

**SPECIMEN LABEL**

This information is for promotional purposes only. Space considerations may require information to be omitted. Always refer to the actual package for complete label verbiage. This product may not yet be available or approved for sale or use in your area.

# Purestand

## Selective Herbicide

For Use on Wheat, Barley, Grain Sorghum, Triticale, Fallow, Pastures, Conservation Reserve Program Land (CRP), and Rangeland

**ACTIVE INGREDIENT:**

Metsulfuron Methyl: Methyl 2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2yl)amino]

Carbonyl]amino]sulfonyl]benzoate ..... 60.0%

**OTHER INGREDIENTS:** ..... 40.0%

**TOTAL:** ..... 100.0%

**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 the label, find someone to explain it to you in detail.)  
 SEE INSIDE BOOKLET FOR FIRST AID AND ADDITIONAL PRECAUTIONARY STATEMENTS

For Chemical Spill, Leak, Fire, or Exposure, Call CHEMTREC (800) 424-9300  
 For Medical Emergencies Only, Call (877) 325-1840

EPA Reg. No. 71368-38

Manufactured for Nufarm, Inc. 150 Harvester Drive Burr Ridge, IL 60527



## FIRST AID

<b>IF SWALLOWED:</b>	<ul style="list-style-type: none"><li>• Call a doctor or poison control center immediately for treatment advice.</li><li>• Have person sip a glass of water if able to swallow.</li><li>• Do not induce vomiting unless told to do so by a poison control center or doctor.</li><li>• Do not give anything by mouth to an unconscious person.</li></ul>
<b>IF ON SKIN OR CLOTHING:</b>	<ul style="list-style-type: none"><li>• Take off contaminated clothing.</li><li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li><li>• Call a poison control center or doctor for treatment for advice.</li></ul>
<b>IF IN EYES:</b>	<ul style="list-style-type: none"><li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li><li>• Remove contact lenses, if present, after first 5 minutes, then continue rinsing eye.</li><li>• Call a poison control center or doctor for treatment advice.</li></ul>
<b>IF INHALED:</b>	<ul style="list-style-type: none"><li>• Move person to fresh air.</li><li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li><li>• Call a poison control center or doctor for further treatment advice.</li></ul>

## HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-877-325-1840 for emergency medical treatment information.

## NOTE TO PHYSICIAN

This product may pose an aspiration pneumonia hazard. Contains petroleum distillates.

## PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION

Causes eye irritation. Avoid contact with skin, eyes or clothing. Avoid breathing dust or spray mist.

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers who handle this pesticide for any use covered by the Worker Protection Standard [(40 CFR Part 170)] must wear:

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

Follow manufacturer's instructions for cleaning/maintaining PPE. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE, if no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

### USER SAFETY RECOMMENDATIONS

Users should: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.

## 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 disposing of equipment washwaters or rinsate.

## IMPORTANT INFORMATION

### PESTICIDE HANDLING

- Calibrate sprayers only with clean water away from the well site.
- Make scheduled checks of spray equipment.
- Assure accurate measurement of pesticides by all operation employees.
- Mix only enough product for the job at hand.
- Do not overfill spray tank.
- Do not discharge excess material on the soil at a single spot in the field or mixing/loading station.
- Dilute and agitate excess solution and apply at labeled rates/uses.
- Do not store pesticides near well sites.
- When triple rinsing the pesticide container, be sure to add the rinsate to the spray mix.

### 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.

### **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.

### **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.

Weed control in pastures and rangeland is not within the scope of the Worker Protection Standard. Keep unprotected persons out of treated areas until sprays have dried.

Use this product only in accordance with instructions on this label or in separate published Nufarm labeling.

Nufarm will not be responsible for losses or damages resulting from the use of this product in any manner not specified by Nufarm.

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

### **PRODUCT INFORMATION**

This product is registered on land primarily dedicated to the production of wheat, barley, fallow, grain sorghum, Triticale, CRP, pasture, and rangeland.

This product is also registered on wheat, barley, grain sorghum, Triticale, fallow, CRP, pasture and rangeland in most states, check with your state extension or Dept. of Agriculture before use, to be certain this product is registered in your state.

This product is not registered for use in Alamosa, Conejos, Costilla, Rio Grande, and Saquache counties of Colorado.

This product is a dry-flowable granule that controls weeds in wheat (including durum), barley, grain sorghum, Triticale, pasture, rangeland grasses, CPR, and fallow. This product is mixed in water or can be pre-slurried in water and added to liquid nitrogen carrier solutions and applied as a uniform broadcast spray. A surfactant should be used in the spray mix unless otherwise specified on this label. This product is noncorrosive, nonflammable, nonvolatile, and does not freeze.

This product controls weeds by postemergence activity. For best results, apply this product to young, actively growing weeds. 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 at application
- environmental condition at and following treatment

#### ***Environmental Conditions and Biological Activity***

This product is absorbed through the foliage of broadleaf weeds, rapidly inhibiting their growth. Leaves of susceptible plants appear chlorotic from 1 to 3 weeks after application and the growing point subsequently dies.

Application of this product provides the best control in vigorously growing crops that shade competitive weeds. Weed control in areas of thin crop stand or seeding skips may not be as satisfactory. However, a crop canopy that is too dense at application can intercept spray and reduce weed control.

This product may injure crops that are stressed from adverse environmental conditions (such as extreme temperatures or moisture), abnormal soil conditions, or cultural practices. In addition, different varieties of the crop may be sensitive to treatment with this product under otherwise normal conditions. Treatment of such varieties may injure crops.

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 this product.

Weed control may be reduced if rainfall or snowfall occurs soon after application.

### **APPLICATION INFORMATION Use Rates**

#### ***Wheat (including durum), Barley and Triticale***

Apply 1/10 oz Purestand per acre to wheat, barley or Triticale.

#### ***Pasture and Rangeland***

Apply 1/10 to 4/10 oz of this product per acre as a broadcast treatment to pasture and rangeland. For spot applications, use 4/10oz per 100 gal of water. Do not exceed 3/4 oz of this product per acre per year.

**Harvest Aid**

Apply 1/10 oz of this product per acre in combination with 2,4-D or Roundup to aid in dry down of many broadleaved weeds, thereby aiding grain harvest.

**Fallow**

Apply this product at 1/10 oz per acre.

**Application Timing—Wheat, Barley, Triticale****Dryland Wheat, Barley and Triticale****(Except Durum or Wampum Variety)**

Make applications after the crop is in the 2-leaf stage but before boot.

**Durum and Wampum Variety Spring Wheat**

Make applications after the crop is tillering but before boot. Applications to durum and wampum varieties should be made in combination with 2,4-D.

