

241-296

05/16/2011

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U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Registration Division (7505P)
Ariel Rios Building
1200 Pennsylvania Ave., NW
Washington, D.C. 20460

EPA Registration
 Number:
 241-296

Date of Issuance:
 5-16-11

NOTICE OF PESTICIDE:

- Registration
- Reregistration

(under FIFRA, as amended)

Term of Issuance: **Unconditional**

Name of Pesticide Product: Chopper Herbicide

Name and Address of Registrant (include ZIP Code):

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

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/reregistered 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.

EPA received a label amendment request submitted on 5-13-11. EPA grants this request under the authority of section 3(c)(5) of the Federal Insecticide, Fungicide and Rodenticide Act, as amended. With this accepted labeling, all requirements set forth in the Reregistration Eligibility Decision (RED) for **imazapyr** have been satisfied. Therefore, EPA reregisters the product listed above. This action is taken under the authority of section 4(g)(2)(c) of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended. Reregistration under this section does not eliminate the need for continual reassessment of pesticides. EPA may require submission of data at any time to maintain the registration of your product.

Submit one (1) copy of final printed labeling. Amended labeling will supersede all previously accepted labels. A copy of your label stamped "Accepted" is enclosed for your records. Products shipped after twelve (12) months from the date of this Notice or the next printing of your label, whichever occurs first, must bear the new revised label.

Signature of Approving Official:

Kable Bo Davis
Product Manager 25
Herbicide Branch
Registration Division (7505P)

Date:

5-16-11

If you have any questions regarding this Notice, please contact Erik Kraft at 703-308-9358 or Kraft.Erik@epa.gov.

CHOPPER®

herbicide

For control of vegetation on forestry sites

Active Ingredient:

isopropylamine salt of imazaapyr: (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)

27.7%
72.3%
100.0%

Other Ingredients:

Total:

*Equivalent to 22.6% (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid) or 2 pounds acid per gallon

EPA Reg. No. 241-296

EPA Est. No.

**KEEP OUT OF REACH OF CHILDREN
CAUTION/PRECAUCIÓN**

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 complete **First Aid, Precautionary Statements, Directions For Use, Conditions of Sale and Warranty,** and state-specific crop and/or use site restrictions.

In case of an emergency endangering life or property involving this product, call day or night 1-800-832-HELP (4357).

Net Contents:

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

ACCEPTED
S-16-11
Under the Federal Insecticide,
Fungicide, and Rodenticide Act,
as amended, for the pesticide
registered under
EPA Reg. No. 241-296

BASF
The Chemical Company

FIRST AID	
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 to 20 minutes. • Call a poison control center or doctor for treatment advice.
If inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably mouth to mouth, if possible. • Call a poison control center or doctor for further treatment advice.
If in eyes	<ul style="list-style-type: none"> • Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. • Remove contact lenses, if present, after first 5 minutes; then continue rinsing eyes. • Call a poison control center or doctor for treatment advice.
HOTLINE NUMBER	
<p>Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact BASF Corporation for emergency medical treatment information: 1-800-832-HELP (4357).</p>	

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

Harmful if inhaled or absorbed through skin. Avoid breathing spray mist. Avoid contact with skin, eyes or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Personal Protective Equipment (PPE)

Some materials that are chemical resistant to this product are barrier laminate, butyl rubber, or polyethylene. If you want more options, follow the instructions for **Category A** on an EPA chemical-resistance category selection chart.

Mixers, loaders, applicators, and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves (except for pilots)

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

Engineering Controls

Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)].

ENVIRONMENTAL HAZARDS

This product is toxic to plants. Drift and runoff may be hazardous to plants in water adjacent to treated areas.

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 washwater or rinsate. See **DIRECTIONS FOR USE** for additional precautions and requirements.

PHYSICAL AND CHEMICAL HAZARDS

Spray solutions of **Chopper® herbicide** should be mixed, stored, and applied only in stainless steel, fiberglass, plastic, and plastic-lined steel containers.

