



U.S. ENVIRONMENTAL PROTECTION AGENCY  
Office of Pesticide Programs  
Registration Division (H7505C)  
401 "M" St., S.W.  
Washington, D.C. 20460

EPA Reg. Number:  
228-480

Date of Issuance:  
DEC 2 2005

NOTICE OF PESTICIDE:  
  x   Registration  
       Reregistration

Term of Issuance:  
Conditional

Name of Pesticide Product:  
Polaris Herbicide

(under FIFRA, as amended).

Name and Address of Registrant (include ZIP Code):

George Meindl  
Nufarm Americas Inc.  
1333 Burr Ridge Parkway, Suite 125A  
Burr Ridge, IL 60527-0866

**Note:** Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered/conditionally registered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is conditionally registered in accordance with FIFRA sec. 3(c)(7)(A) provided that you:

1. Submit and/or cite all data required for registration/reregistration of your product when the Agency requires all registrants of similar products to submit such data.
2. Make the following changes to your labeling:
  - a. Change the registration number to "228-480"
  - b. Make all of the changes detailed in the attached document "Summary of Comments on Polaris specimen.qxd".
3. Submit final labeling for this product **within 30 days** of the date of this letter.

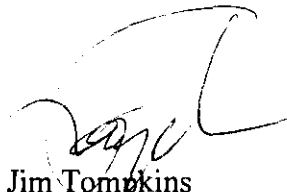
If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA sec. 6(e). Your release for shipment of the product constitutes acceptance of these conditions.

Signature of Registrant: \_\_\_\_\_

Date: 12/2/05

A stamped copy of the label is enclosed for your records.

If you have any questions about this letter, please contact Tobi Colvin-Snyder at 703-305-7801.



Jim Tompkins  
Product Manager (25)  
Herbicide Branch  
Registration Division (7505C)

# POLARIS™ HERBICIDE



**ACTIVE INGREDIENT:**

Isopropylamine salt of Imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)*	53.10%
OTHER INGREDIENTS:	46.90%
<b>TOTAL:</b>	<b>100.00%</b>

\*Equivalent to 43.3% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid or 4 pounds acid per gallon.

U.S. Patent No. 4,798,619

## KEEP OUT OF REACH OF CHILDREN CAUTION/PRECAUCION

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.)

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. 228-  
EPA EST. NO. 228-IL-1

MANUFACTURED BY  
NUFARM AMERICAS INC.  
BURR RIDGE, IL 60527-0866



NET CONTENTS      GALS.

0000      0.0000 Gallon

ACCEPTED  
with COMMENTS  
in EPA Letter Dated

DEC 2 2005

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.

228-480

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS  
CAUTION/PRECAUCION**

Harmful if inhaled. Avoid contact with skin, eyes, or clothing. Avoid breathing spray mist.

**PERSONAL PROTECTIVE EQUIPMENT (PPE):**

**Applicators and other handlers must wear:**

- long-sleeved shirt and long pants
- shoes plus socks

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

<b>USER SAFETY RECOMMENDATIONS</b>	
<b>Users should:</b>	
<ul style="list-style-type: none"> <li>• Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.</li> <li>• Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.</li> </ul>	

<b>FIRST AID</b>	
<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 mouth-to-mouth if possible.</li> <li>• Call a poison control center or doctor for further treatment 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 the first 5 minutes, then continue rinsing.</li> <li>• Call poison control center or doctor for treatment advice.</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 advice.</li> </ul>

<b>HOT LINE NUMBER</b>
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.

**ENVIRONMENTAL HAZARDS**

For terrestrial uses, 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 disposing of equipment washwaters. This herbicide is phytotoxic at extremely low concentrations. Nontarget plants may be adversely affected from drift.

**PHYSICAL AND CHEMICAL HAZARDS**

Spray solutions of this product should be mixed, stored, and applied only in stainless steel, fiberglass, plastic, and plastic-lined steel containers.

DO NOT mix, store, or apply this product or spray solutions of this product in unlined steel (except stainless steel) containers or spray tanks.

**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.

This product should be used only in accordance with recommendations on the booklet label. Keep containers closed to avoid spills and contamination.

This product may be applied using helicopters, ground operated sprayers, low-volume hand-operated spray equipment such as back-pack and wand-up sprayers, and tree injection equipment.

Observe restrictions and limitations in the package labels of products used in combination with this product.



### 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 12 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

### IMPORTANT

DO NOT use on food or feed crops. DO NOT use on Christmas trees. DO NOT treat irrigation ditches, or water used for crop irrigation or for domestic uses. Keep from contact with fertilizers, insecticides, fungicides, and seeds to prevent unintentional exposure of desirable vegetation to this product. DO NOT apply or drain or flush equipment on or near sensitive desirable 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 side trim desirable vegetation with this product. Prevent drift of spray to desirable plants.

