

241-296



9/18/2001

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D. C. 20460

1/18

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

Mr. John J. Arthur
BASF Corporation
P.O. Box 400
Princeton, NJ 08543-0400

SEP 18 2001

Subject: CHOPPER[®] Herbicide
EPA Reg. No. 241-296
Proposed Amendment to Revise Personal Protection Equipment requirements
and Use Directions
OPP ID No. 283832
Your submission dated July 27, 2001

Dear Mr. Arthur:

The product labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is acceptable provided you make the required changes listed below:

1. Add the following language to the General Information section:

First paragraph:

"... to cut stumps and frilling cuts for the control of brush."

Second paragraph:

"CHOPPER is recommended for woody vegetation control and site preparation in forestry sites and control of undesirable woody vegetation along forest roads."

New paragraph:

"CHOPPER herbicide is also recommended for use with asphalt and asphalt slurries to control weeds on road shoulders, under pavement, in roadside cracks and crevices, and to prevent weed encroachment on highways and paved surfaces. "

2. If the registrant wishes to add non-irrigation ditchbanks and habitat improvement uses to the label, they must provide use directions for those uses. If not, they must remove the following paragraph:

2/18

“CHOPPER 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.”

3. Add the following footnote to the Cut Stump Treatments and Tree Injection Treatments sections:

“*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.”

4. Move the footnotes from the end of the label to the Cut Stump Treatments section.

5. To eliminate any confusion, modify the Desired Concentration heading in table in the Low Volume Foliar Applications section to specify that the 3% and 5% columns refer to Chopper and the 15% and 20% columns refer to Garlon 4.

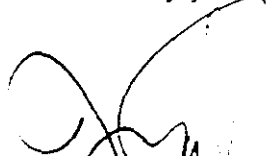
6. The current footnotes do not appear to be accurate. Agency records indicate that Brush Killer 800 is not registered for forestry uses; all references to it must be removed from the label.

7. At this time, Agency policy concerning warranty statements is in review. After a final decision on the policy has been made, the warranty language may need to be changed. Approval of this label should not be construed as a decision by the Agency that the current language is not misleading.

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

The amended label supersedes all previously accepted labels. A stamped copy of the label is enclosed for your records. Please submit one copy of the final printed label before you release the product for shipment.

Sincerely yours,



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

Enclosure

3/18

CHOPPER® 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)* 27.6%

INERT INGREDIENTS 72.4%

TOTAL 100.0%

*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

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

EPA Est. No. No. 241-PR-002

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.)

FIRST AID

IF ON SKIN OR

CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call poison control center or doctor for treatment advice.

IF INHALED: 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.

Have the product container or label with you when calling a poison control center or doctor or going for treatment.

See Next Page for Additional Precautions

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

®Registered Trademark of BASF

BASF Corporation
26 Davis Drive
Research Triangle Park, NC 27709

ACCEPTED
with **COMMENTS**
In EPA Letter Dated

SEP 18 2001

BASF

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

1 241-296

5/23/01

4/18

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS

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 listed below. If you want more options, follow the instructions for category A on an EPA chemical-resistance category selection chart.

Applicators and other handlers must wear:

- long-sleeved shirt and long pants
- chemical-resistant gloves, such as barrier laminate, butyl rubber or polyethylene.
- 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.

USER SAFETY RECOMMENDATIONS

Users should:

1. Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
2. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

PHYSICAL AND CHEMICAL HAZARDS

Spray solutions of CHOPPER 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.

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 disposing of equipment washwaters. This herbicide is phytotoxic at extremely low concentrations. Non-target plants may be adversely affected from drift.

5/18

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 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
- chemical-resistant gloves, such as barrier laminate, butyl rubber or polyethylene.
- 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 (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.

Noncrop weed control is not within the scope of the Worker Protection Standard. See the GENERAL INFORMATION section of this label for a description of noncrop sites.

Do not enter treated areas without protective clothing until sprays have dried.

CHOPPER herbicide should be used only in accordance with recommendations in this leaflet label. Keep containers closed to avoid spills and contamination.

6/18

STORAGE AND DISPOSAL

- PROHIBITIONS:** DO NOT store below 10°F. DO NOT contaminate water, food, or feed by storage or disposal.
- 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 by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

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).

GENERAL INFORMATION

CHOPPER herbicide is an emulsifiable concentrate 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 is recommended for vegetation control in forestry sites and for control of undesirable woody vegetation along forest roads.

CHOPPER 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.

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 manmade bodies of water such as lakes, reservoirs, ponds, streams, rivers and canals.

SYMPTOMOLOGY:

CHOPPER herbicide 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.