DO NOT mix, store, or apply **Chopper** or spray solutions of **Chopper** 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.

USER SAFETY RECOMMENDATIONS
<p>Users should:</p> <ul style="list-style-type: none"> • Wash hands with plenty of soap and water before eating, drinking, chewing gum, using tobacco, or using the toilet. • Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. • Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

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 **48 hours**.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Shoes plus socks
- Chemical-resistant gloves made of any waterproof material
- Protective eyewear

NONAGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard (WPS) 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.

DO NOT enter or allow others to enter treated areas until sprays have dried.

Chopper® herbicide may be used only in accordance with directions and restrictions in this leaflet label. Keep containers closed to avoid spills and contamination.

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 Handling

Nonrefillable Container. DO NOT reuse or refill this container. Triple rinse or pressure rinse container (or equivalent) promptly after emptying; then offer for recycling, if available, or reconditioning, if appropriate, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures approved by state and local authorities.

STORAGE AND DISPOSAL (continued)

Container Handling (continued)

Triple rinse containers small enough to shake (capacity ≤ 5 gallons) as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Triple rinse containers too large to shake (capacity > 5 gallons) as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank, or store rinsate for later use or disposal. Repeat this procedure two more times.

Pressure rinse as follows: Empty the remaining contents into application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank, or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

Refillable Container. Refill this container with pesticide only. **DO NOT** reuse this container for any other purpose. Triple rinsing the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

Triple rinse as follows: To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

When this container is empty, replace the cap and seal all openings that have been opened during use; return the container to the point of purchase or to a designated location. This container must only be refilled with a pesticide product. Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions, worn-out threads and closure devices. Check for leaks after refilling and before transport. **DO NOT** transport if this container is damaged or leaking. If the container is damaged, or leaking, or obsolete and not returned to the point of purchase or to a designated location, triple rinse emptied container and offer for recycling, if available, or dispose of container in compliance with state and local regulations.

In Case of Spill

In case of large-scale spillage regarding this product, call:
CHEMTREC 1-800-424-9300
BASF Corporation 1-800-832-HELP (4357)

IMPORTANT

DO NOT use on food or feed crops. **DO NOT** apply to the inside of ditches used to transport irrigation water. Keep from contact with fertilizers, insecticides, fungicides, and seeds to prevent unintentional exposure of desirable vegetation to **Chopper® herbicide**. **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** use on Christmas trees.

Thoroughly clean application equipment after use. Flush tank, pump, hoses, and boom with several changes of water after removing nozzle tips and screens (clean these parts separately).

PRODUCT INFORMATION

Chopper is an aqueous formulation that is readily mixable with water, diesel oil, or recommended seed oils and penetrating oils. For foliar applications, **Chopper** may be mixed with water as the spray carrier or an emulsion carrier may be prepared by mixing **Chopper** into water and then adding a suitable seed oil at 12 to 50%, by volume.

Chopper is to be mixed with water or a penetrating oil and applied as a spray to cut stumps. **Chopper** should be mixed with a penetrating oil for application to the basal area of brush and trees. Adequate agitation should be maintained with all **Chopper** emulsion mixtures to prevent phase separation. Prior to actual tank mixing with other products, herbicides and carrier oils, compatibility testing in small containers is recommended.

Chopper may be used for vegetation control in forestry sites. Roadsides contiguous with the treated area may be included.

Chopper may be used for control of vegetation in forestry site preparation, in directed applications for conifer release and for mid-rotation release using understory broadcast applications.

Chopper may also be used for the control of undesirable vegetation along non-irrigation ditch banks and for the establishment and maintenance of wildlife openings, except in the state of California. See use directions for

CUT STUMP TREATMENTS, TREE INJECTION TREATMENTS, FRILL OR GIRDLE TREATMENTS, THINLINE BASAL AND STEM APPLICATIONS, LOW VOLUME BASAL BARK TREATMENTS and LOW VOLUME FOLIAR APPLICATIONS.

Chopper 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 man-made bodies of water such as lakes, reservoirs, ponds, streams, rivers and canals.