**Irrigated Wheat and Barley**

Make applications after the crop begins tillering but before boot. First post-treatment irrigation should be delayed for at least 3 days after treatment and should not exceed 1 in. of water

**Wheat and Barley—Harvest Aid**

Make applications after the crop has reached the hard dough stage, but no later than 10 days before harvest.

See section on Harvest Aid tank mixtures.

**Fallow**

This product may be used as a fallow treatment, in the spring or fall when the majority of weeds have emerged and are actively growing.

**Do not apply during boot or early heading, as crop injury may result.**

**Application Timing—Pasture Grasses**

This product may be used on some native grasses such as bluestems and grama, and on other pasture grasses such as bermudagrass, bluegrass, orchardgrass, bromegrass, fescue and timothy. Specific application information on several of these pasture grasses follows:

Pasture Grass	Minimum time from grass establishment to Purestand application
Bermudagrass	2 months
Bluegrass, bromegrass, and orchardgrass	6 months
Timothy	12 months
Fescue	24 months

**Fescue Precautions:**

Note that this product may temporarily stunt fescue, cause it to turn yellow, or cause seedhead suppression. To minimize these symptoms, take the following precautions:

- tank mix this product with 2,4-D
- use the lowest specified rate for target weeds
- use surfactant at 1/2 to 1 pt per 100 gal of spray solution (1/16 to 1/8% v/v)
- make application later in the spring after the new growth is 5 to 6 inches tall, or in the fall.
- Do not use surfactant when liquid nitrogen is used as a carrier.

The first cutting yields may be reduced due to seedhead suppression resulting from treatment with this product.

**Timothy Precautions:**

Timothy should be at least 6" tall at application and be actively growing. Applications of this product to timothy under any other conditions may cause crop yellowing and/or stunting. To minimize these symptoms, take the following precautions:

- tank mix this product with 2,4-D
- use the lowest specified rate for target weeds
- use surfactant at 1/2 pt per 100 gal (1/16% v/v)
- make applications in the late summer or fall
- Do not use surfactant when liquid nitrogen is used as a carrier.

**Ryegrass Pastures (Italian or perennial): Do not apply this product as injury to or loss of the pasture may result.**

**Other Pastures:** Varieties and species of pasture grasses differ in their tolerance to herbicides. When using this product on a particular grass for the first time, limit use to one container. If no injury occurs throughout the season, larger acreage may be treated the following season.

Broadleaf pasture species, such as alfalfa and clover are highly sensitive to this product and will be severely stunted or injured by this product.

## WEEDS CONTROLLED

Unless otherwise directed, treat when weeds are less than 4" tall or in diameter and are actively growing. Effectiveness may be reduced if rainfall occurs within 4 hrs after application.

### Cereals, Pasture, Rangeland, and Fallow 1/10 oz per acre

Blue/purple mustard*	Filaree	Pigweed (redroot, smooth, tumble)	Snow speedwell
Bur buttercup (testiculate)	Flixweed*	Plains coreopsis	Tansy mustard*
Coast fiddleneck (tarweed)	Groundsel (common)	Prickly lettuce*	Treacle mustard (Bushy Wallflower)
Common chickweed	Henbit	Russian thistle*	Tumble/Jim Hill mustard
Common purslane	Kochia*	Shepherd's purse	Volunteer sunflower
Conical catchfly	Lambsquarters (common, slimleaf)	Smallseed falseflax	Waterpod
Cowcockle	Mayweed chamomile	Smartweed (green, ladysthumb, pale)	Wild Mustard
False chamomile	Miners lettuce		

### Additional Weeds and Brush Controlled or Suppressed in Pastures and Rangeland 1/10 to 1/4 oz per acre

Annual Marshelder	Corn gromwell*++	Kochia*	Smartweed (green, ladysthumb, pale)
Bitter Sneezeweed	Common purslane	Lambsquarters (common, slimleaf)	Snow speedwell
Blackeyed-Susan	Common yarrow	Marestail	Tansy mustard*
Blue/purple mustard*	Conical catchfly	Mayweed chamomile	Treacle mustard (Bushy Wallflower)
Broomweed, common	Corn gromwell*++	Miners lettuce	Tumble/Jim Hill mustard
Buckbrush	Cowcockle	Musk thistle*	Smartweed (green, ladysthumb, pale)
Bur buttercup (testiculate)	Curly dock	Pigweed (redroot, smooth, tumble)	Volunteer sunflower*
Burclover	Dandelion	Plains coreopsis	Waterpod
Buttercup	Dogfennel	Plantain	Western snowberry++
Canada thistle*++	False chamomile	Prickly lettuce*	Wild buckwheat*
Carolina geranium	Field pennycress (fanweed)	Purple scabious	Wild carrot
Coast fiddleneck (tarweed)	Filaree	Russian thistle*	Wild garlic*
Common chickweed	Flixweed*	Shepherd's purse	Wild Mustard
Common mullein	Groundsel (common)	Smallseed falseflax	Woolly croton*
Common purslane	Henbit		
Common yarrow	Horsemint (beebalm)		
Conical catchfly	Knotweed Species*		

### 3/10 oz per acre

Pensacola bahiagrass\*

### 4/10 oz per acre

Sericea lespedeza

### Weeds Suppressed++\*

### Cereals, Pastures, Rangeland, and Fallow

#### 1/10 oz per acre

Canada thistle*	Corn gromwell*	Sowthistle (annual)*
Common sunflower*	Knotweed (prostrate)*	Wild buckwheat*

### Brush Suppressed++\*

(Pasture/Rangeland only)

#### 3/10 oz per acre

Blackberry	Dewberry	Multiflora rose*
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### Weeds/Brush Suppressed with Spot Application (Pasture/Rangeland only)

#### 1 oz per 100 gal of water

Blackberry*	Canada thistle*	Dewberry*	Multiflora rose*
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\* See the **Specific Weed Problems** 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.

### Specific Weed Problems

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

**Blue / Purple Mustard, Flixweed, and Tansy mustard:** For best results, apply this product tank mixtures with 2,4-D, or MCPA postemergence to mustards, but before bloom.

**Canada Thistle and Sowthistle:** Apply either this product plus surfactant or this product plus 2,4-D or MCPA 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 the crop.

For Spot applications to Canada Thistle in pasture and rangeland, apply as a foliar spray once plant is fully leafed. Apply to runoff and include a surfactant in the spray mix at 1 to 2 qt per 100 gal of spray solution. Complete coverage of all foliage and stems is required for control. On tall, dense stands, it is often necessary to spray from both sides to obtain adequate coverage.

**Corn Cromwell and Prostrate Knotweed:** Apply this product plus surfactant when weeds are actively growing are no larger than 2" tall, and when crop canopy will allow thorough coverage. Tank mixing 2,4-D or MCPA with this product can improve results.