Clean application equipment after using this product by thoroughly flushing with water.

### GENERAL INFORMATION

This product is a surfactant free aqueous solution to be mixed in water and generally applied as a post-emergent spray for control of most annual and perennial grasses, broadleaf weeds, vines and brambles, and hardwood brush and trees for forestry site preparation and release of conifers from woody and herbaceous competition. This product may be used for selective woody and herbaceous weed control in natural regeneration of certain conifers (see pine release). This product may also be mixed in water and used for stump and cut-stem treatment for control of unwanted woody vegetation. This product can be applied along forest roads to control undesirable woody vegetation.

This product is also recommended for the control of undesirable vegetation along non-irrigation ditchbanks and for the establishment and maintenance of wildlife openings, except in the state of California.

This product may be applied on forestry sites that contain areas of temporary surface water caused by the collection of water between planting beds, in equipment ruts, or in other depressions created by forest management activities, except in the states of California and New York. It is permissible to treat drainage ditches, intermittent drainage, intermittently flooded low lying sites, seasonally dry flood plains, and transitional areas between upland and lowland sites when no water is present, except in the states of California and New York. Only the edge of drainage ditches can be treated for drainage ditches that contain water. It is also permissible to treat marshes, swamps, and bogs after water has receded, as well as seasonally dry flood deltas, except in the states of California and New York. DO NOT make applications to natural or manmade bodies of water such as lakes, reservoirs, ponds, streams, rivers and canals.

#### SYMPTOMOLOGY:

This product is readily absorbed through foliage and roots and is translocated rapidly throughout the plant, with accumulation in the meristematic regions. Treated plants stop growing soon after spray application. Chlorosis first appears in the youngest leaf tissue. In perennials, the herbicide is translocated into the roots, thus preventing most resprouting. Chlorosis and tissue necrosis may not be apparent in some plant species for several weeks after application. Woody plants, brush, and trees normally do not display the full extent of herbicide control until several months following application.

### MIXING AND APPLICATION INSTRUCTIONS

#### HELICOPTER SPRAY EQUIPMENT:

Thoroughly mix the recommended amount of this product in 5 to 30 gallons of water per acre and uniformly apply with properly calibrated aerial equipment. A suitable nonionic surfactant may be added to the spray solution to enhance control of undesirable vegetation. All precautions should be taken to minimize or eliminate spray drift. Applications should not be made under windy or gusty conditions. The use of controlled droplet booms and nozzle configurations is recommended. A drift control agent may be added at the recommended label rate. A foam reducing agent may be added at the recommended label rate, if needed.

**IMPORTANT:** DO NOT make applications by fixed wing aircraft. Maintain adequate buffer zones. Thoroughly clean application and mixing equipment, including landing gear, immediately after use. Prolonged exposure of this product to uncoated steel (except stainless steel) surfaces may result in corrosion and failure of the exposed part.

#### GROUND OPERATED SPRAY EQUIPMENT:

Thoroughly mix and apply the recommended amount of this product in 5 to 100 gallons of water per acre. A suitable nonionic surfactant may be added to the spray solution to enhance control of undesirable vegetation. A drift control agent and a foam reducing agent may be added at the recommended label rates, if needed. If desired, a spray pattern indicator may be added at the recommended label rate.

For best results, uniformly cover the foliage of the vegetation to be controlled with the spray solution.

**IMPORTANT:** DO NOT spray under windy or gusty conditions. Maintain adequate buffer zones. Clean application and mixing equipment after using this product by thoroughly flushing with water.

6/11

**DIRECTED FOLIAR OR SPOT SPRAY EQUIPMENT:**

When making directed or spot spray applications with helicopter or ground spray equipment, or low-volume hand-operated spray equipment, thoroughly mix a solution of 1 to 5 percent by volume of this product and a minimum of 1/4 percent by volume nonionic surfactant in water.

To mix the spray solution, add the volume of this product and nonionic surfactant indicated in the table below to the desired amount of water:

**SPRAY SOLUTION MIXING GUIDE**

SOLUTION VOLUME	POLARIS CONCENTRATION			SURFACTANT
	1%	2.5%	5%	
1 gallon	1-1/3 oz.	3-1/3 oz.	6-2/3 oz.	1/3 oz.
5 gallons	6-2/3 oz.	1 pint	2 pints	1-2/3 oz.
10 gallons	13-1/3 oz.	2 pints	4 pints	3-1/3 oz.
25 gallons	2 pints	5 pints	10 pints	8 oz.
100 gallons	1 gallon	2.5 gallons	5 gallons	2 pints

2 tablespoons = 1 fluid ounce

For best results, uniformly cover the foliage of the vegetation to be controlled with the spray solution. Avoid making applications directly to desirable conifers. BIGLEAF MAPLE REQUIRES AT LEAST A 5% SPRAY SOLUTION CONCENTRATION.