SYMPTOMOLOGY

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

Spray Drift Requirements

Aerial Applications

- Applicators are required to use a coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater for release heights below 10 feet. Applicators are required to use a very coarse or coarser droplet size or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 475 microns or greater for release heights above 10 feet. Applicators must consider the effects of nozzle orientation and flight speed when determining droplet size.
- Applicators are required to use upwind swath displacement.
- The boom length must not exceed 60% of the wingspan or 90% of the rotor blade diameter to reduce spray drift.
- Applications with wind speeds less than 3 mph and with wind speeds greater than 10 mph are prohibited.
- Applications into temperature inversions are prohibited.

Ground Boom Applications

- Applicators are required to use a nozzle height below 4 feet above the ground or plant canopy and coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater.
- Applications with wind speeds greater than 10 mph are prohibited.
- Applications into temperature inversions are prohibited.

CONIFER SITE PREPARATION TREATMENTS

Chopper® herbicide 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 (ozs/A)
Loblolly Pine (<i>Pinus taeda</i>)	48 to 80
Loblolly X Pitch Hybrid	48 to 80
Longleaf Pine (<i>Pinus palustris</i>)	48 to 80
Shortleaf Pine (<i>Pinus echinata</i>)	48 to 80
Virginia Pine (<i>Pinus virginiana</i>)	48 to 80
Slash Pine (<i>Pinus elliottii</i>)	40 to 64
Douglas Fir (<i>Pseudotsuga menziesii</i>)	24 to 48
Incense Cedar (<i>Libocedrus decurrens</i>)	24 to 48
Larch (<i>Larix</i> spp.)	24 to 48
Western Hemlock (<i>Tsuga heterophylla</i>)	24 to 48
Western Red Cedar (<i>Thuja plicata</i>)	24 to 48
Coast Redwood (<i>Sequoia sempervirens</i>)	24 to 48
California Red Fir (<i>Abies magnifica</i>)	24 to 40
California White Fir (<i>Abies concolor</i>)	24 to 40
Jack Pine (<i>Pinus banksiana</i>)	24 to 32
Lodgepole Pine (<i>Pinus contorta</i>)	24 to 32
Pitch Pine (<i>Pinus rigida</i>)	24 to 32
Ponderosa Pine (<i>Pinus ponderosa</i>)	24 to 32
Red Pine (<i>Pinus resinosa</i>) ²	24 to 32
Sugar Pine (<i>Pinus lambertiana</i>)	24 to 32
White Pine (<i>Pinus strobus</i>)	24 to 32
Black Spruce (<i>Picea mariana</i>) ¹	24 to 32
Red Spruce (<i>Picea rubens</i>)	24 to 32
White Spruce (<i>Picea glauca</i>) ¹	24 to 32

¹ **DO NOT** plant seedlings of black spruce (*Picea mariana*) or white spruce (*Picea glauca*) on sites that have been site prepared with a broadcast application of **Chopper** or into the treated zone of spot or banded site preparation applications for three months following treatment or injury may occur.

² **DO NOT** plant seedlings of red pine (*Pinus resinosa*) on sites that have been site prepared with a broadcast application of **Chopper** or into the treated zone of spot or banded site preparation applications for six months following treatment or injury may occur.

Use the specified rate of **Chopper** 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.

For tracts to be planted with loblolly, loblolly x pitch hybrid, longleaf pine, shortleaf pine, Virginia pine and slash pine, **Chopper** may be applied at a rate of 64 oz per acre on areas that have little to no resprouting vegetation because of recent management activities such as harvesting, mechanical shearing, burning piling or bedding. Applications must be made after September 1.

MIXING AND APPLICATION INSTRUCTIONS FOR SITE PREPARATION

Apply the specified rate of **Chopper** per acre in 5 to 20 gallons total spray carrier for helicopter applications or 5 to 40 gallons total spray carrier for mechanical or backpack ground spray applications. Enhanced brownout for burning and improved control of brush and grasses may be obtained by application of **Chopper** in 12 to 50% oil to water (volume to volume) emulsion carrier. Methylated or ethylated seed oils containing at least 50% esterified seed oil by volume are recommended.