**Kochia, Russian thistle, Prickly lettuce:** Naturally occurring resistant biotypes of these weeds are known to occur. For best results, use this product in a tank mix with Weedmaster (1 pint per acre) or bromoxynil and 2,4-D (such as 3/4 - 1 pt "Buctril" + 1/4-3/8 lb active 2,4-D ester). This product should be applied in the spring when kochia, Russian thistle, and prickly lettuce are less than 2" tall or 2" across and are actively growing (refer to the Tank Mixtures section of this label for additional details).

**Sunflower (common/volunteer):** Apply either this product plus surfactant or this product plus 2,4-D or MCPA after the majority of sunflowers have emerged, are 2" to 4" tall and are actively growing. Use spray volumes of at least 3 gal by air or 5 gal by ground (10 gal by ground in pastures).

**Wild Buckwheat:** For best results, apply this product plus 2,4-D or MCPA 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.

**Musk Thistle:** Apply this product at 2/10 to 3/10 oz 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. Fall applications should be made before the soil freezes.

**Multiflora Rose:** For best control, apply this product as a broadcast application when multiflora rose is less than 3' tall. Application should be made in the spring, soon after multiflora rose is fully leafed.

For Spot applications in pasture and rangeland, apply as a foliar spray once plant is fully leafed. Apply to runoff and include a surfactant in the spray mix at 1 to 2 qt per 100 gal of spray solution. Complete coverage of all foliage and stems is required for control. On tall, dense stands, it is often necessary to spray from both sides to obtain adequate coverage.

**Blackberry and Dewberry:** For Spot applications in pasture and rangeland, apply as a foliar spray once plant is fully leafed. Apply to runoff and include a surfactant in the spray mix at 1 to 2 qt per 100 gal of spray solution. Complete coverage of all foliage and stems is required for control. On tall, dense stands, it is often necessary to spray from both sides to obtain adequate coverage.

**Pensacola bahiagrass control in established Bermudagrass pasture:** Apply this product at 3/10 az per acre plus surfactant. Apply after green-up in the spring but before bahiagrass seedhead formation. Application should be made when moisture is sufficient to enhance grass growth.

This product is very effective for removal of bahiagrass from bermudagrass pastures. In highly infested pastures, the use of this product can clear the areas of useful forage until the bermudagrass has time to cover the area. Therefore, treatments with this product should 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.

**Note:** This product should not be used for the control of common or Argentine bahiagrass. Also, this product should not be applied in liquid fertilizer solutions for Pensacola bahiagrass control, as poor control and/or regrowth may occur.

**Sericea lespedeza:** Apply this product at 4/10 oz per acre plus a surfactant at 1/2 to 1 qt per 100 gal of total spray solution. For best results, make applications to sericea lespedeza beginning at flower bud initiation through the full bloom stage of growth.

**Note:** Do not make applications if drought conditions exist at intended time of application.

**Wild Garlic:** Apply 1/4 oz per acre of this product in the early spring when wild garlic is less than 12" tall with 2" to 4" of new growth.

**Woolly Croton:** Apply 1/4 oz per acre of this product in the late spring or early summer at preemergence through 2 true leaf stage.

### **Surfactants**

Unless otherwise specified, add a Nufarm specified nonionic surfactant having at least 80% active ingredient at 1 to 2 qt per 100 gal of spray solution (0.25 to 0.5% v/v).

**Exceptions: (1)** On all spring wheat and spring or winter barley use 1/2 to 1 qt per 100 gals; (2) on Fescue pastures use 1/2 to 1 pint per 100 gals; (3) on Timothy pastures use 1/2 pint per 100 gals.

Consult your agricultural dealer, applicator, or Nufarm representative for a listing of specified surfactants.

Antifoaming agents may be used if needed.

**Do not use low rates of liquid fertilizer as a substitute for surfactant.**

### **Ground Application**

To obtain optimum spray distribution and thorough coverage, use flat-fan or low-volume flood nozzles.

For flood nozzles on 30" spacings, use at least 3 gallons per acre (GPA), flood nozzles no larger than -n(10 (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%.

For flat-fan nozzles, use at least 3 CPA for applications to wheat or barley. Use at least 10 GPA for applications to pasture or rangeland.

Use 50-mesh screens or larger.



## **Aerial Application**

Use nozzle types and arrangements that provide optimum spray distribution and maximum coverage. Wheat, Barley, Triticale and Fallow—use 1 to 5 GPA. Use at least 3 GPA in Idaho, Oregon, or Utah. Pasture and Rangeland use a minimum of 3 GPA.

Use a minimum of 3 GPA when applying this product 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 **Spray Drift Management** section of this label.

### **Product Measurement**

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

## **TANK MIXES**

Unless otherwise prohibited on this label or the label of an intended tank mix product, this product may be applied in combination with any pesticide registered for the same crop, timing, and method of application. Observe the most restrictive label statements of various tank mix products used.

**IMPORTANT: PESTICIDE TANK MIXES MAY INCREASE THE RISK OF MIXING INCOMPATIBILITIES, REDUCED EFFECTIVENESS AND/OR CAUSE CROP INJURY OR LOSS. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW ANY LIABILITY FOR LOSS, INJURY OR DAMAGE RESULTING FROM A TANK MIXTURE NOT SPECIFIED ON THIS LABEL OR IN MANUFACTURER'S SUPPLEMENTAL LABELING DISTRIBUTED FOR THIS PRODUCT IS SPECIFICALLY DISCLAIMED BY MANUFACTURER.**

### **COMPATIBILITY**

Before full-scale mixing of this product with other pesticides, fertilizers, secondary plant nutrients, adjuvants, surfactants or oils, you must determine the compatibility of the proposed mixture. Use proportionate quantities of each ingredient and mix in a small container. Always mix one product thoroughly with the diluent before adding another product. If no incompatibility is evident after 30 minutes, the mixture is generally compatible for spraying. To evaluate potential short term effects of applying the mixture, test the tank mix combination on a few plants or a small area before larger-scale treatments. Wait at least 2 to 3 days for problems to become apparent. **IMPORTANT: MIXING WITH OTHER SUBSTANCES MAY INCREASE THE RISK OF MIXING INCOMPATIBILITIES, REDUCED EFFECTIVENESS AND/OR CAUSE CROP INJURY OR LOSS. TO THE EXTENT CONSISTENT WITH APPLICABLE LAW ANY LIABILITY FOR LOSS, INJURY OR DAMAGE RESULTING FROM A MIXTURE NOT SPECIFIED ON THIS LABEL OR IN MANUFACTURER'S SUPPLEMENTAL LABELING DISTRIBUTED FOR THIS PRODUCT IS SPECIFICALLY DISCLAIMED BY MANUFACTURER.**

### **Tank Mixtures in Cereals (Wheat, Barley and Triticale)**

#### **With 2,4-D (amine or ester) or MCPA (amine or ester)**

This product can be used as a tank-mix treatment with 2,4-D or MCPA (ester formulations provide best results) herbicides after weeds have emerged. For best results, use 1/10 oz of this product per acre; add 2,4-D or MCPA herbicides to the tank at 1/4 to 1/2 lb active ingredient. Surfactant may be added to the mixture at 1/2 to 1 qt per 100 gal of spray solution; however, adding surfactant may increase the potential for crop injury.

