 4 feet above the crop or target vegetation.

- For applications prior to the emergence of crops and target weeds, applicators are required to use a Coarse or coarser droplet size (ASABE S572.1).
- For all other applications, applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- Do not apply during temperature inversions.

### Boom-less Ground Applications:

- Applicators are required to use a medium or coarser droplet size (ASABE S572.1) for all applications.
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- Do not apply during temperature inversions.

## **SPRAY DRIFT ADVISORIES**

### Boom-less Ground Applications:

- Setting nozzles at the lowest effective height will help to reduce the potential for spray drift.

### Handheld Technology Applications:

- Take precautions to minimize spray drift.

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

## **IMPORTANCE OF DROPLET SIZE**

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

### **Controlling Droplet Size – Ground Boom**

- Volume - Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray

volume is needed, consider using a nozzle with a higher flow rate.

- Pressure - Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.
- Spray Nozzle - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

#### **Controlling Droplet Size – Aircraft**

- Adjust Nozzles - Follow nozzle manufacturers recommendations for setting up nozzles. Generally, to reduce fine droplets, nozzles should be oriented parallel with the airflow in flight.

#### **BOOM HEIGHT – Ground Boom**

Use the lowest boom height that is compatible with the spray nozzles that will provide uniform coverage. For ground equipment, the boom should remain level with the crop and have minimal bounce.

#### **RELEASE HEIGHT - Aircraft**

Higher release heights increase the potential for spray drift. When applying aurally to crops, do not release spray at a height greater than 10 ft above the crop canopy, unless a greater application height is necessary for pilot safety.

#### **SHIELDED SPRAYERS**

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

#### **TEMPERATURE AND HUMIDITY**

When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

#### **TEMPERATURE INVERSIONS**

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of 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. Avoid applications during temperature inversions.

#### **WIND**

Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS. Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

#### **NON-TARGET ORGANISM ADVISORY**

This product is toxic to plants and may adversely impact the forage and habitat of non-target organisms, including pollinators, in areas adjacent to the treated area. Protect the forage and habitat of non-target organisms by minimizing spray drift. For further guidance and instructions on how to minimize spray drift, refer to the Spray Drift Management section of this label.

#### **WINDBLOWN SOIL PARTICLES ADVISORY**

PASTORA® HERBICIDE has the potential to move off-site due to wind erosion. Soils that are subject to wind erosion usually have a high silt and/or fine to very fine sand fractions and low organic matter content. Other factors which can affect the movement of windblown soil include the intensity and direction of prevailing winds, vegetative cover, site slope, rainfall, and drainage patterns. Avoid applying PASTORA® HERBICIDE if prevailing local conditions may be expected to result in off-site movement.

## PRODUCT INFORMATION

PASTORA® HERBICIDE is registered for use on bermudagrass pastures and hay meadows, and for use in non-crop areas. Check with your state extension or Department of Agriculture before use to be certain PASTORA® HERBICIDE is registered in your state.

PASTORA® HERBICIDE is a dry-flowable granule that controls or suppresses broadleaf and grass weeds. PASTORA® HERBICIDE is mixed in water and applied as a uniform broadcast spray. A spray adjuvant must be used in the spray mix unless otherwise specified on this label. PASTORA® HERBICIDE is noncorrosive, nonflammable, nonvolatile, and does not freeze.

PASTORA® HERBICIDE controls broadleaf weeds by preemergence and postemergence activity and grass weeds by postemergence activity. For best results, apply PASTORA® HERBICIDE to young, actively growing weeds. Weeds hardened off by cold weather or drought stress may not be controlled. The use rate depends upon the weed spectrum and size of weeds at application. The degree and duration of control may depend on the following factors:

- weed spectrum and infestation intensity
- weed size and maturity at application
- environmental conditions during and following treatment
- application rate and coverage

It is permissible to treat intermittently flooded low lying sites, seasonally dry flood plains, and transitional areas between upland and lowland sites when no water is present. It is also permissible to treat marshes, swamps, and bogs after water has receded as well as seasonally dry flood deltas. DO NOT make applications to natural or man-made bodies of water including lakes, reservoirs, ponds, streams, and canals.

### BIOLOGICAL ACTIVITY AND ENVIRONMENTAL CONDITIONS

PASTORA® HERBICIDE is absorbed through the foliage and roots of weeds, rapidly inhibiting their growth. Leaves of susceptible plants appear chlorotic from 1 to 3 weeks after application,

and the growing point subsequently dies. The final effects on annual weeds are evident about 4 to 6 weeks after application. The ultimate effects on perennial weeds occur in the growing season following application.

One to two inches of rainfall or sprinkler irrigation (enough to wet the top 2-3 inches of soil profile) may be needed to move PASTORA® HERBICIDE into the weed root zone before the next flush of broadleaf weeds emerge. The amount of moisture required for sufficient activation increases with crop or weed residue and for finer textured soils. Without sufficient rainfall or sprinkler irrigation to move PASTORA® HERBICIDE into the weed root zone, weeds that germinate after treatment will not be controlled.

Application of PASTORA® HERBICIDE provides the best control in vigorously growing pastures that shade competitive weeds. Weed control in areas of thin grass may not be as satisfactory. However, a bermudagrass canopy that is too dense at application can intercept spray and reduce weed control.

In warm, moist conditions, the expression of herbicide symptoms is accelerated in weeds; in cold, dry conditions, expression of herbicide symptoms is delayed. In addition, weeds hardened-off by drought stress are less susceptible to PASTORA® HERBICIDE.

Weed control or suppression may be reduced if rainfall or sprinkler irrigation occurs within 4 hours after application.

Weed control needs to be part of an overall pasture management plan which includes good fertility, adequate moisture (rainfall, irrigation), insect and rodent control, and other agronomic practices which maximize bermudagrass growth. Consult your state cooperative extension service, local agricultural dealer, professional consultant, or other qualified authority for specific instructions regarding proper management of bermudagrass pastures.

## USE RESTRICTIONS

- DO NOT apply or drain or flush equipment on or near desirable trees or other plants, or on areas where their roots extend, or in locations where the product may be washed or moved into contact with their roots, as injury or loss of desirable trees or other plants may result.
- DO NOT use on lawns, walks, driveways, tennis courts, golf courses, athletic fields, or other high-maintenance, and fine turfgrass areas.
- DO NOT apply to irrigated land where the tailwater will be used to irrigate crops.
- DO NOT apply to frozen or snow-covered ground as surface runoff may occur.
- DO NOT apply more than 2.5 ounces of PASTORA® HERBICIDE (0.088 pounds of nicosulfuron and 0.023 pounds of metsulfuron-methyl) per acre per year for use in bermudagrass pastures, unimproved bermudagrass turf, and non-crop uses.
- DO NOT use PASTORA® HERBICIDE in the following counties of Colorado: Alamosa, Conejos, Costilla, Rio Grande, and Saquache.
- DO NOT apply through any type of irrigation system.
- DO NOT make more than two applications of PASTORA® HERBICIDE to all use sites per year when using reduced application rates. Allow at least 16 days between applications.
- DO NOT apply more than 1.5 ounces (0.053 pounds nicosulfuron and 0.014 pounds of metsulfuron-methyl) of PASTORA® HERBICIDE per acre in a single broadcast application for all use sites. For spot applications, DO NOT apply more than 2.5 ounces (0.088 pounds of nicosulfuron and 0.023 pounds of metsulfuron-methyl) in a single application or annually.