Mix **Chopper** into the water portion of the carrier thoroughly; then add the oil and mix thoroughly again to obtain a uniform emulsion. Use the higher label rates of **Chopper** and higher spray volumes when controlling particularly dense or multi-layered canopies of hardwood stands, or difficult to control species. Make applications during the growing season; beginning in the spring after full leaf expansion of the target weed or brush has occurred and complete applications before leaf drop in the fall.

Tank mixes may be necessary for chemical control of conifers and other species tolerant to **Chopper** 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.

DO NOT plant seedlings of black spruce (*Picea mariana*) or white spruce (*Picea glauca*) on sites that have been site prepared with a broadcast application of **Chopper** or into the treated zone of spot or banded site preparation applications for three months following treatment or injury may occur.

HELICOPTER SPRAY EQUIPMENT

All precautions should be taken to minimize or eliminate spray drift. Applications should not be made under gusty conditions. The use of controlled droplet booms and nozzle configurations is recommended.

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.

HARDWOOD SITE PREPARATION TREATMENTS

For site preparation prior to planting hardwood species in the Southeast and Gulf Coast states (Virginia to Texas), use **Chopper** at a rate of 48 oz per acre and spray before the end of July. Application in an emulsion carrier with a minimum of 12% oil is recommended. **DO NOT** plant hardwood seedlings before January of the year following site preparation or injury may occur.

DIRECTED FOLIAR APPLICATIONS FOR CONIFER RELEASE

Chopper® herbicide may be applied as a directed spray using water or oil emulsion carrier for control and suppression of labeled brush and weed species. Directed spray applications may be made using low carrier volumes (generally 10 gallons total spray per acre or less) in labeled conifer stands of all ages by targeting the unwanted vegetation and avoiding direct application to the conifer. Ensure that the maximum labeled rates per acre listed for the conifer species are not exceeded.

Use directed foliar applications of **Chopper** for release of the following conifers from hardwood competition:

Crop Species	Rate (fl ozs/Acre)
Loblolly Pine (<i>Pinus taeda</i>)	24 to 40
Loblolly X Pitch Hybrid	24 to 40
Virginia Pine (<i>Pinus virginiana</i>)	24 to 40
Longleaf Pine (<i>Pinus palustris</i>)	24 to 32
Pitch Pine (<i>Pinus rigida</i>)	24 to 32
Shortleaf Pine (<i>Pinus echinata</i>)	24 to 32
Slash Pine (<i>Pinus elliotii</i>)	24 to 32
Coast Redwood (<i>Sequoia sempervirens</i>)	16 to 32
Incense Cedar (<i>Libocedrus decurrens</i>)	16 to 32
Western Red Cedar (<i>Thuja plicata</i>)	16 to 32
White Pine (<i>Pinus strobus</i>)	16 to 32
Douglas Fir (<i>Pseudotsuga menziesii</i>)	16 to 24
Lodgepole Pine (<i>Pinus contorta</i>)	16 to 24
Black Spruce (<i>Picea mariana</i>)	12 to 24
Jack Pine (<i>Pinus banksiana</i>)	12 to 24
Red Spruce (<i>Picea rubens</i>)	12 to 24
White Spruce (<i>Picea glauca</i>)	12 to 24

For applications directed to the foliage of undesirable brush mix 2 to 10% **Chopper** in water. For brush species with thick leaf cuticles or difficult to control species use oil emulsion carrier containing 12 to 50%, by volume, recommended oil diluent. Apply the spray solution or emulsion to at least 2/3 of each hardwood crown using backpack sprayers or handheld equipment. **DO NOT** spray to the point of runoff and avoid spraying the conifers for best results. For low-volume foliar applications to control big leaf maple, use a 5% by volume **Chopper** solution or emulsion.

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, release treatments may be made late in the growing season after formation of final conifer resting buds. To prevent possibility of conifer injury, **DO NOT** apply **Chopper** when conifers are under stress from drought, diseases, animal or winter injury, or other stresses reducing conifer vigor.