**IMPORTANT:** DO NOT over apply causing runoff from the treated foliage. Avoid direct application to desired plant species as injury may occur. DO NOT exceed recommended dosage rate per acre.

**STUMP AND CUT STEM TREATMENTS**

This product may be used to control undesirable woody vegetation in forest management by applying a solution of the herbicide in water to the cambium area of freshly-cut stump surfaces or to cuts on the stem of the target woody vegetation. Applications can be made at any time of the year except during periods of heavy sap flow in the spring. Tree injection and cut stem treatments are most effective in late summer and early fall.

**MIXING**

This product may be mixed as either a concentrated or dilute solution for stump and cut stem treatments. The dilute solution may be used for applications to the surface of the stump or to cuts on the stem of the target woody vegetation. Concentrated solutions may be used for applications to cuts on the stem. Use of the concentrated solution permits application to fewer cuts on the stem, especially for large diameter trees. Follow the application instructions to determine proper application techniques for each type of solution.

**APPLICATION WITH DILUTE SOLUTIONS**

To prepare a dilute solution, mix 6 fluid ounces of this product with one gallon of water.

For cut stump treatments: Spray or brush the solution onto the cambium area of the freshly cut stump surface. Insure that the solution thoroughly wets the entire cambium area (the wood next to the bark of the stump).

For tree injection treatments: Using standard injection equipment, apply 1 milliliter of solution at each injection site around the tree with no more than one inch intervals between cut edges. Insure that the injector completely penetrates the bark at each injection site.

For frill or girdle treatments: Using a hatchet, machete, or similar device, make cuts through the bark at intervals around the tree with no more than two inch intervals between cut edges. Spray or brush the solution into each cut until thoroughly wet.

**APPLICATION WITH CONCENTRATED SOLUTIONS**

To prepare a concentrated solution, use undiluted product or mix with up to 75% water, by volume.

For tree injection treatments: Using standard injection equipment, apply 1 milliliter of solution at each injection site. Make at least one injection cut for every three inches of diameter at breast height (dbh) on the target tree. For example, a three-inch dbh tree will receive 1 injection cut and a six-inch dbh tree will receive 2 injection cuts. On trees requiring more than one injection site, place the injection cuts at approximately equal intervals around the tree.

For hack and squirt treatments: Using a hatchet, or similar device, make cuts at a downward angle completely through the bark and cambium at approximately equal intervals around the tree. Make at least one cut for every three inches of diameter at breast height (dbh) on the target tree. For example, a three-inch dbh tree will receive 1 cut and a six-inch dbh tree will receive 2 cuts. Using a squirt bottle, syringe, or similar device apply 1 milliliter of the concentrated mix into each cut, ensuring that the solution does not run out of the cut.

**NOTE:** Injury may occur to non-target or desirable woody plants if they extend from the same root system or their root systems are grafted to those of the treated tree.

**SITE PREPARATION TREATMENTS**

This product may be used to control labeled grasses, broadleaf weeds, vines and brambles, and woody brush and trees on forest sites in advance of regeneration for the following conifer crop species:

Crop Species	Rate (oz./A)
Loblolly Pine ( <i>Pinus taeda</i> )	24-40
Loblolly X Pitch Hybrid	24-40
Longleaf Pine ( <i>Pinus palustris</i> )	24-40
Shortleaf Pine ( <i>Pinus echinata</i> )	24-40
Virginia Pine ( <i>Pinus virginiana</i> )	24-40
Slash Pine ( <i>Pinus elliotii</i> )	20-32
Douglas Fir ( <i>Pseudotsuga menziesii</i> )	12-24
Coastal Redwood ( <i>Sequoia sempervirens</i> )	12-24
Western Hemlock ( <i>Tsuga heterophylla</i> )	12-24
California Red Fir ( <i>Abies magnifica</i> )	12-20
California White Fir ( <i>Abies concolor</i> )	12-20
Jack Pine ( <i>Pinus banksiana</i> )	12-16
Lodgepole Pine ( <i>Pinus contorta</i> )	12-16
Pitch Pine ( <i>Pinus rigida</i> )	12-16
Ponderosa Pine ( <i>Pinus ponderosa</i> )	12-16
Sugar Pine ( <i>Pinus lambertiana</i> )	12-16
White Pine ( <i>Pinus strobus</i> )	12-16
Black Spruce ( <i>Picea mariana</i> )	12-16
Red Spruce ( <i>Picea rubens</i> )	12-16
White Spruce ( <i>Picea glauca</i> )	12-16

Use the recommended rate of this product per acre applied as a broadcast foliar spray for long-term control of labeled woody plants and residual control of herbaceous weeds. Within 4 to 6 weeks of treatment, grasses and other herbaceous weeds will be controlled and may provide fuel to facilitate a site preparation burn, if desired, to control conifers or other species tolerant to the herbicide.