## USE PRECAUTIONS

- Grass species or varieties may differ in their response to various herbicides. Some bermudagrass varieties including World Feeder, Midland 99, and Jiggs are more sensitive to PASTORA® HERBICIDE and are more likely to exhibit crop response in the form of temporary yellowing

or stunting. ENVIRONMENTAL SCIENCE U.S., LLC advises that you first consult your state experiment station, university, or extension agent as to sensitivity to any herbicide. If no information is available, limit the initial use of PASTORA® HERBICIDE to a small area.

- Under certain conditions including heavy rainfall, high pH, prolonged cold weather, or wide fluctuations in day/night temperatures prior to or soon after PASTORA® HERBICIDE application, temporary discoloration and/or grass injury may occur. PASTORA® HERBICIDE must not be applied to grass that is stressed by severe weather conditions, drought, low fertility, water saturated soil, disease, or insect damage, as grass injury may result. Severe winter stress, drought, disease, or insect damage before or following application also may result in grass injury.
- Applications may make some toxic plants more palatable to cattle as the weeds are dying. DO NOT graze treated areas until toxic plants are dry and unpalatable to livestock.
- Applications of PASTORA® HERBICIDE to pastures undersown with legumes may cause injury to the legumes.
- To reduce the potential for movement of treated soil due to wind erosion, DO NOT apply to powdery dry or light sandy soils until they have been stabilized by rainfall, trashy mulch, reduced tillage, or other cultural practices. Injury to immediately adjacent crops may occur when treated soil is blown onto land used to produce crops other than bermudagrass.
- For ground applications applied to weeds when dry, dusty field conditions exist, control of weeds in wheel track areas may be reduced. The addition of 2,4-D may improve weed control under these conditions.
- Applications of PASTORA® HERBICIDE to grass grown for seed, sod, or sprigging has not been evaluated for all bermudagrass varieties. Use of PASTORA® HERBICIDE may result in reduced yield and needs to be evaluated by the user under local conditions. To the extent consistent with applicable law, this risk must be assumed by the user.

## WEED RESISTANCE MANAGEMENT

PASTORA® HERBICIDE contains the active ingredients nicosulfuron and metsulfuron-methyl which are a Group 2 Herbicide based on the mode of action classification system of the Weed Science Society of America. When herbicides that affect the same biological site of action are used repeatedly over several years to control the same weed species in the same field, naturally-occurring resistant biotypes may survive a correctly applied herbicide treatment, propagate, and become dominant in that field. Adequate control of these resistant weed biotypes cannot be expected.

Follow the best management practices listed below to delay the development of herbicide resistant weeds.

- Fields should be scouted prior to application to identify the weed species present and their growth stage to determine if the intended application will be effective. Fields should be scouted after application to verify that the treatment was effective.
- Identify weeds present in the field through scouting and field history and understand their biology. The weed-control program should consider all of the weeds present.
- Suspected herbicide-resistant weeds may be identified by these indicators:
  - o Failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds;
  - o A spreading patch of non-controlled plants of a particular weed species; and
  - o Surviving plants mixed with controlled individuals of the same species.
- Contact your local sales representative, crop advisor, or extension agent to find out if suspected resistant weeds to this MOA have been found in your region. If resistant biotypes of target weeds have been reported, use the application rates of this product specified for your local conditions. Tank mix products so that there are multiple effective mechanisms of actions for each target weed.
- Report any incidence of non-performance of this product against a particular weed species to your Environmental Science U.S., LLC distributor, Environmental Science U.S., LLC representative or call 1-800-331-2867.

- If resistance is suspected, treat weed escapes with an herbicide having a different mechanism of action and/or use non-chemical means to remove escapes, as practical, with the goal of preventing further seed production.
- Use a diversified approach toward weed management. Whenever possible incorporate multiple weed-control practices such as mechanical cultivation, biological management practices, and crop rotation.
- To the extent possible, do not allow weed escapes to produce seeds, roots, or tubers.
- Difficult to control weeds may require sequential applications of herbicides with differing mechanisms of action.
- Apply this herbicide at the correct timing and rate needed to control the most difficult weeds in the field.
- Use a broad spectrum soil-applied herbicide with a mechanism of action that differs from this product as a foundation in a weed-control program.
- Do not use more than two applications of this or any other herbicide with the same mechanism of action within a single growing season unless mixed with an herbicide with another mechanism of action with an overlapping spectrum for the difficult-to-control weeds.

## INTEGRATED PEST MANAGEMENT

This product may be used as part of an Integrated Pest Management (IPM) program that can include biological, cultural, and genetic practices aimed at preventing economic pest damage. IPM principles and practices include field scouting or other detection methods, correct target pest identification, population monitoring, and treating when target pest populations reach locally determined action thresholds. Consult your state cooperative extension service, professional consultants, or other qualified authorities to determine appropriate action treatment threshold levels for treating specific pest/crop systems in your area.



## AGRICULTURAL USES

### 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 4 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

Shoes plus socks

Chemical resistant gloves (such as butyl rubber, natural rubber, neoprene rubber, or nitrile rubber), all  $\geq 14$  mils

### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses. Non-crop weed control is not within the scope of the Worker Protection Standard. Do not enter or allow others to enter the treated area until sprays have dried.

## BERMUDAGRASS PASTURES

### APPLICATION TIMING

Apply PASTORA® HERBICIDE to bermudagrass pastures and hay meadows that have been established for at least one growing season. For best results, time applications to young, actively growing broadleaf or grass weeds.

Applications of PASTORA® HERBICIDE may result in temporary yellowing or stunting of bermudagrass. Crop response is more likely if bermudagrass is stressed from adverse environmental conditions (including drought, extreme temperatures or moisture), abnormal soil conditions (e.g. soils low in potassium), or cultural practices (e.g. over-grazing).

Applications targeting winter and early season weeds while the bermudagrass is dormant will minimize potential for crop response.

Spring or summer applications of PASTORA® HERBICIDE may temporarily reduce grass production. Crop response is minimized by treating when bermudagrass has less than 2" of new growth during initial green-up or by treating soon after cutting for hay (before one to two inches of new bermudagrass growth appears).

Weeds may continue to germinate throughout the growing season. Also, regrowth of treated weeds may occur due to adverse environmental conditions. To control weeds under these conditions, a sequential application of PASTORA® HERBICIDE may be necessary. Allow at least 16 days between applications of PASTORA® HERBICIDE.