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:

<u>Crop Species</u>	<u>Rate (oz./A)</u>
Loblolly Pine (<u>Pinus taeda</u>)	48-80
Loblolly X Pitch Hybrid	48-80
Longleaf Pine (<u>Pinus palustris</u>)	48-80
Shortleaf Pine (<u>Pinus echinata</u>)	48-80
Virginia Pine (<u>Pinus virginiana</u>)	48-80
Slash Pine (<u>Pinus elliotii</u>)	40-64
Douglas-Fir (<u>Pseudotsuga menziesii</u>)	24-48
Western Hemlock (<u>Tsuga heterophylla</u>)	24-48
Coastal Redwood (<u>Sequoia sempervirens</u>)	24-48
California Red Fir (<u>Abies magnifica</u>)	24-40
California White Fir (<u>Abies concolor</u>)	24-40
Jack Pine (<u>Pinus banksiana</u>)	24-32
Lodgepole Pine (<u>Pinus contorta</u>)	24-32
Pitch Pine (<u>Pinus rigida</u>)	24-32
Ponderosa Pine (<u>Pinus ponderosa</u>)	24-32
Sugar Pine (<u>Pinus lambertiana</u>)	24-32
White Pine (<u>Pinus strobus</u>)	24-32
Black Spruce (<u>Picea mariana</u>)	24-32
Red Spruce (<u>Picea rubens</u>)	24-32
White Spruce (<u>Picea glauca</u>)	24-32

8/18

Use the recommended 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.

MIXING and APPLICATION INSTRUCTIONS for SITE PREPARATION:

Apply the recommended rate of CHOPPER herbicide 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 herbicide in 12 to 50% oil:water (volume:volume) emulsion carrier. Methylated or ethylated seed oils containing at least 50% esterified seed oil by volume are recommended. Mix CHOPPER herbicide 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 herbicide 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 herbicide 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 herbicide 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.

9/13

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 herbicide for release of the following conifers from hardwood competition:

<u>Crop Species</u>	<u>Rate (fl. oz./Acre)</u>
Loblolly Pine (<u>Pinus taeda</u>)	24 - 40
Loblolly X Pitch Hybrid	24 - 40
Virginia Pine (<u>Pinus virginiana</u>)	24 - 40
Longleaf Pine (<u>Pinus palustris</u>)	24 - 32
Pitch Pine (<u>Pinus rigida</u>)	24 - 32
Shortleaf Pine (<u>Pinus echinata</u>)	24 - 32
Slash Pine (<u>Pinus elliottii</u>)	24 - 32
White Pine (<u>Pinus strobus</u>)	16 - 32
Lodgepole Pine (<u>Pinus contorta</u>)	16 - 24
Douglas-Fir (<u>Pseudotsuga menziesii</u>)	16 - 24
Jack Pine (<u>Pinus banksiana</u>)	12 - 24
Black Spruce (<u>Picea mariana</u>)	12 - 24
Red Spruce (<u>Picea rubens</u>)	12 - 24
White Spruce (<u>Picea glauca</u>)	12 - 24

For applications directed to the foliage of undesirable brush mix 2 to 10% CHOPPER herbicide 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 two-thirds of each hardwood crown using backpack sprayers or hand held equipment. Do not spray to the point of runoff and avoid spraying the conifers for best results. Big leaf maple requires a 10% 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 herbicide 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.

10/18

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 hand held 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.

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

CUT STUMP TREATMENTS

Mix 8.0-16.0 fluid ounces of CHOPPER in one gallon of water*, diesel oil, or a penetrating oil. CHOPPER herbicide may be tank-mixed with Garlon¹ 3A, Garlon 4, Tordon¹ K, Brush Killer² 800, Escort³ or Roundup⁴ to control labeled species. Spray or brush the CHOPPER solution onto the cambium area of the freshly cut stump surface. Insure 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** over apply causing puddling.

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 8.0-12.0 fluid ounces of CHOPPER in one 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. Insure that the injector completely penetrates the bark at each site.

FRILL OR GIRDLE TREATMENTS

Mix 8.0-12.0 fluid ounces of CHOPPER in one 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.