Apply the recommended rate of this product per acre in 5 to 30 gallons total spray solution for helicopter applications or 5 to 100 gallons total spray solution for mechanical ground spray and backpack applications. Use a minimum of 1/2 percent by volume nonionic surfactant. Use the higher label rates of this product and higher spray volumes when controlling particularly dense or multi-layered canopies of hardwood stands, or difficult to control species.

Tank mixes may be necessary for chemical control of conifers and other species tolerant to this product in certain cases. Observe all precautions and restrictions on the product labels. Always follow the most restrictive label. Combinations with other products labeled for forest site preparation may kill certain plants such as legumes and blackberry which are desirable for wildlife habitat.

Where quick initial brown out (deadening of foliage) is desired for burning, apply a tank mixture of 16 to 32 oz. this product with 16 to 64 oz. glyphosate or 16 to 48 oz. triclopyr per acre. For control of seedling pines, apply 16 to 32 oz. this product with 3 to 4 quarts glyphosate. For site preparation, rates less than 24 oz. This product will provide suppression of hardwood brush and trees, and some resprouting may occur.

Do not plant seedlings of black spruce (*Picea mariana*) or white spruce (*Picea glauca*) on sites that have been broadcast treated with this product or into the treated zone of spot or banded applications for three months following application or injury may occur.

**HERBACEOUS WEED CONTROL**

Use this product for selective weeding in the following conifers:

Crop Species	Rate (fl. oz./A)
Loblolly Pine ( <i>Pinus taeda</i> )	6 - 10
Loblolly X Pitch Hybrid	6 - 10
Virginia Pine ( <i>Pinus virginiana</i> )	6 - 10
Longleaf Pine ( <i>Pinus palustris</i> ) <sup>1</sup>	4 - 6
Slash Pine ( <i>Pinus elliotii</i> ) <sup>1</sup>	4 - 6
Douglas Fir ( <i>Pseudotsuga menziesii</i> ) <sup>1</sup>	4 - 6

<sup>1</sup>Use of surfactant is not recommended.

This product may be applied as a broadcast treatment, banded over tree rows, or as a directed spray for release of young conifers from herbaceous weeds. To prevent possibility of conifer injury, do not apply this product when conifers are under stress from drought, diseases, animal or winter injury, planting shock, or other stresses reducing conifer vigor. Broadcast applications may be made by helicopter, ground, or backpack sprayer. For best results, applications should be made to newly emerged weeds. For difficult to control weeds, use the higher labeled rates. Where herbaceous weeds have overtopped conifer seedlings, a nonionic surfactant may be added to improve weed control (except for slash pine, longleaf pine, and Douglas-fir), at a rate not to exceed 1/4 percent of spray solution volume. Some minor conifer growth inhibition may be observed when herbaceous weed control treatments are made during periods of active conifer growth.

This product may also be applied using backpack or hand-held sprayers to control herbaceous weeds around individual conifer seedlings. Mix 0.4 to 0.6 oz. this product and 0.2 oz. nonionic surfactant per gallon of water. Direct the spray to the weeds and minimize the amount applied to conifer foliage for best conifer tolerance. Ensure that maximum labeled rates per acre listed for crop species above are not exceeded.

This product may be tank mixed with a sulfometuron methyl product to broaden the spectrum of weeds controlled. For loblolly pine, apply 4 to 6 oz. this product plus 1-2 oz. sulfometuron methyl per acre. The application of this product plus sulfometuron methyl on other conifer species may cause growth suppression.

### CONIFER RELEASE TREATMENTS

This product may be applied as a broadcast or directed spray application for suppression of labeled brush, tree, and herbaceous weed species. Directed spray applications may be made with low-volume applications in conifer stands of all ages by targeting the unwanted vegetation and avoiding direct application to the conifer. Ensure that maximum labeled rates per acre listed for crop species below are not exceeded.