### USE RATES

Apply 1.0 to 1.5 ounces (0.035 to 0.053 pounds nicosulfuron; 0.009 to 0.014 pounds metsulfuron-methyl) PASTORA® HERBICIDE per acre as a broadcast application to established bermudagrass pastures.

For spot applications, mix 2.5 ounces (0.088 pounds nicosulfuron and 0.023 pounds metsulfuron-methyl) of PASTORA® HERBICIDE per 25 gallons of water and cover no less than one acre for treatment

of weeds on the **WEEDS CONTROLLED OR SUPPRESSED** list.

### **SPRAY ADJUVANTS**

Unless otherwise directed, applications of PASTORA® HERBICIDE must include a surfactant. In addition, ammonium nitrogen fertilizer and/or antifoaming agents can be used unless specifically prohibited by tank mix partner labeling. Consult local ENVIRONMENTAL SCIENCE U.S., LLC fact sheets, technical bulletins, and service policies prior to using other adjuvant systems. If another herbicide is tank mixed with PASTORA® HERBICIDE, select adjuvants authorized for use with both products. Products must contain only EPA-exempt ingredients.

#### **Nonionic Surfactant (NIS)**

- NIS is the preferred surfactant under most conditions.
- Apply at 0.25% v/v (1 quart per 100 gallons spray solution) or 0.5% under arid conditions.
- Surfactant products must contain at least 60% nonionic surfactant with a hydrophilic/lipophilic balance (HLB) greater than 12.

#### **Drop Oil Concentrate (COC)**

- Use of COC may increase the potential for bermudagrass injury.
- Apply at 1% v/v (1 gallon per 100 gallons spray solution) or 2% under arid conditions.
- Oil adjuvants must contain at least 80% high quality petroleum (mineral) with at least 15% surfactant emulsifiers

#### **Ammonium Nitrogen Fertilizer**

- Use 2 quarts/acre of a high-quality urea ammonium nitrate (UAN), e.g. 28%N or 32%N, or 2 pounds/acre of a spray grade ammonium sulfate (AMS). Use 4 quarts/acre UAN or 4 pounds/acre AMS under arid conditions.
- DO NOT use low rates of liquid fertilizer as a substitute for surfactant.
- See "Tank Mixtures with Liquid Solution Fertilizer" for instructions on using fertilizer as a

carrier in place of water.

### **Special Adjuvant Types**

- Combination adjuvant products may be used at doses that provide the required amount of NIS, COC, and/or ammonium nitrogen fertilizer. Consult product literature for use rates and restrictions. Use of combination adjuvant products may increase the potential for bermudagrass injury.
- In addition to the adjuvants specified above, other adjuvant types may be used if they provide the same functionality and have been evaluated and approved by ENVIRONMENTAL SCIENCE U.S., LLC. Consult separate ENVIRONMENTAL SCIENCE U.S., LLC technical bulletins for detailed information before using adjuvant types not specified on this label.

### **WEED CONTROL INFORMATION**

PASTORA® HERBICIDE may be applied post emergence to control or suppress weeds listed on, but not limited to, this label. For best results, treat weeds when they are small and actively growing. Unless otherwise directed, treat when broadleaf weeds are less than 4" and grass weeds are less than 2" tall or in diameter (natural size - not after mowing or grazing).

Broadleaf pasture species, including alfalfa and clover, are highly sensitive to PASTORA®

HERBICIDE and will be severely stunted or injured.

**WEEDS CONTROLLED OR SUPPRESSED**

**1.0 ounce/acre (0.035  
pounds/acre nicosulfuron;  
0.009 pounds/acre  
metsulfuron-methyl)**

Annual bluegrass  
Annual marshelder  
Barnyardgrass  
Bitter sneezeweed  
Blackeyed-Susan  
Blue/purple mustard\*  
Broadleaf signalgrass  
Broomweed, common  
Buckbrush‡  
Bur buttercup (testiculate)  
Burclover  
Burdock  
Buttercup  
Canada thistle\*‡  
Carolina geranium  
Coast fiddleneck (tar-  
weed)  
Common chickweed  
Common mullein  
Common purslane  
Common yarrow  
Conical catchfly  
Corn gromwell\*‡  
Cowcockle  
Crabgrass, large\*‡  
Curly dock  
Cutleaf evening primrose\*‡  
Dandelion  
Dogfennel  
Downy brome‡  
False chamomile  
Field pennycress (fanweed)  
Filaree  
Flixweed\*†  
Foxtails (bristly, giant, green,  
yellow\*)  
Goosegrass‡  
Groundsel (common)  
Hemp dogbane‡  
Henbit

Horsemint (beebalm)  
Horsenettle‡  
Itchgrass  
Japanese brome\*††  
Jimsonweed  
Johnsongrass\*†  
Kochia\*†  
Lambsquarters (common,  
slimleaf)  
Little barley  
Marestail†  
Mayweed chamomile  
Miners lettuce  
Morningglory (ivyleaf,  
pitted, tall)  
Panicum (browntop, fall,  
Texas)  
Pigweed† (redroot, smooth,  
tumble)  
Plains coreopsis  
Plantain  
Pokeweed‡

Prickly lettuce\*†  
Prostrate knotweed\*‡  
Purple scabious  
Quackgrass‡  
Rescuegrass‡  
Russian thistle\*†  
Ryegrass\*† (Italian, perennial)  
Sandbur\* (field, longspine)  
Shattercanet  
Shepherd's purse  
Smallseed falseflax  
Smartweed (green, ladysthumb,  
pale, PA)  
Snow speedwell  
Sorghum alnum  
Tansymustard\*  
Timothy  
Treacle mustard (Bushy  
Wallflower)  
Tumble/Jim Hill mustard  
Volunteer cereals (barley, oats,  
rye, triticale, wheat)

Volunteer sunflower\*  
Waterpod  
Western snowberry‡  
Wild buckwheat\*‡  
Wild carrot  
Wild garlic\*  
Wild mustard  
Wild oats  
Wild proso millet  
Wild sunflower\*‡  
Wirestem muhly  
Witchgrass  
Woolly croton\*  
Woolly Cupgrass

**Additional weeds at 1.25 to 1.5 ounces/acre (0.044 to 0.053 pounds/acre nicosulfuron; 0.012 to 0.014 pounds/acre metsulfuron-methyl)**

Annual sowthistle	Dewberry*†	Seaside arrowgrass
Aster	Goldenrod	Sericea lespedeza*
Bittercress	Honeysuckle‡	Silky crazyweed (locoweed)
Blackberry*‡	Maximillion sunflower	Spotted knapweed*‡
Broom snakeweed*‡	Multiflora rose*‡	Sweet clover
Buckhorn plantain‡	Musk thistle*	Teasel‡
Chicory	Pensacola bahiagrass*	Wild lettuce
Clover	Plumeless thistle‡	Wood sorrel
Cocklebur	Redstem filaree	Vaseygrass*‡
Corn cockle	Rough fleabane	Yankeweed
Crown vetch	Scotch thistle*	

\* See the **Specific Weed Instructions** section.