Apply this product plus MCPA after the 3 to 5-leaf stage but before boot (with Durum and Wampum varieties do not apply before tillering). Apply this product plus 2,4-D after tillering (refer to appropriate 2,4-D manufacturer's label), but before boot.

#### **With Dicamba, such as Nufarm "Diablo" Herbicide**

For best results, apply this product at 1/10 oz per acre; add 1/16 to 1/8 lb active ingredient Nufarm "Diablo" Herbicide. Surfactant may be added to the mixture at 1/2 to 1 qt per 100 gal of spray solution; however, adding surfactant may increase the potential for crop injury. Also refer to Nufarm "Diablo" Herbicide label for application timing and restrictions

#### **With 2,4-D (amine or ester) and Dicamba, such as Nufarm "Diablo" Herbicide**

This product may be applied in a 3-way tank mix with formulations of "Diablo" and 2,4-D. Observe all applicable directions, restrictions and precautions on labels of all products used.

Make applications at 1/10 oz of this product + 2-3 oz "Diablo" + 4 - 6 oz active 2,4-D Ester or Amine per acre. Use higher rates when weed infestation is heavy. Add 1-2 pt of surfactant to the 3 way mixture, where necessary, as deemed by local guidance. Use of additional surfactant may not be needed with the higher phenoxy rates and ester phenoxy formulations. Consult the specific 2,4-D or "Diablo" label, or local guidance for more information.

Apply this 3-way combination to winter wheat after the crop is tillering and prior to jointing (first node). In Spring Wheat (including Durum wheat) apply after the crop is tillering and before it exceeds the 5-leaf stage.

Do not apply this 3-way mixture at high rates more than once a year or more than twice per year at the low rates.

#### **With bromoxynil (such as "Maestro" "Buctril", "Bronate")**

This product may be tank mixed with bromoxynil containing herbicides registered for use on wheat, barley, or fallow. For best results, add bromoxynil containing herbicides to the tank at 3 to 6 oz active ingredient per acre (such as "Bronate" or "Buctril" at 3/4 - 1 1/2 pt per acre).

Read and follow all label instructions on timing, precautions, and warnings for these herbicides before using these tank mixtures. Follow the most restrictive labeling.

### ***With grass control products***

Tank mixtures of this product and grass control products may result in poor grass control. Nufarm suggests that you first consult your state experiment station, university, or extension agent, Agricultural dealer, or Nufarm representative as to the potential for antagonism before using the mixture. If no information is available, limit the initial use of Purestand and the grass product to a small area.

To control wild oat, tank mix Purestand with "Avenge" or "Assert".

When tank mixing this product with "Assert", always include 2,4-D ester, MCPA ester, or Bromoxynil containing products (such as "Maestro" "Buctril", or "Bronate"). Tank-mixed applications of Purestand plus "Assert" may cause temporary crop discoloration, stunting, or injury when heavy rainfall occurs shortly after application.

Do not tank mix this product with "Hoelon" 3EC, as grass control may be reduced.

### ***EXPRESS & Victory***

This product may be tank mixed with EXPRESS® based on local guidance.

Read and follow all label instructions on timing, precautions, and warnings for these herbicides before using this tank mixture.

### ***HARMONY® EXTRA & Treaty Extra***

This product may be tank mixed with HARMONY® EXTRA based on local guidance.

Read and follow all label instructions on timing, precautions, and warnings for these herbicides before using this tank mixture.

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

This product may be tank-mixed or used sequentially with insecticides and fungicides registered for use on cereal grains.

However, under certain conditions (drought stress, cold weather, or if the crop is in the 2-4 leaf stage), tank mixes or sequential applications of this product with organophosphate insecticides (such as parathion, "DiSyston") may produce temporary crop yellowing or, in severe cases, crop injury.

The potential for crop 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 apply this product within 60 days of crop emergence where an organophosphate insecticide (such as "Di-Syston") has been applied as an in-furrow treatment, as crop injury may result.

Do not use this product plus Malathion, as crop injury will result.

### ***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 this product in fertilizer solution.

This product 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 this product is added. Use of this mixture may result in temporary crop yellowing and stunting.

If using low rates of liquid nitrogen fertilizer in the spray solution (less than 50% of the spray solution volume), the addition of surfactant is necessary. Add surfactant at 1/2 pt-1 qt per 100 gal of spray solution (0.06 - 0.25% v/v) based on local guidance.

When using high rates of liquid nitrogen fertilizer in the spray solution, adding surfactant increases the risk of crop injury. Consult your agricultural dealer, consultant, fieldman, or Nufarm representative for a specific recommendation before adding an adjuvant to these tank mixtures.

If 2,4-D or MCPA is included with this product and fertilizer mixture, ester formulations tend to be more compatible (See manufacturer's label). Do not add surfactant when using this product in tank mix with 2,4-D ester or MCPA ester and liquid nitrogen fertilizer solutions.

Do not use low rates of liquid fertilizer as a substitute for a surfactant. Do not use with liquid fertilizer solutions with a pH less than 3.0.

### ***Tank Mixtures in Harvest Aid***

A tank mix of this product plus 2,4-D and surfactant, or "Roundup", will typically aid in dry down of many broadleaved weeds, thereby aiding grain harvest. Postemergence application should be made to actively growing weeds after the crop is in the hard dough stage. If weeds are not dry within 10 days after application, delay harvest until weeds are dry.

See weeds listed in Weeds Controlled chart of this label.

With 2,4-D.

Use 1/10 oz of this product plus 1/4 to 1/2 lb active ingredient 2,4-D per acre on moderate weed infestations; higher rates of 2,4-D may be used on large weeds if permitted by the 2,4-D brand labeling. Include 1 to 2 qt surfactant per 100 gal spray solution.

In addition to the weeds listed in Weeds Controlled chart of this label, the 2,4-D combination will also dry down common cocklebur, marehail, puncturevine and common and wild sunflower. In areas where 2,4-D use is restricted, apply this product with surfactant only; however, this treatment may be less effective.