Use broadcast applications of this product for release of the following conifers from hardwood competition:

Crop Species	Rate (fl. oz./Acre)
Loblolly Pine ( <i>Pinus taeda</i> ) <sup>3</sup>	12 - 20
Loblolly X Pitch Hybrid <sup>3</sup>	12 - 20
Virginia Pine ( <i>Pinus virginiana</i> ) <sup>3</sup>	12 - 20
Longleaf Pine ( <i>Pinus palustris</i> )	12 - 16
Pitch Pine ( <i>Pinus rigida</i> )	12 - 16
Shortleaf Pine ( <i>Pinus echinata</i> )	12 - 16
Slash Pine ( <i>Pinus elliottii</i> )	12 - 16
White Pine ( <i>Pinus strobus</i> ) <sup>1</sup>	8 - 16
California Red Fir ( <i>Abies magnifica</i> )	8 - 12
California White Fir ( <i>Abies concolor</i> )	8 - 12
Lodgepole Pine ( <i>Pinus contorta</i> ) <sup>2</sup>	8 - 12
Douglas-Fir ( <i>Pseudotsuga menziesii</i> ) <sup>2</sup>	8 - 12
Jack Pine ( <i>Pinus banksiana</i> ) <sup>2</sup>	6 - 12
Black Spruce ( <i>Picea mariana</i> ) <sup>2</sup>	6 - 12
Red Spruce ( <i>Picea rubens</i> ) <sup>2</sup>	6 - 12
White Spruce ( <i>Picea glauca</i> ) <sup>2</sup>	6 - 12

<sup>1</sup> DO NOT make applications to white pine stands younger than three years old. To minimize potential white pine injury, release treatments should not be made prior to July 15.

<sup>2</sup> Applications should be made after formation of final conifer resting buds in the fall or height growth inhibition may occur.

<sup>3</sup> Mid-rotation release: For broadcast applications below the pine canopy in established stands of loblolly pine, loblolly X pitch hybrid, and Virginia pine use 16-32 oz product per acre. For mid-rotation release of other species use rates listed above.

For slash pine and longleaf pine, broadcast release treatments over the top of pines for the purpose of woody plant control must be made after August 15 and only in stands 2 through 5 years old. For applications over the top of slash pine and longleaf pine, do not add surfactant and use lower labeled rates on sandy soils.

#### FOR THE AERIAL RELEASE TO SLASH PINE (*PINUS ELLIOTII*) STANDS OVER THE AGE OF 5 YEARS OBSERVE ALL PRECAUTIONARY STATEMENTS IN THIS PRODUCT LEAFLET LABEL BEFORE USING

#### DIRECTIONS FOR USE

This product may be applied as an aerial application for the release of slash pine stands, over the age of 5 years.

In addition to reading and following all directions in this product label, the following precautions and restrictions are required:

- Make applications in the fall after slash pine height growth has stopped and buds have set.
- Do not apply before September 15 even if height growth has stopped and buds have set.
- A maximum of 12 to 14 oz/A of this product may be applied. Use the 12 oz/A rate on sandier sites.



9/11

- Do not use a surfactant.
- Do not over apply due to spray pattern overlap.
- Do not over apply by dressing up around the edges of a tract.
- Do not treat trees that are under stress. This may include stress from poor site quality including low soil nutrient availability, drought, diseases, animal or winter injury, prolonged flooding, fusiform rust or other stresses reducing vigor.

Some inhibition in height growth or terminal dieback is possible and this treatment should not be used if this cannot be tolerated.

The use of this product at rates less than or equal to 14 oz/A are intended for hardwood growth suppression, and some hardwood resprouting should be expected.

Apply the recommended rate of this product per acre when making broadcast applications with helicopter or ground spray equipment. Refer to mixing and application instructions for proper spray volumes. A nonionic surfactant may be added at no more than 1/4 percent by volume. Use the higher label rates of this product when controlling particularly dense stands or difficult to control species.

Some minor conifer growth inhibition may be observed when release treatments are made during periods of active conifer growth. To minimize potential conifer height growth inhibition, do not make broadcast applications to conifer stands, except loblolly pine, before the end of the second growing season. To minimize potential conifer height growth inhibition, broadcast release treatments may be made late in the growing season. To prevent possibility of conifer injury, do not apply this product when conifers are under stress from drought, diseases, animal or winter injury, or other stresses reducing conifer vigor.

This product may be used to release loblolly pine seedlings during the first growing season following planting or for one-year-old natural loblolly pine regeneration. For one-year-old loblolly pine release, apply 12-20 oz./A this product after July 15. The use of rates below 16 oz./A is intended for hardwood growth suppression and some hardwood resprouting should be expected.