‡ **Weed suppression** is a reduction in weed competition (reduced population and/or vigor) as visually compared to an untreated area. The degree of suppression varies with the rate used, the size of the weeds, and the environmental conditions following treatment.

† Naturally occurring resistant biotypes of these weeds are known to occur. See **WEED RESISTANCE** section of the label for more information.

### **SPECIFIC WEED INSTRUCTIONS**

Thorough spray coverage of all weed species listed below is very important.

**Blackberry, Dewberry, Multiflora Rose:** For suppression with broadcast applications, apply PASTORA® HERBICIDE at 1.5 ounces (0.053 pounds nicosulfuron; 0.014 pounds metsulfuron-methyl)

per acre. Apply in the spring, soon after plant is fully leafed and is less than 3 feet tall. For control with broadcast applications, PASTORA® HERBICIDE may be tank mixed with 0.33 to 0.75 ounces of CIMARRON® PLUS HERBICIDE (EPA Reg. No. 432-1572, containing metsulfuron-methyl and chlorsulfuron) per acre.

**Blue/Purple Mustard, Flixweed, and Tansymustard:** For best results, apply PASTORA® HERBICIDE tank mixtures with 2,4-D postemergence to mustards, but before bloom.

**Broom Snakeweed:** For best results, apply PASTORA® HERBICIDE at 1.5 ounces (0.053 pounds nicosulfuron; 0.014 pounds metsulfuron-methyl) per acre in the fall.

**Canada Thistle:** For suppression, apply either PASTORA® HERBICIDE or PASTORA® HERBICIDE plus 2,4-D in the spring after the majority of thistles have emerged and are small (rosette stage to 6" elongating stems) and actively growing. The application will inhibit the ability of emerged thistles to compete with grass.

**Corn Gromwell, Cutleaf Evening Primrose, and Prostrate Knotweed:** Apply PASTORA® HERBICIDE when weeds are actively growing, are no larger than 2" tall, and when crop canopy will allow thorough coverage. Tank mixing 2,4-D with PASTORA® HERBICIDE can improve results.

**Crabgrass (large):** For best suppression of Large Crabgrass, apply PASTORA® HERBICIDE in a tank mix with 0.156 to 0.256 pounds glyphosate per acre. Note that "Large Crabgrass" refers to a type of crabgrass - not the size of crabgrass. For best results, you must treat crabgrass when it is newly germinated to less than 2" in height (not after mowing).

**Japanese Brome:** For best results, use PASTORA® HERBICIDE in a tank mix with glyphosate.

**Johnsongrass:** For best results on seedling Johnsongrass, apply PASTORA® HERBICIDE before seedlings reach 12" in height. For best results on rhizome Johnsongrass, apply PASTORA® HERBICIDE when Johnsongrass is from 10" to 18" in height. If treating after pasture has been mowed, treat about 10 to 14 days after mowing when Johnsongrass has 6" to 8" of leaf surface for herbicide to contact.

**Kochia, Russian thistle, Prickly lettuce:** Naturally occurring resistant biotypes of these weeds are known to occur. For best results, use PASTORA® HERBICIDE in a tank mix with dicamba and 2,4-D. Apply PASTORA® HERBICIDE in the spring when kochia, Russian thistle, and prickly lettuce are less than 2" tall or 2" across and are actively growing.

**Musk Thistle, Scotch Thistle:** Apply PASTORA® HERBICIDE at 1.0 to 1.5 ounces (0.035 to 0.053 pounds nicosulfuron; 0.009 to 0.014 pounds metsulfuron-methyl) per acre in the spring or early summer prior to flowering or in the fall after newly emerged plants have reached the rosette stage of growth. Certain biotypes of Musk and Scotch Thistles are less sensitive to PASTORA® HERBICIDE and may not be fully controlled with PASTORA® HERBICIDE. Consult with your local ENVIRONMENTAL SCIENCE U.S., LLC representative, dealer or applicator for specific use rate and tank mix instructions for your area. Fall applications needs to be made before the soil freezes.

**Pensacola bahiagrass:** Apply PASTORA® HERBICIDE at 1.25 to 1.5 ounces (0.044 to 0.053 pounds nicosulfuron; 0.012 to 0.014 pounds metsulfuron-methyl) per acre after green-up in the spring but before bahiagrass seedhead formation. Apply when moisture is sufficient to enhance grass growth. PASTORA® HERBICIDE is very effective for removal of bahiagrass from bermudagrass pastures. In highly infested pastures, the use of PASTORA® HERBICIDE can clear the areas of useful forage until the bermudagrass has time to cover the area. Therefore, PASTORA® HERBICIDE treatments needs to be spread out over a period of years. DO NOT apply to an entire farm or ranch in one year. Fertilization (particularly with nitrogen and potassium) and/or replanting may accelerate the process of reestablishment of bermudagrass.

Under heavy bahiagrass pressure, grazing pressure, or adverse weather conditions (heat and drought), bahiagrass regrowth may occur.

DO NOT use PASTORA® HERBICIDE for the control of common or Argentine bahiagrass. Also, DO NOT apply PASTORA® HERBICIDE in liquid fertilizer solutions for Pensacola bahiagrass control, as poor

control and/or regrowth may occur.

**Ryegrass (Italian, perennial):** For best results when ryegrass is greater than 2" in height, for heavy populations or for later flushes, apply PASTORA® HERBICIDE at 1 ounce (0.035 pounds nicosulfuron; 0.009 pounds metsulfuron-methyl) per acre and follow with a second application at 1 ounce per acre in 3 to 4 weeks. In areas where known populations of ALS herbicide resistant ryegrass are known to exist, control may not be satisfactory.

**Sandbur:** Apply when sandbur is newly germinated to 1.5" tall. Make applications when bermudagrass is less than 4" tall following green-up in the spring or after cutting for hay. Tall, dense stands of bermudagrass can intercept spray and reduce sandbur control.

In some areas, sandbur may overwinter and start the new season with an established root system. For overwintering sandbur or newly germinated sandbur that is greater than 1.5" tall, applications of PASTORA® HERBICIDE may only suppress growth resulting in a reduction in sandbur seedheads. For best results in these situations, apply PASTORA® HERBICIDE in a tank mix with 0.156 to 0.257 pounds glyphosate per acre.

A follow-up application of PASTORA® HERBICIDE may be necessary to control subsequent germination (flushes) of sandbur following the first application or when the first application was made to larger sandbur or under unfavorable environmental conditions.

Sandbur Management must be part of an overall pasture management plan which includes good fertility, adequate moisture (rainfall, irrigation), insect and rodent control, and other agronomic practices which maximize bermudagrass growth. In contrast, sandbur control in areas with thin stands of bermudagrass may not be satisfactory.