Injury may occur to non-target or desirable hardwoods if they extend from the same root system as treated stems,

or their root systems are grafted to those of the treated tree, or if their roots extend into the soil near treated trees.

BAG AND BROADCAST APPLICATIONS FOR CONIFER RELEASE

In Douglas fir and Ponderosa pine stands, broadcast applications of **Chopper** up to 32 oz per acre are permissible when the trees are covered by bags prior to the application. The bags must prevent the spray mix from contacting the conifer foliage. For improved control of brush species, particularly evergreens, add a suitable seed oil at 5 to 12% by volume. On sites with coarse textured soils (e.g. decomposed granite, pumice, sandy or rocky sites) or low levels of soil organic matter (generally 5% or less) significant conifer growth inhibition and mortality is possible. **DO NOT** use this treatment on these types of sites if conifer growth inhibition and mortality cannot be tolerated.

LATE ROTATION VEGETATION CONTROL IN WESTERN CONIFERS

In California, the Pacific Northwest and Inland Northwest, broadcast aerial applications of **Chopper** up to 48 oz per acre are permissible in conifer stands that are targeted for harvesting the year following treatment. Use a minimum spray volume of 15 gallons per acre. For improved control of brush species, particularly evergreens, add a suitable seed oil at 5 to 12% by volume. Significant conifer injury or mortality must be expected. **DO NOT** use this treatment if conifer injury or mortality cannot be tolerated.

UNDERSTORY BROADCAST APPLICATIONS FOR MID-ROTATION RELEASE

Chopper may be applied as a broadcast application below the conifer canopy to control understory brush and suppress trees for labeled species. Ground spray machinery or handheld equipment may be used to broadcast **Chopper** in water or oil emulsion carrier below the crop tree canopy in a manner as to minimize spray contact by the live crown of crop trees.

Ensure that maximum labeled rates per acre listed for crop species below are not exceeded.

Crop Species	Maximum Rate (fl oz/Acre)
Loblolly Pine (<i>Pinus taeda</i>)	64
Loblolly X Pitch Hybrid	64
Virginia Pine (<i>Pinus virginiana</i>)	64
Longleaf Pine (<i>Pinus palustris</i>)	32
Pitch Pine (<i>Pinus rigida</i>)	32
Shortleaf Pine (<i>Pinus echinata</i>)	32
Slash Pine (<i>Pinus elliotii</i>)	32

CUT STUMP TREATMENTS

Mix 8.0 to 16.0 fluid ounces of **Chopper** in 1 gallon of water*, diesel oil, or a penetrating oil. **Chopper** may be tank mixed with **Garlon® 3A herbicide**, **Garlon® 4 herbicide**, **Tordon® K herbicide**, **Escort® herbicide** or **Roundup® herbicide** to control labeled species. Spray or brush the **Chopper** solution onto the cambium area of the freshly cut stump surface. Ensure that the **Chopper** solution thoroughly wets the cambium area (the wood next to

the bark) of the stump. The use of a surfactant or penetrating agent may improve uptake through partially callused cambiums. Applications can be made anytime during the year except during periods of heavy sap flow in the spring. **DO NOT** overapply causing puddling.

***Note:** Use water as a diluent only when temperatures are sufficient to prevent freezing or add antifreeze (ethylene glycol) according to label directions to prevent freezing.

TREE INJECTION TREATMENTS

No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is directly injected into agricultural plants.

Mix 8.0 to 12.0 fluid ounces of **Chopper® herbicide** in 1 gallon of water*. Using standard injection equipment, apply 1 ml of **Chopper** solution at each injection site around the tree with no more than 1 inch intervals between cut edges. Ensure that the injector completely penetrates the bark at each site.

***Note:** Use water as a diluent only when temperatures are sufficient to prevent freezing or add antifreeze (ethylene glycol) according to label directions to prevent freezing.