**Use this product for spot treatment of undesirable hardwood vegetation:**

This product may be used as a directed foliar or cut stem application to control undesirable brush and hardwoods in the management of stands of all ages for the conifer species listed in the broadcast application section above. Refer to mixing and application instructions in the directed foliar or cut stem sections above for proper use rates, equipment, and application techniques. Ensure that the maximum labeled rates per acre listed for crop species are not exceeded. Cut stem applications may be used for spot treatment of undesirable hardwoods in Ponderosa pine stands using 12 oz. or less of product per acre.

Avoid direct application to desired plant species as injury may occur. Injury may occur to non-target or desirable hardwoods or conifers if they extend from the same root system or their root systems are grafted to those of the treated tree or if their roots extend into the treated zone

**FOR JACK PINE, BLACK SPRUCE, RED SPRUCE, AND WHITE SPRUCE RELEASE  
OBSERVE ALL PRECAUTIONARY STATEMENTS IN THIS PRODUCT LEAFLET LABEL BEFORE USING**

**DIRECTIONS FOR USE**

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

This product may be used to release Jack Pine, Black Spruce, Red Spruce and White Spruce from labeled brush, vine, grass, and broadleaf weeds at rates less than 6 fluid oz. per acre when tank mixed with glyphosate.

A nonionic surfactant may be tank mixed at rates greater than 0.25% v/v when using less than 6 oz./A of this product. The use of this product with more than 0.25% v/v nonionic surfactant can result in conifer growth inhibition or mortality, and should not be used if this type of conifer injury cannot be tolerated.

The use of this product rates below 6 oz./A are intended for hardwood brush growth suppression and hardwood brush resprouting should be expected

**WEEDS CONTROLLED**

This product will provide postemergence control and some residual control of the following target vegetation species. Degree of control is both species and rate dependent. This product should be used only in accordance with the recommendations on this label.

**GRASSES**

The species of annual and perennial grasses controlled by this product include the following:

Annual bluegrass ( <i>Poa annua</i> )	Dallisgrass ( <i>Paspalum dilatatum</i> )	Orchardgrass ( <i>Dactylis glomerata</i> )
Bahiagrass ( <i>Paspalum notatum</i> )	Downy brome ( <i>Bromus tectorum</i> )	<i>Panicum</i> spp.
Barnyardgrass ( <i>Echinochloa crus-galli</i> )	Fall panicum ( <i>Panicum dichotomiflorum</i> )	Paragrass ( <i>Brachiaria mutica</i> )
Beardgrass ( <i>Andropogon</i> spp.)	Feathertop ( <i>Pennisetum villosum</i> )	Phragmites ( <i>Phragmites australis</i> )
Bermudagrass ( <i>Cynodon dactylon</i> ) <sup>1</sup>	Fescue ( <i>Festuca</i> spp.)	Prairie cordgrass ( <i>Spartina pectinata</i> )
Big bluestem ( <i>Andropogon gerardii</i> )	Foxtail ( <i>Setaria</i> spp.)	Prairie threeawn ( <i>Aristida oligantha</i> )
Broadleaf signalgrass ( <i>Brachiaria platyphylla</i> )	Giant reed ( <i>Arundo donax</i> )	Quackgrass ( <i>Agropyron repens</i> )
Canada bluegrass ( <i>Poa compressa</i> )	Goosegrass ( <i>Eleusine indica</i> )	Reed canary grass ( <i>Phalaris arundinacea</i> )
Cattail ( <i>Typha</i> spp.)	Guineagrass ( <i>Panicum maximum</i> )	Saltgrass ( <i>Distichlis stricta</i> )
Cheat ( <i>Bromus secalinus</i> )	Italian ryegrass ( <i>Lolium multiflorum</i> )	Sand dropseed ( <i>Sporobolus cryptandrus</i> )
Cogongrass ( <i>Imperata cylindrica</i> ) <sup>2</sup>	Itchgrass ( <i>Rotiboevia exaltata</i> )	Sandbur ( <i>Cenchrus</i> spp.)
Crabgrass ( <i>Digitaria</i> spp.)	Johnsongrass ( <i>Sorghum halepense</i> ) <sup>1</sup>	Smooth brome ( <i>Bromus inermis</i> )
Crowfootgrass ( <i>Dactyloctenium aegyptium</i> )	Junglerice ( <i>Echinochloa colonum</i> )	Sprangletop ( <i>Leptochloa</i> spp.)
	Kentucky bluegrass ( <i>Poa pratensis</i> )	
	Lovegrass ( <i>Eragrostis</i> spp.) <sup>1</sup>	

**GRASSES (continued)**

Timothy (*Phleum pratense*)  
Torpedograss (*Panicum repens*)  
Vaseygrass (*Paspalum urvillei*)  
Wild barley (*Hordeum* spp.)