**Sericea lespedeza:** For best results, apply PASTORA® HERBICIDE at 1.25 to 1.5 ounces (0.044 to 0.053 pounds nicosulfuron; 0.012 to 0.014 pounds metsulfuron-methyl) per acre beginning at flower bud through the full bloom stage of growth. DO NOT make applications if drought conditions exist at the time of application.

**Spotted Knapweed:** For best results, apply PASTORA® HERBICIDE with dicamba and 2,4-D.

**Sunflower (wild or volunteer):** Apply either PASTORA® HERBICIDE or PASTORA® HERBICIDE plus 2,4-D after the majority of sunflowers have emerged, are 2" to 4" tall, and are actively growing. Use spray volumes of at least 3 gallons by air or 10 gallons by ground.

**Vaseygrass:** Apply PASTORA® HERBICIDE at 1.0 to 1.5 ounces (0.035 to 0.053 pounds nicosulfuron; 0.009 to 0.014 pounds metsulfuron-methyl) per acre when Vaseygrass is from 10" to 14" in height or diameter. If treating after pasture has been mowed, treat about 10 to 14 days after mowing when Vaseygrass has 6" to 8" of leaf surface for herbicide to contact. A repeat application may be necessary to achieve an adequate level of control.

**Wild Buckwheat:** For best results, apply PASTORA® HERBICIDE plus 2,4-D when plants have no more than 3 true leaves (not counting the cotyledons). If plants are not actively growing, delay treatment until environmental conditions favor active weed growth.

**Wild Garlic:** Apply PASTORA® HERBICIDE in the early spring when wild garlic is less than 12" tall with 2" to 4" of new growth. Typical symptoms of dying garlic plants may not be noticeable for 2 to 5 weeks.

**Woolly Croton:** Apply PASTORA® HERBICIDE in the late spring or early summer from cotyledon through 2 true leaf stage.

**Yellow Foxtail:** For best results, use PASTORA® HERBICIDE in a tank mix with glyphosate.

## TANK MIXTURES

PASTORA® HERBICIDE may be tank mixed with other suitable registered herbicides, insecticides, and fungicides. It is the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the applicable restrictions and limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements of each product in the

tank mixture.

Since formulations may be changed and new ones introduced, it is advised that users premix a small quantity of a desired tank mix and observe for possible adverse changes (settling out, flocculation, etc.). Avoid mixtures of several materials and very concentrated spray mixtures. For best results, use of spray equipment having continuous agitation is advised.

### With Herbicides

PASTORA® HERBICIDE may be tank mixed with other suitable registered herbicides containing hexazinone to control weeds listed as suppressed, weeds resistant to PASTORA® HERBICIDE, or weeds not listed under Weeds Controlled or Suppressed. Some herbicide tank mixes may antagonize grass weed control.

**CIMARRON® PLUS HERBICIDE (EPA Reg. No. 432-1572; contains metsulfuron-methyl and chlorsulfuron):** PASTORA® HERBICIDE may be tank mixed with 0.33 to 0.75 ounces of CIMARRON® PLUS HERBICIDE per acre for control of blackberry, dewberry, multiflora rose, and honeysuckle. For best results on multiflora rose, application needs to be made in the spring, soon after plants are fully leafed and are less than 3 feet tall.

**CIMARRON® MAX HERBICIDE (EPA Reg. No. 432-1555 metsulfuron-methyl, 2,4-D and dicamba):** PASTORA® HERBICIDE may be tank mixed with CIMARRON® MAX HERBICIDE (containing metsulfuron-methyl) at Rate I to Rate II for additional control of blackberry, ragweed, and other brush and broadleaf weeds.

**2,4-D:** For additional broadleaf weed control PASTORA® HERBICIDE may be tank mixed with amine or ester formulations of 2,4-D at a rate of 0.5 to 1 pound active ingredient per acre.

**Glyphosate:** PASTORA® HERBICIDE may be tank mixed with 0.156 to 0.256 pounds glyphosate per acre for improved control of foxtails, little barley, ryegrass, and sandbur or for improved suppression of crabgrass, Japanese brome, and rescuegrass.

Postemergence application of PASTORA® HERBICIDE plus glyphosate may result in temporary

yellowing or stunting of bermudagrass. DO NOT make a tank mix application of PASTORA® HERBICIDE plus glyphosate if the bermudagrass is under stress from drought or any other reason as it may result in unacceptable crop injury.

#### **With Liquid Nitrogen Solution Fertilizer**

Liquid nitrogen fertilizer solutions may be used as a carrier in place of water. Run a tank mix compatibility test before mixing PASTORA® HERBICIDE in fertilizer solution.

PASTORA® HERBICIDE must first be slurried with water and then added to liquid nitrogen solutions (e.g., 28-0-0, 32-0-0). Ensure that the agitator is running while the PASTORA® HERBICIDE is added. Use of this mixture is likely to result in temporary grass yellowing or burn as commonly seen with liquid fertilizer applications.

If using low rates of liquid nitrogen fertilizer (between 5% and 50% of the spray solution volume) in the spray solution, the addition of a non-ionic surfactant is necessary. Add surfactant at 1/4 pint per 100 gallons of spray solution (0.03% v/v).

DO NOT use a spray adjuvant other than non-ionic surfactant.

When using high rates of liquid nitrogen fertilizer (greater than or equal to 50% of the spray solution volume) in the spray solution, adding spray adjuvant(s) increases the risk of grass injury. Consult your agricultural dealer, consultant, fieldman, or ENVIRONMENTAL SCIENCE U.S., LLC representative for specific directions before adding an adjuvant to these tank mixtures.

If 2,4-D is included with PASTORA® HERBICIDE and liquid nitrogen fertilizer mixture, ester formulations tend to be more compatible (See manufacturer's label). DO NOT add spray adjuvants when using PASTORA® HERBICIDE in tank mix with 2,4-D ester and liquid nitrogen fertilizer solutions greater than 5% of the spray volume.

When making a combined application of liquid fertilizer and herbicides, thorough spray

coverage of the weeds is still important. Flat fan nozzles delivering a medium size droplet will provide best results. Cluster nozzles delivering a very coarse droplet may not provide satisfactory weed control.

DO NOT use low rates of liquid fertilizers as a substitute for spray adjuvants.

DO NOT use with liquid fertilizer solutions with a pH less than 3.0.

#### **With Insecticides and Fungicides**

PASTORA® HERBICIDE may be tank mixed or used sequentially with insecticides and fungicides registered for use on pastures.

However, under certain conditions (drought stress or cold weather), tank mixes or sequential applications of PASTORA® HERBICIDE with organophosphate insecticides (e.g., parathion) may produce temporary grass yellowing or, in severe cases, grass injury.

The potential for grass injury is greatest when wide fluctuations in day/night temperatures occur just prior to or soon after application.

Test these mixtures in a small area before treating large areas.

DO NOT use PASTORA® HERBICIDE plus malathion, as grass injury will result.