### ***With "Roundup" or "Credit"***

Use 1/10 oz of this product plus the locally specified rate of "Glyphosate" (see "Glyphosate" label for maximum seasonal rate). This product requires the use of an adjuvant for optimum activity - Consult the "Glyphosate" label or local guidance for the amount of adjuvant to include.



### Tank Mixtures in Fallow

This product may be used as a fallow treatment, and may be tank mixed with other herbicides that are registered for use in fallow. Read and follow all manufacturer's label instructions for the companion herbicide. If those specifications conflict with this label, do not tank mix the herbicide with this product.

### Tank Mixtures in Pastures or Rangeland

This product can be applied in a tank-mix combination with "Grazon P+D", "Trooper P + D", "Trooper 22K", "Tordon" 22K, 2,4-D, "Diablo", or "Weedmaster" in states where these products are labeled for postemergence control of the following weeds:

Annual marshelder	Common cocklebur	Giant ragweed	Western ragweed
Burclover	Common milkweed	Prickly lettuce	
Carolina horsenettle	Common ragweed	Sunflower	

For best results, apply this product at 1/10 to 1/4 oz per acre with one of the following products:

Product	Rate (oz /A)
"Grazon P+D" or "Trooper p + D"	8 to 32
"Tordon" 22K, or "Trooper 22K"	4 to 16
2,4-D	16 to 32
"Banvel" or "Diablo"	4 to 32
"Weedmaster"	8 to 32
"Remedy" or "Relegate"	8
"Amber"	0.35 *

\* For suppression of Ragweed In Phenoxy Restricted and Herbicide Regulated Counties

### 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 this product in fertilizer solution.

This product 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 this product is added. Use of this mixture may result in temporary crop yellowing and stunting.

If using low rates of liquid nitrogen fertilizer in the spray solution (less than 50% of the spray solution volume), the addition of surfactant is necessary. Add surfactant at 1/4 pt per 100 gal of spray solution (0.03% v/v

When using high rates of liquid nitrogen fertilizer in the spray solution, adding surfactant increases the risk of crop injury. Consult your agricultural dealer, consultant, fieldman, or Nufarm representative for a specific recommendation before adding an adjuvant to these tank mixtures.

If 2,4-D or MCPA is included with this product and fertilizer mixture, ester formulations tend to be more compatible (See manufacturer's label). Do not add surfactant when using this product in tank mix with 2,4-D ester and liquid nitrogen fertilizer solutions.

Do not use low rates of liquid fertilizer as a substitute for a surfactant. Do not use with liquid fertilizer solutions with a pH less than 3.0.

### WEED CONTROL IN GRAIN SORGHUM

**Only for use on irrigated or dryland grain sorghum in Colorado, Kansas, Nebraska, Oklahoma, and Texas (North of I-20)**

#### WEED CONTROL, RATES AND TIMING OF APPLICATION

Crop stage: For optimum performance and crop safety, apply this product plus 2,4-D amine when grain sorghum is 3 to 15 inches in height. If sorghum is taller than 10 inches to the top of the canopy, use drop nozzles and keep spray off the foliage. Apply only before the boot stage. Read and follow all other use instructions, warnings and precautions on companion herbicide labels.

Sorghum varieties vary in sensitivity to 2,4-D amine. Spray only varieties known to be tolerant to 2,4-D amine. Contact seed company and Local County Extension Service for this information.

**Application Rates:** Apply this product at 1/20 oz per acre plus 1/4 lb active ingredient 2,4-D amine per acre. Do not use surfactant or crop oil.

**Pest Stage:** Application of this product plus 2,4-D amine should be made when all or a majority of the weeds have germinated and emerged. For best results, spray when weeds are less than 6 inches tall.

#### Weeds Controlled With Tank Mix Of Purestand plus 2,4-D amine:

Pigweed species Puncture vine Velvetleaf
--

### APPLICATION INFORMATION

This product may be applied to grain sorghum by properly calibrated ground or aerial equipment.

**Ground Application:** Apply uniformly by ground with a properly calibrated low pressure (20-40 PSI) boom sprayer equipped with flat fan nozzles. Use 10-30 GPA with ground equipment.

**Aerial Application:** Use orifice discs, cores and nozzle types and arrangements that will provide for optimum spray distribution and maximum coverage at 2 to 5 GPA. Do not apply during inversion conditions, when winds are gusty, or when other conditions will favor poor coverage and/or drift.

This product can be used on either dryland or irrigated grain sorghum. If application is made to irrigated sorghum, delay first post-treatment irrigation for at least 3 days after treatment. The first post-treatment irrigation should not exceed 1".

Use cultivation prior to this product + 2,4-D amine treatment to cover exposed brace roots of grain sorghum to minimize injury from 2,4-D amine.

#### **PRECAUTIONS**

- Temporary crop yellowing and/or stunting may occur soon after application, especially when crop is under stress conditions.
- Do not use on grain sorghum grown for seed production or syrup. Do not use on forage sorghum.
- Do not use for forage or silage within 30 days of application.
- Do not include a surfactant or crop oil to the tank mix.
- Do not apply this treatment under cold, wet weather conditions or to grain sorghum growing under stress caused by weather, insects or disease as crop injury may result.
- Do not apply to long season grain sorghum varieties or grain sorghum that is planted after July 1, as crop injury or delayed maturity may occur.
- Do not exceed one (1) application per year.
- This product must be used with 2,4-D; in areas where 2,4-D use is restricted, follow requirement of the restriction. If 2,4-D use is prohibited, do not use this product on grain sorghum.

#### **PURESTAND WITH MCPA, 2,4-D AND/OR DICAMBA FOR SUPPRESSION OF WINTER ANNUAL BROADLEAF WEEDS IN WINTER WHEAT TO BE GRAZED OUT IN THE STATES OF TEXAS, OKLAHOMA, NEW MEXICO AND KANSAS**

##### **PRODUCT INFORMATION**

This product can be tank mixed with MCPA, 2,4-D and/or dicamba (such as Nufarm "Weedmaster") for suppression of winter annual broadleaf weeds in winter wheat to be grazed out and not harvested for grain, in the States of Texas, Oklahoma, New Mexico and Kansas.

For the suppression of winter annual broadleaf weeds (such as henbit and mustards) in winter wheat in the states of Texas, Oklahoma, New Mexico and Kansas, this product at 0.05 (1/20) ounce per acre should be tank mixed with MCPA, 2,4-D and/or dicamba at label rates. Winter annual broadleaf weeds should be less than 1" tall or in the rosette stage for suppression. Add a Nufarm specified nonionic surfactant having at least 80% active ingredient at 1 to 2 qts per 100 gal of spray solution (0.25 to 0.5% v/v).