FRILL OR GIRDLE TREATMENTS

Mix 8.0 to 12.0 fluid ounces of **Chopper** in 1 gallon of water*, diesel oil, or a penetrating oil. Using a hatchet, machete, or similar tool, make cuts through the bark and completely around the tree with no more than 2 inch intervals between cut edges. Spray or brush the **Chopper** solution into each cut until thoroughly wet.

***Note:** Use water as a diluent only when temperatures are sufficient to prevent freezing or add antifreeze (ethylene glycol) according to label directions to prevent freezing.

THINLINE BASAL AND STEM APPLICATIONS

Chopper may be applied as a thinline basal or arcing application to the stems of susceptible species such as big leaf maple (*Acer macrophyllum*), willow (*Salix* spp.) and Eucalyptus (*Eucalyptus* spp.) with a stem ground line diameter of 3 inches or less. Mix 24 to 48 ounces of **Chopper** in 1 gallon of diesel oil or penetrating oil. Maintain uniform mixtures with frequent agitation. Direct a thin line of the spray solution to the stems beginning a few feet from the ground and descending toward the base of the tree making a zig-zag motion. **DO NOT** over apply causing puddling.

LOW VOLUME BASAL BARK TREATMENTS

Mix 8.0 to 12.0 fluid ounces of **Chopper** in 1 gallon of diesel oil or a penetrating oil. To control mixed brush species with up to 4 inch stem diameter at breast height, spray to wet the lower 12 to 18 inches of the stem with the **Chopper** oil mixture (include the root collar area). **DO NOT** overapply causing dripping or puddling. Maintain uniform mixtures with frequent agitation.

LOW VOLUME FOLIAR APPLICATIONS

Chopper may be applied as a low volume foliar application. Mix 3 to 5% **Chopper** in water and adjuvant or in a penetrating oil. For small brush spray down on the crown to cover approximately 70% of the plant foliage. For larger brush ensure coverage on as much of the crown as possible and spray at least two sides of the plant. **Chopper** may be tank mixed with other labeled herbicides. Use a tank mix of 3 to 5% **Chopper** plus 15 to 20% **Garlon® 4 herbicide** in basal oil to control black locust, honey locust, hackberry, elms and other species listed on manufacturer's labels. Use the higher rate of **Chopper** (5%) in areas containing sassafras, oak, hickory, cherry, and maples or in the southern 2/3 of the U.S. A tank mix of 3% **Chopper** + **Garlon 4** or **Chopper** is effective in the Northeastern U.S.

SPRAY SOLUTION MIXING GUIDE FOR LOW VOLUME FOLIAR APPLICATIONS

AMOUNT OF SPRAY SOLUTION BEING PREPARED	DESIRED CONCENTRATION (fluid volume)			
	Chopper		Garlon 4	
	3%	5%	15%	20%
1 gallon	3.8 oz	6.4 oz	19.2 oz	25.6 oz
3 gallons	11.5 oz	19.2 oz	57.6 oz	76.8 oz
4 gallons	15.4 oz	25.6 oz	76.8 oz	102.4 oz
5 gallons	19.2 oz	32.0 oz	96.0 oz	1.0 gallon
50 gallons	1.5 gallons	2.5 gallons	7.5 gallons	10.0 gallons
100 gallons	3.0 gallons	5.0 gallons	15.0 gallons	20.0 gallons

INVERT EMULSIONS

Chopper can be applied as an invert emulsion carrier. The carrier is a thick invert water-in-oil spray emulsion designed to minimize spray drift and spray runoff, resulting in more herbicide on the target foliage. The spray emulsion may be formed in a single tank (batch mixing) or injected (in-line mixing). Consult the invert chemical label for proper mixing directions. **DO NOT** exceed 3 quarts/Acre of **Chopper**.

WEEDS CONTROLLED

Chopper will provide postemergence control and some residual control of the following target vegetation species. Degree of control is both species and rate dependent.