## **NON-CROP USES**

### **UNIMPROVED BERMUDAGRASS TURF AND NON-CROP SITES**

PASTORA® HERBICIDE is registered for the control of grass and broadleaf weeds in Bermudagrass turf and bare ground sites on private, public, and military lands as follows: uncultivated nonagricultural areas (e.g. airports, highway, railroad, and utility rights-of-way, sewage disposal areas); uncultivated agricultural areas (e.g. farmyards, fuel storage areas, fence rows, soil bank land, barrier strips); and, industrial sites (e.g. lumberyards, pipelines, tank farms) including grazed areas on all these sites. It is also advised for the control of certain noxious and troublesome weeds.

Application can be made any time of the year, except when the soil is frozen. For best results, apply PASTORA® HERBICIDE at 1.0 to 1.5 ounces (0.035 to 0.053 pounds nicosulfuron; 0.009 to 0.014 pounds metsulfuron-methyl) per acre with a surfactant when weeds are young and actively growing. For spot applications, use 2.5 ounces (0.088 pounds nicosulfuron; 0.023 pounds metsulfuron-methyl) of PASTORA® HERBICIDE and 2 to 4 pints of non-ionic surfactant per 25 gallons of water and cover no less than one acre. If PASTORA® HERBICIDE is tank mixed with a herbicide that includes an adequate adjuvant package, no additional adjuvant is required.

Temporary leaf yellowing or stunting is more likely to occur at higher rates or when bermudagrass is under environmental stress e.g. drought.

#### **GRAZING/HAYING**

There are no grazing or haying restrictions for non-lactating or lactating livestock including cattle, horses, sheep, goats, and other animals when using PASTORA® HERBICIDE as directed. Grazing animals DO NOT have to be moved off the pasture before, during, or after applying PASTORA® HERBICIDE.

#### **CROP ROTATION**

Before using PASTORA® HERBICIDE, carefully consider your crop rotation plans and options. For rotational flexibility, DO NOT treat all of your pasture acres at the same time.

#### **MINIMUM ROTATIONAL INTERVALS**

Minimum rotation intervals\* are determined by the rate of breakdown of PASTORA® HERBICIDE applied. PASTORA® HERBICIDE breakdown in the soil is affected by soil pH, presence of soil microorganisms, soil temperature, and soil moisture. Low soil pH, high soil temperature, and high soil moisture increase PASTORA® HERBICIDE breakdown in soil, while high soil pH, low soil temperature, and low soil moisture slow PASTORA® HERBICIDE breakdown.

Of these 3 factors, only soil pH remains relatively constant. Soil temperature, and to a greater

extent, soil moisture, can vary significantly from year to year and from area to area. For this reason, soil temperatures and soil moisture must be monitored regularly when considering crop rotations.

\* The minimum rotation interval represents the period of time from the last application to the anticipated date of the next planting.

#### **SOIL pH LIMITATIONS**

PASTORA® HERBICIDE must not be used on soils having a pH above 7.9, as extended soil residual activity could extend crop rotation intervals beyond normal. Under certain conditions, PASTORA® HERBICIDE could remain in the soil for 34 months or more, injuring wheat and barley. In addition, other crops planted in high-pH soils can be extremely sensitive to low concentrations of PASTORA® HERBICIDE.

#### **CHECKING SOIL pH**

Before using PASTORA® HERBICIDE, determine the soil pH of the areas of intended use. To obtain a representative pH value for the test area, take several 0" to 4" samples from different areas of the field and analyze them separately. Consult local extension publications for additional information on specified soil sampling procedures.

#### **BIOASSAY**

A field bioassay must be completed before rotating to any crop or grass species/variety not listed in the Rotation Intervals Table, or if the soil pH is not in the specified range, or if the use rate applied is not specified in the table.

To conduct a field bioassay, grow test strips of the crop(s) or grass(es) you plan to grow the following year in fields previously treated with PASTORA® HERBICIDE. Crop or grass response to the bioassay will indicate whether or not to rotate to the crop(s) or grass(es) grown in the test strips. If a field bioassay is planned, check with your local Agricultural dealer or ENVIRONMENTAL SCIENCE U.S., LLC representative for information detailing the field bioassay procedure.



## ROTATION INTERVALS

Location	Crop or Grass Species	Maximum PASTORA® HERBICIDE Rate on Pasture (ounce/acre)*	Minimum Rotation Interval (months)
All areas	Alfalfa, red clover, white clover, sweet clover	2.0	12
	Bermudagrass, bluegrass, ryegrass, tall fescue	2.0	4
	Wheat (except durum)	2.0	4
	Durum, barley, oat	1.5	10
Areas with Soil pH of 7.0 or Less	STS soybeans	1.0	6
	Field corn	1.0	12

\* 1 ounce of PASTORA® HERBICIDE contains 0.035 pounds of nicosulfuron ad 0.009 pounds of metsulfuron-methyl

## APPLICATION INFORMATION

### PRODUCT MEASUREMENT

PASTORA® HERBICIDE is measured using the PASTORA® HERBICIDE volumetric measuring cylinder. The degree of accuracy of this cylinder varies by +/- 7.5%. For more precise measurement, use scales calibrated in ounces.

## MIXING INSTRUCTIONS

1. Fill the tank 1/4 to 1/3 full of water (If using liquid nitrogen fertilizer solution in place of water, see Tank Mixtures sections for additional details).
2. While agitating, add the required amount of PASTORA® HERBICIDE.
3. Continue agitation until the PASTORA® HERBICIDE is fully dispersed, at least 5 minutes.
4. Once the PASTORA® HERBICIDE is fully dispersed, maintain agitation and continue filling tank with water. PASTORA® HERBICIDE needs to be thoroughly mixed with water before adding any other material.
5. As the tank is filling, add tank mix partners (if desired); then add the necessary volume of spray adjuvants. Always add spray adjuvants last.
6. If the mixture is not continuously agitated, settling will occur. If settling occurs, thoroughly re-agitate before using.
7. Apply PASTORA® HERBICIDE spray mixture within 24 hours of mixing to avoid product degradation.
8. If PASTORA® HERBICIDE and a tank mix partner are to be applied in multiple loads, pre-slurry the PASTORA® HERBICIDE in clean water prior to adding to the tank. This will prevent the tank mix partner from interfering with the dissolution of the PASTORA® HERBICIDE.

DO NOT use PASTORA® HERBICIDE with spray additives that reduce the pH of the spray solution to below 3.0.

## APPLICATION METHOD

### Ground Broadcast Application

To obtain optimum spray distribution and thorough coverage, use flat-fan or low-volume flood nozzles. For flat-fan nozzles, use at least 10 GPA for broadcast applications.

For flood nozzles on 30" spacings, use at least 10 gallons per acre (GPA), flood nozzles no larger than TK10 (or equivalent), and a pressure of at least 30 pounds per square inch (psi). For 40" nozzle

spacings, use at least 13 GPA; for 60" spacings, use at least 20 GPA. It is essential to overlap the nozzles 100% for all spacings.