Wild oats (*Avena fatua*)  
Wirestem muhly  
(*Muhlenbergia frondosa*)

Witchgrass (*Panicum capillare*)  
Woolly cupgrass (*Eriochloa villosa*)

<sup>1</sup>Use higher labeled rates.

<sup>2</sup>Use minimum of 24 oz per acre.

**BROADLEAF WEEDS**

The species of annual and perennial broadleaf weeds controlled by this product include the following:

Arrowwood (*Pluchea sericea*)  
Broom snakeweed  
(*Gutierrezia sarothrae*)  
Bull thistle (*Cirsium vulgare*)  
Burclover (*Medicago* spp.)  
Burdock (*Arctium* spp.)  
Camphorweed (*Heterotheca subaxillaris*)  
Canada thistle (*Cirsium arvense*)  
Carolina geranium  
(*Geranium carolinianum*)  
Carpetweed (*Mullugo verticillata*)  
Chickweed, mouseear  
(*Cerastium vulgatum*)  
Clover (*Trifolium* spp.)  
Cocklebur (*Xanthium strumarium*)  
Common chickweed (*Stellaria media*)  
Common ragweed  
(*Ambrosia artemisiifolia*)  
Cudweed (*Gnaphalium* spp.)  
Dandelion (*Taraxacum officinale*)  
Desert camelthorn (*Alhagi pseudalhagi*)  
Diffuse knapweed (*Centaurea diffusa*)  
Dock (*Rumex* spp.)  
Dogfennel (*Eupatorium capillifolium*)  
Fiddleneck (*Amsinckia intermedia*)  
Filaree (*Erodium* spp.)  
Fleabane (*Erigeron* spp.)  
Giant ragweed (*Ambrosia trifida*)  
Goldenrod (*Solidago* spp.)

Gray rabbitbrush  
(*Chrysothamnus nauseosus*)  
Henbit (*Lamium aplexicaule*)  
Hoary vervain (*Verbena stricta*)  
Horseweed (*Conyza canadensis*)  
Indian mustard (*Brassica juncea*)  
Japanese bamboo/knotweed  
(*Polygonum cuspidatum*)  
Knotweed, prostrate  
(*Polygonum aviculare*)  
Kochia (*Kochia scoparia*)  
Lambsquarters (*Chenopodium album*)  
Little mallow (*Malva parviflora*)  
Milkweed (*Asclepias* spp.)  
Miners lettuce (*Montia perfoliata*)  
Mullein (*Verbascum* spp.)  
Nettleleaf goosefoot  
(*Chenopodium murale*)  
Oxeye daisy  
(*Chrysanthemum leucanthemum*)  
Pepperweed (*Lepidium* spp.)  
Pigweed (*Amaranthus* spp.)  
Plantain (*Plantago* spp.)  
Pokeweed (*Phytolacca americana*)  
Primrose (*Oenothera kunthiana*)  
Puncturevine (*Tribulus terrestris*)  
Purple looserstrife (*Lythrum salicaria*)  
Purslane (*Portulaca* spp.)  
Pusley, Florida (*Richardia scabra*)

Rocket, London (*Sisymbrium irio*)  
Rush skeletonweed (*Chondrilla juncea*)  
Russian knapweed (*Centaurea repens*)  
Russian thistle (*Salsola kali*)  
Saltbush (*Atriplex* spp.)  
Shepherd's purse  
(*Capsella bursa-pastoris*)  
Silverleaf nightshade  
(*Solanum elaeagnifolium*)  
Smartweed (*Polygonum* spp.)  
Sorrell (*Rumex* spp.)  
Sowthistle (*Sonchus* spp.)  
Spurge, annual (*Euphorbia* spp.)  
Stinging nettle (*Urtica dioica*)  
Sunflower (*Helianthus* spp.)  
Sweet clover (*Melilotus* spp.)  
Tansymustard (*Descurainia pinnata*)  
Texas thistle (*Cirsium texanum*)  
Velvetleaf (*Abutilon theophrasti*)  
Western ragweed  
(*Ambrosia psilostachya*)  
Wild carrot (*Daucus carota*)  
Wild lettuce (*Lactuca* spp.)  
Wild parsnip (*Pastinaca sativa*)  
Wild turnip (*Brassica campestris*)  
Woollyleaf bursage (*Ambrosia grayi*)  
Yellow starthistle (*Centaurea solstitialis*)  
Yellow woodsorrel (*Oxalis stricta*)

**VINES AND BRAMBLES**

The species of vines and brambles controlled by this product include the following:

Field bindweed (*Convolvulus arvensis*)  
Hedge bindweed (*Carysisyegia sequium*)  
Honeysuckle (*Lonicera* spp.)<sup>1</sup>  
Morningglory (*Ipomoea* spp.)  
Poison ivy (*Rhus radicans*)  
Redvine (*Brunnichia cirrhosa*)

Trumpetcreeper (*Campsis radicans*)  
Virginia creeper (*Parthenocissus quinquefolia*)  
Wild buckwheat (*Polygonum convolvulus*)  
Wild grape (*Vitis* spp.)