Grasses

The species of annual and perennial grasses controlled by **Chopper** include the following:

- Annual bluegrass (*Poa annua*)
- Bahiagrass (*Paspalum notatum*)
- Barnyardgrass (*Echinochloa crus-galli*)
- Beardgrass (*Andropogon* spp.)
- Bermudagrass (*Cynodon dactylon*)
- Big bluestem (*Andropogon gerardii*)
- Broadleaf signalgrass (*Brachiaria platyphylla*)
- Canada bluegrass (*Poa compressa*)
- Cattail (*Typha* spp.)
- Cheat (*Bromus secalinus*)
- Cogongrass (*Imperata cylindrica*)¹
- Crabgrass (*Digitaria* spp.)

WEEDS CONTROLLED (continued)

Grasses (continued)

- Crowfootgrass (*Dactyloctenium aegyptium*)
- Dallisgrass (*Paspalum dilatatum*)
- Downy brome (*Bromus tectorum*)
- Fall panicum (*Panicum dichotomiflorum*)
- Feathertop (*Pennisetum villosum*)
- Fescue (*Festuca* spp.)
- Foxtail (*Setaria* spp.)
- Giant reed (*Arundo donax*)
- Goosegrass (*Eleusine indica*)
- Guineagrass (*Panicum maximum*)
- Italian ryegrass (*Lolium multiflorum*)
- Itchgrass (*Rottboellia exaltata*)
- Johnsongrass (*Sorghum halepense*)
- Junglerice (*Echinochloa colonum*)
- Kentucky bluegrass (*Poa pratensis*)
- Lovegrass (*Eragrostis* spp.)
- Orchardgrass (*Dactylis glomerata*)
- Panicum* spp.
- Paragrass (*Brachiaria mutica*)
- Phragmites (*Phragmites australis*)
- *Pinegrass (*Calamagrostis rubescens*)
- Prairie cordgrass (*Spartina pectinata*)
- Prairie threeawn (*Aristida oligantha*)
- Quackgrass (*Agropyron repens*)
- Reed canary grass (*Phalaris arundinacea*)
- Saltgrass (*Distichlis stricta*)
- Sand dropseed (*Sporobolus cryptandrus*)
- Sandbur (*Cenchrus* spp.)
- Smooth brome (*Bromus inermis*)
- Sprangletop (*Leptochloa* spp.)
- 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*)

* **Chopper® herbicide** is not registered for use on pinegrass in California.

¹ Use minimum of 48 oz per acre.

Broadleaf Weeds

The species of annual and perennial broadleaf weeds controlled by **Chopper** include the following:

- Arrowwood (*Pluchea sericea*)
- Broom snakeweed (*Gutierrezia sarothrae*)
- Bull thistle (*Cirsium vulgare*)
- Burclover (*Medicago* spp.)
- Burdock (*Arctium* spp.)
- Camphorweed (*Heterotheca subaxillaris*)
- Carolina geranium (*Geranium carolinianum*)
- Carpetweed (*Mullugo verticillata*)
- Chickweed, mouseear (*Cerastium vulgatum*)
- Clover (*Trifolium* spp.)
- Cocklebur (*Xanthium strumarium*)
- Common chickweed (*Stellaria media*)

WEEDS CONTROLLED (continued)

Broadleaf Weeds (continued)

- 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 amplexicaule*)
- 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.)
- Miner's 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 loosestrife (*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*)

WEEDS CONTROLLED (continued)

Broadleaf Weeds (continued)

- Woollyleaf bursage (*Ambrosia grayi*)
- Yellow starthistle (*Centaurea solstitialis*)
- Yellow woodsorrel (*Oxalis stricta*)

Vines and Brambles

The species of vines and brambles controlled by **Chopper® herbicide** include the following:

- Field bindweed (*Convolvulus arvensis*)
- Hedge bindweed (*Calystegia sepium*)
- Honeysuckle (*Lonicera* spp.)¹
- 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.)¹

- Including Multiflora rose (*Rosa multiflora*)
- Macartney rose (*Rosa bracteata*)

¹ Use higher labeled rates.