With "Raindrop RA" nozzles, use at least 30 GPA and ensure that nozzle spray patterns overlap 100%.

Use 50-mesh screens or larger.

#### **Ground Broadcast Application - Buffer Restriction**

When applying a broadcast application by ground, maintain a 50-foot buffer between the point of direct application and the closest downwind edge of non-target aquatic and terrestrial areas.

#### **Ground Spot Application**

Spot applications may be made using equipment including back pack, ATV, or hand sprayers. Thorough coverage of foliage and stems is necessary to optimize results. Use an adjustable conejet nozzle with an orifice size of X6 to X12 or equivalent. The application volume required will vary with the height and density of the weeds or brush and the application equipment used.

#### **Aerial Application**

Use nozzle types and arrangements that provide optimum spray distribution and maximum coverage. Use a minimum of 2 GPA.

When applying PASTORA® HERBICIDE by air in areas adjacent to sensitive crops, use solid stream nozzles oriented straight back. Adjust the swath to avoid spray drift damage to sensitive crops downwind and/or use ground equipment to treat the border edge of fields. See the **Mandatory Spray Drift** section of this label. Aerial application is not permitted in New York state.

#### **Aerial Application - Buffer Restriction**

When applying by air, maintain a 100-foot buffer between the point of direct application and the closest downwind edge of non-target aquatic and terrestrial areas.

#### **SPRAY EQUIPMENT**

For specific application equipment, refer to the manufacturer's specifications for additional information on GPA, pressure, speed, nozzle types and arrangements, nozzle heights above the target canopy, etc.

Be sure to calibrate air or ground equipment properly before application. Select a spray volume and delivery system that will ensure thorough coverage and a uniform spray pattern with minimum drift. Use higher spray volumes to obtain better coverage when the crop canopy is dense. Avoid swath overlapping, and shut off spray booms while starting, turning, slowing, or stopping to avoid crop injury.

DO NOT make applications using equipment and/or spray volumes or under weather conditions that might cause spray to drift onto nontarget sites. For additional information on spray drift, refer to the **Mandatory Spray Drift** section of the label.

Continuous agitation is required to keep PASTORA® HERBICIDE in suspension.

#### **BEFORE SPRAYING PASTORA® HERBICIDE**

Spray equipment must be clean before PASTORA® HERBICIDE is sprayed. Follow the cleanup procedures specified on the labels of previously applied products. If no directions are provided, follow the six steps outlined in **After Spraying PASTORA® HERBICIDE** section of this label.

#### **AT THE END OF THE DAY**

When multiple loads of PASTORA® HERBICIDE are applied, it is advised that at the end of each day of spraying, the interior of the tank be rinsed with fresh water and then partially filled, and the boom and hoses flushed. This will prevent the buildup of dried pesticide deposits that can accumulate in the application equipment.

#### **After Spraying PASTORA® HERBICIDE and Before Spraying Crops Other Than Bermudagrass**

To avoid subsequent injury to desirable crops, thoroughly clean all mixing and spray equipment immediately following applications of PASTORA® HERBICIDE as follows:

1. Drain tank; thoroughly rinse spray tanks, boom, and hoses with clean water. Loosen and physically remove any visible deposits.
  2. Fill the tank with clean water and 1 gallon of household ammonia\* (contains 3% active) for every 100 gallons of water. Flush the hoses, boom, and nozzles with the cleaning solution. Then add more water to completely fill the tank. Circulate the cleaning solution through the tank and hoses for at least 15 min. Flush the hoses, boom, and nozzles again with the cleaning solution, and then drain the tank.
  3. Remove the nozzles and screens and clean separately in a bucket containing cleaning agent and water.
  4. Repeat step 2.
  5. Rinse the tank, boom, and hoses with clean water.
  6. If only Ammonia is used as a cleaner, the rinsate solution may be applied back to the crop(s) listed on this label. DO NOT exceed the maximum labeled use rate. If other cleaners are used, consult the cleaner label for rinsate disposal instructions. If no instructions are given, dispose of the rinsate on site or at an approved waste disposal facility.
- \* Equivalent amounts of an alternate-strength ammonia solution or a cleaner which dissolves and removes sulfonyleurea herbicide residues can be used in the cleanout procedure. Carefully read and follow the individual cleaner instructions.

**Notes:**

1. Attention: DO NOT use chlorine bleach with ammonia, as dangerous gases will form. DO NOT clean equipment in an enclosed area.
2. Steam-cleaning aerial spray tanks is advised prior to performing the above cleanout procedure to facilitate the removal of any caked deposits.
3. When PASTORA® HERBICIDE is tank mixed with other pesticides, all required cleanout

- procedures must be examined and the most rigorous procedure must be followed.
4. In addition to this cleanout procedure, all precleanout guidelines on subsequently applied products must be followed as per the individual labels.
  5. Where routine spraying practices include shared equipment frequently being switched between applications of PASTORA® HERBICIDE and applications of other pesticides to PASTORA® HERBICIDE sensitive crops during the same spray season, it is advised that a sprayer be dedicated to PASTORA® HERBICIDE to further reduce the chance of crop injury.

**AIR ASSISTED (AIR BLAST) FIELD CROP SPRAYERS**

Air assisted field crop sprayers carry droplets to the target via a downward directed air stream. Some may reduce the potential for drift, but if a sprayer is unsuitable for the application and/or set up improperly, high drift potential can result. It is the responsibility of the applicator to determine that a sprayer is suitable for the intended application, that it is configured properly, and that drift potential has been minimized.

Note: Air assisted field sprayers can affect product performance by affecting spray coverage and canopy penetration. Read the specific crop use and application equipment instructions to determine if an air assisted field crop sprayer can be used.

**DRIFT CONTROL ADDITIVES**

Using product compatible drift control additives can reduce drift potential. When a drift control additive is used, read and carefully observe cautionary statements and all other information on the additive's label. If using an additive that increases viscosity, ensure that the nozzles and other application equipment will function properly with a viscous spray solution. Preferred drift control additives have been certified by the Chemical Producers and Distributors Association (CPDA).

## STORAGE AND DISPOSAL

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

**Pesticide Storage:** Store product in original container only. Do not contaminate water, other pesticides, fertilizer, food, or feed in storage.

**Pesticide Disposal:** Do not contaminate water, food, or feed by storage, disposal, or cleaning of equipment. Waste resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

**Container Handling:** Refer to the Net Contents section of this product's labeling for the applicable "Nonrefillable Container" or "Refillable Container" designation.

**Nonrefillable Plastic and Metal Containers (Capacity Equal to or Less Than 50 Pounds):** Non-refillable container. 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 1/4 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. Then, for Plastic Containers, offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration. Do not burn, unless allowed by state and local ordinances. For Metal Containers, offer for recycling if available or reconditioning if appropriate, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

**Nonrefillable Plastic and Metal Containers (Capacity Greater Than 50 Pounds):** Nonrefillable container. 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 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

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. Then, for Plastic Containers, offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration. Do not burn, unless allowed by state and local ordinances. For Metal Containers, offer for recycling if available or reconditioning if appropriate, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

**Nonrefillable Plastic and Metal Containers, e.g., Intermediate Bulk Containers [IBC] (Size or Shape Too Large to be Tipped, Rolled, or Turned Upside Down):** Nonrefillable container. Do not reuse or refill this container.