This product can also be tank mixed at this rate with approved insecticides. This treatment can be applied by ground or air. However, under certain conditions (drought stress, cold weather, or if the crop is in the 2-4 leaf stage), tank mixes or sequential applications of this product with organophosphate insecticides (such as parathion, "Di-Syston") may produce temporary crop yellowing or, in severe cases, crop injury. The potential for crop 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 this product plus Malathion as crop injury will result.

##### **CROP ROTATION**

Before using this product, carefully consider your crop rotation plans and options. For rotational flexibility, do not treat all of your wheat, barley, Triticale, fallow, pasture, or rangeland acres at the same time.

##### ***Minimum Rotational intervals***

Minimum rotation intervals\* are determined by the rate of breakdown of this product applied. This product 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 Purestand breakdown in soil, while high soil pH, low soil temperature, and low soil moisture slow Purestand 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 should 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***

This product should 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, this product 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 this product

##### ***Checking Soil pH***

Before using this product, 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 recommended soil sampling procedures.

**Rotational Intervals for Cereals**

**All Areas - Following Use of Purestand at 1/10 oz per Acre**

Crop	Soil pH	Minimum Cumulative Precipitation (inches)	Minimum Rotation Interval
Winter and spring wheat	7.9 or lower	No restrictions	1
Durum wheat, barley, spring/winter oat	7.9 or lower	No restrictions	10

**Rotation Intervals for Crops in Non-Irrigated Land**

**Following Use of Purestand at 1/10 oz per Acre on Wheat, Barley, Triticale, Fallow or Pasture**

Location		Crop	Soil pH	Minimum Cumulative Precipitation (inches)	Minimum Rotation Interval (months)
State	County or Area				
Colorado	Statewide Generally N. of 1-70	Grain sorghum, Proso millet	7.9 or lower	No restrictions	10
		Flax, Safflower, Sunflower	7.9 or lower	No restrictions	22
		Field corn	7.9 or lower	15	12
Idaho	Southern Idaho	Flax, Safflower, Sunflower	7.9 or lower	No restrictions	22
	Statewide	Peas Lentils Canola	6.8 or lower	18	10
		Peas	6.9 to 7.9	18	15
		Lentils	6.9 to 7.9	18	34
		Canola	6.9 to 7.9	18	22
Kansas	Statewide	Grain sorghum, Proso millet	7.9 or lower	No restrictions	10
		Flax, Safflower, Sunflower	7.9 or lower	No restrictions	22
	Central and Western Kansas (West of the Flint Hills)	Field corn	7.9 or lower	15	12
	Western Kansas W. of Hwy. 183	Soybeans	7.5 or lower 7.6-7.9	22 33	22 34
	Central Kansas; generally E. of Hwy. 183 and W. of the Flinthills	Soybeans	7.9 or lower	15	12
Montana	Statewide	Grain sorghum, Proso millet, Field corn	7.9 or lower	22	22
		Alfalfa (hay only)	7.6-7.9	No restrictions	34
			7.5 or lower	No restrictions	22
		Flax, Safflower, Sunflower	7.9 or lower	No restrictions	22

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Location		Crop	Soil pH	Minimum Cumulative Precipitation (inches)	Minimum Rotation Interval (months)
State	County or Area				
Nebraska	Statewide	Grain sorghum, Proso millet	7.9 or lower	No restrictions	10
		Flax, Safflower, Sunflower	7.9 or lower	No restrictions	22
	Generally W. of Hwy. 77 and E. of the Panhandle	Field corn	7.9 or lower	15	12
		Soybeans	7.5 or lower	22	22
			7.6-7.9	33	34
New Mexico	Statewide	Grain sorghum, Proso millet	7.9 or lower	No restrictions	10
		Flax, Safflower, Sunflower	7.9 or lower	No restrictions	22
	Eastern New Mexico	Cotton (dryland only)	7.9 or lower	30	22
North Dakota	W. of Hwy. 1	Grain sorghum, Proso millet, Field corn, Dry beans, Flax, Safflower, Sunflower	7.9 or lower	22	22
	E. of Hwy. 1	Grain sorghum, Proso millet, Field corn, Dry beans, Flax, Safflower, Sunflower	7.9 or lower	34	34
Oklahoma	Statewide	Grain sorghum, Proso millet	7.9 or lower	No restrictions	10
		Flax, Safflower, Sunflower	7.9 or lower	No restrictions	22
		Field corn	7.9 or lower	15	12
	Panhandle	Cotton (dryland only)	7.9 or lower	30	22
	E. of the Panhandle	Cotton (dryland only)	7.9 or lower	25	14
Oregon	Statewide	Peas Lentils Canola	6.8 or lower	18	10
		Peas	6.9 to 7.9	18	15
		Lentils	6.9 to 7.9	18	34
		Canola	6.9 to 7.9	18	22

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Location		Crop	Soil pH	Minimum Cumulative Precipitation (inches)	Minimum Rotation Interval (months)
State	County or Area				
South Dakota	Statewide	Flax, Safflower, Sunflower	7.9 or lower	No restrictions	22
	S. of Hwy. 212 & E. of the Missouri River, & S. of Hwy. 34 & W. of Missouri River	Grain sorghum, Proso millet	7.9 or lower	13	12
	Generally E. of Missouri River & S. of Hwy. 14, & W. of Missouri River	Field corn	7.9 or lower	15	12
Texas	Statewide	Grain sorghum, Proso millet	7.9 or lower	No restrictions	10
		Flax, Safflower, Sunflower	7.9 or lower	No restrictions	22
	Panhandle	Field corn	7.9 or lower	15	12
		Cotton (dryland only)	7.9 or lower	30	22
	N. Central Texas*	Field corn	7.9 or lower	15	12
		Cotton (dryland only)	7.9 or lower	25	14
* The counties of N. Central Texas are: Archer, Baylor, Bell, Bosque, Bowie, Callahan, Camp, Cass, Clay, Collin, Cooke, Coryell, Dallas, Delta, Denton, Eastland, Ellis, Falls, Fannin, Foard, Franklin, Grayson, Hardeman, Haskell, Hill, Hood, Hopkins, Hunt, Jack, Johnson, Kaufman, Knox, Lamar, Limestone, McLennan, Milam, Montague, Morris, Nafarro, Palo Pinto, Parker, Rains, Red River, Robertson, Rockwall, Shackelford, Somervell, Stephens, Tarrant, Throckmorton, Titus, Upshur, Van Zandt, Wilbarger, Wichita, Williamson, Wise, Wood, Young.					
Washington	Statewide	Peas Lentils Canola	6.8 or lower	18	10
		Peas	6.9 to 7.9	18	15
		Lentils	6.9 to 7.9	18	34
		Canola	6.9 to 7.9	18	22
Utah	Statewide	Flax, Safflower, Sunflower	7.9 or lower	No restrictions	22
Wyoming	Statewide	Flax, Safflower, Sunflower	7.9 or lower	No restrictions	22
	Southern Wyoming	Grain sorghum, Proso millet	7.9 or lower	No restrictions	10
	Southern Wyoming (Goshen, Laramie, and Platte counties only)	Field corn	7.9 or lower	15	12
	Northern Wyoming	Grain sorghum, Proso millet, Field corn	7.9 or lower	22	22

**Rotation Intervals not covered above** - The minimum rotation interval is 34 months with at least 28" of cumulative precipitation during the period:

- to any major field crop not listed (See the Rotation Intervals table)
- if the soil pH is not in the specified range
- if the use rate applied is not specified in the table
- or if the minimum cumulative precipitation has not occurred since application.