Woody Brush and Trees

The species of woody brush and trees controlled by **Chopper** include the following:

- Alder (*Alnus* spp.)
- American beech (*Fagus grandifolia*)
- Ash (*Fraxinus* spp.)¹
- Aspen (*Populus* spp.)
- Australian pine (*Casuarina equisetifolia*)⁵
- Autumn olive (*Elaeagnus umbellata*)
- Bald cypress (*Taxodium distichum*)⁴
- Bigleaf maple (*Acer macrophyllum*)¹
- Birch (*Betula* spp.)
- Black locust (*Robinia pseudoacacia*)⁵
- Black oak (*Quercus kelloggii*)
- Blackgum (*Nyssa sylvatica*)²
- Boxelder (*Acer negundo*)
- Brazilian peppertree (*Schinus terebinthifolius*)
- Ceanothis (*Ceanothis* spp.)
- Cherry (*Prunus* spp.)^{1,2}
- Chinaberry (*Melia azedarach*)
- Chinese tallow-tree (*Sapium sebiferum*)
- Chinquapin (*Castanopsis chrysophylla*)⁴
- Cottonwood (*Populus* spp.)
- Cypress (*Taxodium* spp.)
- Dogwood (*Cornus* spp.)¹
- Elderberry (*Sambucus* spp.)⁵
- Elm (*Ulmus*)⁵
- Eucalyptus (*Eucalyptus* spp.)
- Hawthorn (*Crataegus* spp.)
- Hazel (*Corylus cornuta*)⁵
- Hickory (*Carya* spp.)¹
- Holly (*Ilex* spp.)^{1,4}
- Including Gallberry (*Ilex glabra*)
- Tall gallberry (*Ilex coriacea*)
- Yaupon (*Ilex vomitoria*)
- Honeylocust (*Gleditsia triacanthos*)⁵

WEEDS CONTROLLED (continued)

Woody Brush and Trees (continued)

- Huckleberry (*Gaylussacia* spp.)
- Lyonia* spp.
 - Including Fetterbush (*Lyonia lucida*)
 - Staggerbush (*Lyonia mariana*)
- Madrone (*Arbutus menziesii*)
- Manzanita, greenleaf (*Arctostaphylos patula*)⁴
- Maple (*Acer* spp.)
- Melaleuca (*Melaleuca quinquenervia*)
- Mulberry (*Morus* spp.)^{1,3}
- Oak (*Quercus* spp.)^{1,3}
- Persimmon (*Diospyros virginiana*)²
- Poison oak (*Rhus diversiloba*)
- Popcorn-tree (*Sapium sebiferum*)
- Poplar (*Populus* spp.)²
- Privet (*Ligustrum vulgare*)
- Red alder (*Alnus rubra*)
- Red maple (*Acer rubrum*)
- Saltcedar (*Tamarix pentandra*)
- Sassafras (*Sassafras albidum*)
- Scotch broom (*Cytisus scoparius*)⁵
- Sourwood (*Oxydendrum arboreum*)²
- Sumac (*Rhus* spp.)
- Sweetbay magnolia (*Magnolia virginiana*)^{1,4}
- Sweetgum (*Liquidambar styraciflua*)
- Sycamore (*Platanus occidentalis*)
- Tanoak (*Lithocarpus densiflorus*)^{1,4,5}
- Titi (*Cyrilla racemiflora*)^{1,4,6}
- Tree of heaven (*Ailanthus altissima*)
- Vaccinium* spp.
 - Including Blueberry (*Vaccinium* spp.)
 - Sparkleberry (*Vaccinium arboreum*)
- Waxmyrtle (*Myrica californica*)^{1,4}
- (*Myrica cerifera*)^{1,4}
- Willow (*Salix* spp.)
- Yellow-poplar (*Liriodendron tulipifera*)¹

¹ Use higher labeled rates.

² Best control with applications prior to formation of fall leaf color.

³ The degree of control may be species dependent.

⁴ Oil emulsion carrier is recommended.

⁵ Tank mix with **Garlon® 4 herbicide** as a basal or cut stump treatment.

⁶ Suppression only.

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