Wild rose (*Rosa* spp.)<sup>1</sup>  
Including: Multiflora rose  
(*Rosa multiflora*)  
Macartney rose  
(*Rosa bracteata*)

<sup>1</sup>Use higher labeled rates.

**WOODY BRUSH AND TREES**

The species of woody brush and trees controlled by this product include the following:

Alder (*Alnus* spp.)  
American beech (*Fagus grandifolia*)  
Ash (*Fraxinus* spp.)<sup>1</sup>  
Aspen (*Populus* spp.)  
Autumn olive (*Elaeagnus umbellata*)  
Bald cypress (*Taxodium distichum*)  
Bigeleaf maple (*Acer macrophyllum*)  
Birch (*Betula* spp.)<sup>1</sup>  
Black oak (*Quercus kelloggii*)  
Blackgum (*Nyssa sylvatica*)<sup>2</sup>  
Boxelder (*Acer negundo*)

Brazilian peppertree  
(*Schinus terebinthifolius*)  
Ceanothis (*Ceanothis* spp.)  
Cherry (*Prunus* spp.)<sup>1, 2</sup>  
Chinaberry (*Melia azedarach*)  
Chinese tallow-tree (*Sapium sebiferum*)  
Chinquapin (*Castanopsis chrysophylla*)  
Cottonwood (*Populus trichocarpa* and  
*Populus deltoides*)  
Cypress (*Taxodium* spp.)  
Dogwood (*Cornus* spp.)<sup>1</sup>  
Eucalyptus (*Eucalyptus* spp.)

Hawthorn (*Crataegus* spp.)  
Hickory (*Carya* spp.)<sup>1</sup>  
Huckleberry (*Gaylussacia* spp.)  
*Lyonia* spp.  
Including: Fetterbush (*Lyonia lucida*)  
Staggerbush (*Lyonia mariana*)  
Madrone (*Arbutus menziesii*)  
Maple (*Acer* spp.)  
Melaleuca (*Melaleuca quinquenervia*)  
Mulberry (*Morus* spp.)<sup>1, 3</sup>  
Oak (*Quercus* spp.)<sup>4</sup>

(continued)

**WOODY BRUSH AND TREES (continued)**

Persimmon ( <i>Diospyros virginiana</i> ) <sup>2</sup>	Sassafras ( <i>Sassafras albidum</i> )	Tree of heaven ( <i>Ailanthus altissima</i> )
Poison oak ( <i>Rhus diversiloba</i> )	Sourwood ( <i>Oxydendrum arboreum</i> ) <sup>2</sup>	<i>Vaccinium</i> spp.
Popcorn-tree ( <i>Sapium sebiferum</i> )	Sumac ( <i>Rhus</i> spp.)	Including: Blueberry ( <i>Vaccinium</i> spp.)
Poplar ( <i>Populus</i> spp.)	Sweetgum ( <i>Liquidambar styraciflua</i> )	Sparkleberry
Privet ( <i>Ligustrum vulgare</i> )	Sycamore ( <i>Platanus occidentalis</i> )	( <i>Vaccinium arboreum</i> )
Red alder ( <i>Alnus rubra</i> )	Tanoak ( <i>Lithocarpus densiflorus</i> ) <sup>1</sup>	Willow ( <i>Salix</i> spp.)
Red maple ( <i>Acer rubrum</i> )	TiTi ( <i>Cyrilla racemiflora</i> ) <sup>1</sup>	Yellow-poplar ( <i>Liriodendron tulipifera</i> )
Saltcedar ( <i>Tamarix pentandra</i> )		

<sup>1</sup>Use higher labeled rates.

<sup>2</sup>Best control with applications prior to formation of fall leaf color.

<sup>3</sup>The degree of control may be species dependent.

<sup>4</sup>For Water oak (*Quercus nigra*), Laurel oak (*Q. lauriflora*), Willow oak (*Q. phellos*) and Live oak (*Q. virginiana*) use higher labeled rates.

**STORAGE AND DISPOSAL**

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

**PESTICIDE STORAGE:** DO NOT store below 10°F.

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

**CONTAINER DISPOSAL:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in an approved sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

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