To rotate to a major field crop at an interval shorter than specified, a field bioassay must be successfully completed to that crop. A field bioassay must be successfully completed before rotation to any minor crops (as determined by the USDA criteria). See section on Field Bioassay for further information.



**Rotation Intervals in Pasture or Rangeland for Overseeding and Renovation**

Location	Crop	Maximum Purestand Rate on Pasture (oz per A)	Minimum Rotation Interval (months)
AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA, WV	Alfalfa, red clover, white clover, sweet clover, bermudagrass, bluegrass, orchardgrass, bromegrass, ryegrass, fescue, timothy	1/10 to 3/10	4
	Wheat (except durum)	1/10 to 3/10	1
	Durum, barley, oat	1/10 to 3/10	10
ALL AREAS NOT INCLUDED ABOVE*	Red clover, white clover, and sweet clover	1/10 to 2/10	12
	Bermudagrass, bluegrass, orchardgrass, bromegrass, ryegrass, timothy	1/10 to 2/10	6
	Fescue	1/10 to 2/10	18
	Wheat (except durum)	1/10 to 2/10	1
	Durum, barley, oat	1/10 to 2/10	10

**Rotation Intervals not covered above** - The minimum rotation interval is 34 months with a least 28" of cumulative precipitation during the period:

- to any major field crop or pasture crop not listed (See the Rotation Intervals table)
- if the use rate applied is not specified in the table

To rotate to a major field crop at an interval shorter than specified, a field bioassay must be successfully completed to that crop. A field bioassay must be successfully completed before rotation to any minor crops (as determined by the USDA criteria). See section on Field Bioassay for further information.

**RECRIPPING INTERVALS FOR GRASSES ON CONSERVATION RESERVE PROGRAM (CRP)**

Whenever this product has previously been used in wheat, barley, triticale or fallow, the following grasses may be planted after the intervals specified in the tables below. The planting of grass and legume mixtures is not recommended as injury to the legume may occur.

- Bentgrasses
- Blue grama
- Bluestems - Big, Little, Plains, Sand, WW Spar
- Buffalograss
- Galleta
- Green needlegrass
- Green sprangletop
- Indian ricegrass
- Lovegrasses - Sand, Weeping
- Orchardgrass snot (excluding Piaute)
- Prairie sandreed
- Sand dropseed
- Sheep fescue
- Sideoats grama
- Switchgrass
- Wild-ryegrasses - Beardless, Russian
- Wheatgrasses - Crested, Intermediate, Pubescent, Slender, Streambank, Tall, Thickspike, Western

**ROTATION INTERVALS**

**MN, MT, ND, SD, and Northern WY:**

Soil pH	Use Rate (ounces/acre)	Minimum Interval for Planting Grasses
7.5 or lower	1/10	4 months (all grasses)
7.6 to 7.9	1/10	4 months (Wheatgrasses only)

**AR, CO, ID, KS, LA, NE, NM, OK, OR, TX, UT, WA, Southern WY:**

Soil pH	Use Rate (ounces/acre)	Minimum Interval for Planting Grasses
7.9 or lower	1/10	2 months (all grasses)

## **BIOASSAY**

A field bioassay must be completed before rotating to any crop not listed (See 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, or if the minimum cumulative precipitation has not occurred since application.

### **Field Bioassay**

To conduct a field bioassay, grow test strips of the crop or crops you plan to grow the following year in fields previously treated with this product. Crop response to the bioassay will indicate whether or not to rotate to the crop(s) grown in the test strips.

If a field bioassay is planned, check with your local Agricultural dealer or Nufarm representative for information detailing the field bioassay procedure.

## **GRAZING**

There are no grazing restriction for this product.

## **IMPORTANT PRECAUTIONS**

Treated vegetation may be cut for forage or hay. Coveralls, shoes plus socks must be worn if cutting within 4 hours of treatment.

## **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 this product.
3. Continue agitation until this product is fully dispersed, at least 5 minutes.
4. Once this product is fully dispersed, maintain agitation and continue filling tank with water, this product should 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 nonionic surfactant. Always add surfactant last.
6. If the mixture is not continuously agitated, settling will occur. If settling occurs, thoroughly re- agitate before using.
7. Apply this product spray mixture within 24 hours of mixing to avoid product degradation.
8. If this product and a tank mix partner are to be applied in multiple loads, pre-slurry this product in clean water prior to adding to the tank. This will prevent the tank mix partner from interfering with the dissolution of this product.

Do not use this product with spray additives that reduce the **pH** of the spray solution to below 3.0.

## **SPRAY EQUIPMENT**

For specific application equipment, refer to the manufacturer's instructions 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 **Spray Drift Management** section of the label.

Continuous agitation is required to keep this product in suspension.

## **SPRAYER CLEANUP**

Spray equipment must be cleaned before this product 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 This Product** section of this label.

### **At the End of the Day**

When multiple loads of this product are applied, it is suggested 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 This Product and Before Spraying Crops Other Than Wheat, Barley, Triticale, Fallow, Pasture, or Rangeland**

To avoid subsequent injury to desirable crops, thoroughly clean all mixing and spray equipment immediately following applications of this product 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 gal of household ammonia\* (contains 3% active) for every 100 gal 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 Nufarm-approved cleaner can be used in the cleanout procedure. Carefully read and follow the individual cleaner instructions. Consult your agricultural dealer, applicator, or Nufarm representative for a listing of approved cleaners.

**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 prior to performing the above cleanout procedure to facilitate the removal of any caked deposits.
3. When this product is tank mixed with other pesticides, all required cleanout procedures should be examined and the most rigorous procedure should be followed.
4. In addition to this cleanout procedure, all pre-cleanout guidelines on subsequently applied products should be followed as per the individual labels.
5. Where routine spraying practices include shared equipment frequently being switched between applications of this product and applications of other pesticides to this product -sensitive crops during the same spray season, use a sprayer that is dedicated to this product to further reduce the chance of crop injury.