Clean container promptly after emptying the contents from this container into application equipment or mix tank and before final disposal using the following pressure rinsing procedure. Insert a lance fitted with a suitable tank cleaning nozzle into the container and ensure that the water spray thoroughly covers the top, bottom, and all sides inside the container. The nozzle manufacturer generally provides instructions for the appropriate spray pressure, spray duration, and/or spray volume. If the manufacturer's instructions are not available, pressure rinse the container for at least 60 seconds using a minimum pressure of 30 PSI with a minimum rinse volume of 10% of the container volume. Drain, pour, or pump rinsate into application equipment or rinsate collection system. Repeat this pressure rinsing procedure two more times. Then, for Plastic Containers, offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration. For Metal Containers, offer for recycling if available or reconditioning if appropriate, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

(continued)

## STORAGE AND DISPOSAL (continued)

**Nonrefillable Paper or Plastic Bags, Fiber Sacks including Flexible Intermediate Bulk Containers (FIBC), or Fiber Drums With Liners:** Nonrefillable container. Do not reuse or refill this container. Completely empty paper or plastic bag, fiber sack, or drum liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application or manufacturing equipment. Then offer for recycling if available or dispose of empty paper or plastic bag, fiber sack, or fiber drum and liner in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**Refillable Fiber Drums With Liners:** Refillable container (fiber drum only). Refilling Fiber Drum: Refill this fiber drum with PASTORA® HERBICIDE containing nicosulfuron and metsulfuron-methyl only. Do not reuse this fiber drum for any other purpose. Cleaning before refilling is the responsibility of the refiller. Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application or manufacturing equipment. Disposing of Fiber Drum and/or Liner: Do not reuse this fiber drum for any other purpose other than refilling (see preceding). Cleaning the container (liner and/or fiber drum) before final disposal is the responsibility of the person disposing of the container. Offer the liner for recycling if available or dispose of liner in a sanitary landfill, or by incineration. Do not burn, unless allowed by state and local ordinances. If drum is contaminated and cannot be reused, dispose of it in the manner required for its liner. To clean the fiber drum before final disposal, completely empty the fiber drum by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application or manufacturing equipment. Then offer the fiber drum for recycling if available or dispose of in a sanitary landfill, or by incineration. Do not burn, unless allowed by state and local ordinances.

**All Other Refillable Containers:** Refillable container. Refilling Container: Refill this container with PASTORA® HERBICIDE containing nicosulfuron and metsulfuron-methyl only. Do not reuse this container for any other purpose. Cleaning before refilling is the responsibility of the refiller. Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions, worn out threads and closure devices.

If damage is found, do not use the container, contact DuPont™ ENVIRONMENTAL SCIENCE U.S., LLC at the number below for instructions. Check for leaks after refilling and before transporting. If leaks are found, do not reuse or transport container, contact ENVIRONMENTAL SCIENCE U.S., LLC at the number below for instructions. Disposing of Container: Do not reuse this container for any other purpose other than refilling (see preceding). Cleaning the container before final disposal is the responsibility of the person disposing of the container. To clean the container before final disposal, use the following pressure rinsing procedure. Insert a lance fitted with a suitable tank cleaning nozzle into the container and ensure that the water spray thoroughly covers the top, bottom, and all sides inside the container. The nozzle manufacturer generally provides instructions for the appropriate spray pressure, spray duration, and/or spray volume. If the manufacturer's instructions are not available, pressure rinse the container for at least 60 seconds using a minimum pressure of 30 PSI with a minimum rinse volume of 10% of the container volume. Drain, pour, or pump rinsate into application equipment or rinsate collection system. Repeat this pressure rinsing procedure two more times. Then, for Plastic Containers, offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration. Do not burn, unless allowed by state and local ordinances. For Metal Containers, offer for recycling if available or reconditioning if appropriate, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

**Outer Pouches of Water Soluble Packets (WSP):** Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available or, dispose of the empty outer foil pouch in the trash as long as WSP is unbroken. If the outer pouch contacts the formulated product in any way, the pouch must be triple rinsed with clean water. Add the rinsate to the spray tank and dispose of the outer pouch as described previously. Do not transport if this container is damaged or leaking. If the container is damaged, leaking, or obsolete, or in the event of a major spill, fire, or other emergency, contact ENVIRONMENTAL SCIENCE U.S., LLC at 1-800-424-9300, day or night.

## CONDITIONS OF SALE AND LIMITATIONS OF WARRANTY AND LIABILITY

Read the entire Directions for Use, Conditions, Disclaimer of Warranties and Limitations of Liability before using this product. If terms are not acceptable, return the unopened product container at once.

By using this product, user or buyer accepts the following Conditions, Disclaimer of Warranties and Limitations of Liability.

**CONDITIONS:** The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Ineffectiveness, plant injury, other property damage, as well as other unintended consequences may result because of factors beyond the control of Environmental Science U.S., LLC. Those factors include, but are not limited to, weather conditions, presence of other materials or the manner of use or application. All such risks shall be assumed by the user or buyer.

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(01)08101121000831

# PASTORA<sup>®</sup>

Herbicide

**Dry Flowable**  
**For Use on Established Bermudagrass Pastures and Hay Meadows, Bermudagrass Turf (Unimproved Only)**

**Active Ingredient** **By Weight**

Nicosulfuron	
2-[[[(4,6-dimethoxypyrimidin-2-yl)aminocarbonyl]aminosulfonyl]-N,N-dimethyl-3-pyridinecarboxamide	56.2%
Metsulfuron Methyl	
Methyl 2-[[[[[4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]carbonyl]amino]sulfonyl]benzoate	15.0%

**Other Ingredients** .....28.8%

**Total** .....100.0%

**EPA Reg. No. 101563-179**

**EPA Est. No.**

**85775081**

85849069E 221216AV1  
Nonrefillable Container  
Net Weight

**5 Ounces**

See Panel for First Aid Instructions  
and Booklet for Complete  
Precautionary Statements and  
Directions for Use.

**NICOSULFURON & METSULFURON-METHYL** **GROUP 2** **HERBICIDE**

## KEEP OUT OF REACH OF CHILDREN CAUTION

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

### FIRST AID

**IF IN EYES:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**IF ON SKIN OR CLOTHING:** 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 SWALLOWED:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by 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. You may also contact 1-800-424-9300 for emergency medical treatment information.

envu

**PRODUCED FOR**  
**Environmental Science U.S., LLC**  
**5000 CentreGreen Way, Suite 400**  
**Cary, NC 27513**

PULL HERE TO OPEN

Product of China