**SPRAY DRIFT MANAGEMENT**

The interaction of many equipment and weather-related factors determines the potential for spray drift. The applicator is responsible for considering all these factors when making application decisions.

AVOIDING SPRAY DRIFT IS THE RESPONSIBILITY OF THE APPLICATOR.

**IMPORTANCE OF DROPLET SIZE**

The most effective way to reduce drift potential is to apply large droplets (>150 - 200 microns). The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. The presence of sensitive species nearby, the environmental conditions, and pest pressure may affect how an applicator balances drift control and coverage. APPLYING LARGER DROPLETS REDUCES DRIFT POTENTIAL, BUT WILL NOT PREVENT DRIFT IF APPLICATIONS ARE MADE IMPROPERLY OR UNDER UNFAVORABLE ENVIRONMENTAL CONDITIONS! See **Wind, Temperature and Humidity, and Temperature Inversions** sections of this label.

**Controlling Droplet Size – General Techniques**

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. WHEN HIGHER FLOW RATES ARE NEEDED, USE A HIGHER-CAPACITY NOZZLE INSTEAD OF INCREASING PRESSURE.
- **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.

**Controlling Droplet Size - Aircraft**

- **Number of Nozzles** - Use the minimum number of nozzles with the highest flow rate that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is emitted backwards, parallel to the airstream will produce larger droplets than other orientations.
- **Nozzle Type** - Solid stream nozzles (such as disc and core with swirl plate removed) oriented straight back produce larger droplets than other nozzle types.
- **Boom Length** - The boom length should not exceed 3/4 of the wing or rotor length - longer booms increase drift potential.
- **Application Height** - Application more than 10 ft above the canopy increases the potential for spray drift.

**BOOM HEIGHT**

Setting the boom at the lowest labeled height (if specified) which provides uniform coverage reduces the exposure of droplets to evaporation and wind. For ground equipment, the boom should remain level with the crop and have minimal bounce.

**WIND**

Drift potential increases at wind speeds of less than 3 mph (due to inversion potential) or more than 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given wind speed. AVOID GUSTY OR WINDLESS CONDITIONS.

**Note:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

**TEMPERATURE AND HUMIDITY**

When making applications in hot and dry conditions, set up equipment to produce larger droplets to reduce effects of evaporation.

## **TEMPERATURE INVERSIONS**

Drift potential is high during a temperature inversion. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of 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.

## **SHIELDED SPRAYERS**

Shielding the boom or individual nozzles can reduce the effects of wind. However, it is the responsibility of the applicator to verify that the shields are preventing drift and not interfering with uniform deposition of the product.

## **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, is configured properly, and that drift is not occurring.

Note: Air assisted field sprayers can affect product performance by affecting spray coverage and canopy penetration. Consult the application equipment section of this label to determine if use of an air assisted sprayer is specified.

## **WEED RESISTANCE**

Biotypes of certain weeds listed on this label are resistant to this product and other herbicides with the same mode of action\*, even at exaggerated application rates. Biotypes are naturally occurring individuals of a species that are identical in appearance but have slightly different genetic compositions; the mode of action of an herbicide is the chemical interaction that interrupts a biological process necessary for plant growth and development.

If weed control is unsatisfactory, it may be necessary to retreat problem areas using a product with a different mode of action, such as postemergence broadleaf and/or grass herbicides.

If resistant weed biotypes such as kochia, prickly lettuce, and Russian thistle are suspected or known to be present use a tank-mix partner with this product to help control these biotypes, or use a planned herbicide rotation program where other residual broadleaf herbicides having different modes of action are used.

\* Naturally occurring weed biotypes that are resistant to ALS inhibitor herbicides (such as “Amber” herbicide, “Pursuit” herbicide, FINESSE® herbicide, or HARMONY® EXTRA herbicide) may also be resistant to this product.

## **INTEGRATED PEST MANAGEMENT**

To better manage weed resistance when using this product, use a combination of tillage, and tank-mix partners or sequential herbicide applications that have a different mode of action than this product, to control escaped weeds. Do not let weed escapes go to seed.

Consult your agricultural dealer, consultant, applicator, and/or appropriate state agricultural extension service representative for specific alternative herbicide specifications available in your area.

It is advisable to keep accurate records of pesticides applied to individual fields to help obtain information on the spread and dispersal of resistant biotypes.

## **PRECAUTIONS**

- Injury to or loss of desirable trees or vegetation may result from failure to observe the following:
  - Do not apply, drain, or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots.
  - Do not use on lawns, walks, driveways, tennis courts, golf courses, athletic fields, commercial sod operations, or other high-maintenance, fine turfgrass areas, or similar areas.
  - Do not use on grasses grown for seed.
- Do not apply to irrigated land where tailwater will be used to irrigate crops other than wheat and barley.
- Do not apply to frozen ground as surface runoff may occur.
- Do not apply to snow-covered ground.
- Wheat and barley varieties may differ in their response to various herbicides. Nufarm recommends 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 this product to a small area.
- Under certain conditions such as heavy rainfall, prolonged cold weather, or wide fluctuations in day/night temperatures prior to or soon after application of this product, temporary discoloration and/or crop injury may occur. This product should not be applied to wheat or barley that is stressed by severe weather conditions, drought, low fertility, water-saturated soil, disease, or insect damage, as crop injury may result. Risk of injury is greatest when crop is in the 2 to 5- leaf stage. Severe winter stress, drought, disease, or insect damage following application also may result in crop injury.
- The combined treatment effects of this product postemergence preceded by preemergence wild oat herbicides may cause crop injury to spring wheat when crop stress (soil crusting, planting too deep, prolonged cold weather, or drought) causes poor seedling vigor.

- In the Pacific Northwest, to prevent cold weather-related crop injury, avoid making applications during winter months when weather conditions are unpredictable and can be severe.
- Do not apply to wheat, barley, Triticale or pastures undersown with legumes, as injury to the forage may result.
- 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 cereal grains or pasture/rangeland.
- 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 or MCPA should improve weed control under these conditions.
- Preplant or preemergence applications of 2,4-D or herbicides containing 2,4-D made within 2 weeks of planting spring cereals may cause crop injury when used in conjunction with early postemergence applications of this product. For increased crop safety, delay treatment of this product until crop tillering has begun.

### **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. Store in a cool, dry place.

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

**Container Disposal: For Plastic Containers:** Non-refillable container. Do not reuse or refill this container. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke.

**NOTICE TO BUYER:** Purchase of this material does not confer any rights under patents of countries outside of the United States.

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