11/18

CUT STUBBLE

CHOPPER herbicide can be applied within 2 weeks following mechanical mowing or cutting of brush. Best results are obtained when some regrowth of brush has occurred. To suppress or control resprouting, uniformly apply a spray solution of 1 to 2 pints CHOPPER herbicide plus 2.5 gallons (5% v/v) basal oil, or similar penetrating agent plus enough water to make 50 gallons of spray solution to treat one acre. CHOPPER herbicide may be tank-mixed with 1 to 2 quarts of Garlon 4 or Tordon K and other labeled products to aid in control or suppression of brush. When tank-mixing, follow all precautions on the tank-mix product label and always follow the most restrictive label. Tank-mixes should include at least 5% (v/v) penetrating agent. The addition of at least 5% (v/v) penetrating agent can aid in uptake through the bark or exposed roots. Cut stubble applications are made to the soil and cut brush stumps. This type of application may increase ground cover injury. However, vegetation will recover. Making applications of CHOPPER herbicide directly to the soil can increase potential root uptake causing injury or death of desirable trees.

USE WITH ASPHALT AND PAVED SURFACES

CHOPPER herbicide may be applied at 3 quarts per acre in combination with MC 30, MC 70, RC 70, and SC 70 asphalts to control weeds which encroach on road shoulders under guardrails, or in cracks and crevices of paved surfaces. The addition of an emulsifier may be needed to allow proper mixing of CHOPPER with other asphalts. Add CHOPPER to the distribution tank just before application, allowing sufficient time for it to mix uniformly with the asphalt. Mixtures should not be heated above 150° F. Do not allow mixture to stand; apply as soon as thoroughly mixed.

12/18

THINLINE BASAL AND STEM APPLICATIONS

CHOPPER herbicide 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 one 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 8.0-12.0 fluid ounces of CHOPPER in one 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 12-18 inches of the stem with the CHOPPER oil mixture (include the root collar area). **DO NOT** over apply causing dripping or puddling. Maintain uniform mixtures with frequent agitation. CHOPPER may be tank-mixed with Garlon 4, Brush Killer 800 and other basal products to broaden the spectrum of control. Consult the herbicide labels for rates and susceptible brush species. When tank-mixing, follow all precautions on the tank-mix product label and always follow the most restrictive label. Use a tank mix of 3 to 5% CHOPPER herbicide plus 15 to 20% Garlon 4 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 herbicide (5%) in areas containing sassafras, oak, hickory, cherry, and maples or in the southern 2/3's of the U.S. A tank-mix of 3% CHOPPER herbicide + Garlon 4 is effective in the Northeastern U.S.

LOW VOLUME FOLIAR APPLICATIONS

CHOPPER herbicide may be applied as a low volume foliar application. Mix 3-5% CHOPPER herbicide 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 insure coverage on as much of the crown as possible and spray at least two sides of the plant. CHOPPER herbicide may be tank-mixed with other labeled herbicides. Use a tank mix of 3 to 5% CHOPPER herbicide plus 15 to 20% Garlon 4 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 herbicide (5%) in areas containing sassafras, oak, hickory, cherry, and maples or in the southern 2/3's of the U.S. A tank-mix of 3% CHOPPER herbicide + Garlon 4 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)			
	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

13/18

INVERT EMULSIONS

CHOPPER herbicide 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 run-off, 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 herbicide.

WEEDS CONTROLLED

CHOPPER herbicide 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 herbicide include the following:

Annual bluegrass (Poa annua)
Bahigrass (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.)
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)

14/18

- Phragmites (Phragmites australis)
- 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)

¹Use minimum of 48 oz per acre.

BROADLEAF WEEDS

The species of annual and perennial broadleaf weeds controlled by CHOPPER herbicide 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)
- 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.)

15/18

Gray rabbitbrush (Chrysothamnus nauseosus)
Henbit (Lamium applexicaule)
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 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)
Woollyleaf bursage (Ambrosia grayi)
Yellow starthistle (Centaurea solstitialis)
Yellow woodsorrel (Oxalis stricta)

16/18

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)
- Trumpet creeper (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)

¹Use higher labeled rates.

WOODY BRUSH AND TREES

The species of woody brush and trees controlled by CHOPPER herbicide 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)
- 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
- Elm (Ulmus)⁵
- Eucalyptus (Eucalyptus spp.)
- Hawthorn (Crataegus spp.)
- Hickory (Carya spp.)¹

17/18

- Holly (Ilex spp.)^{1,4}
 - Including Gallberry (Ilex glabra)^{4,5}
 - Tall gallberry (Ilex coriacea)⁴
 - Yaupon (Ilex vomitoria)⁴
- Honeylocust (Gleditsia triacanthos)⁵
- 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)^{4,5}
- Sweetgum (Liquidambar styraciflua)
- Sycamore (Platanus occidentalis)
- Tanoak (Lithocarpus densiflorus)^{1,4,5}
- TiTi (Cyrilla racemiflora)^{1,4}
- Tree of heaven (Ailanthus altissima)⁵
- Vaccinium spp.
 - Including Blueberry (Vaccinium spp.)
 - Sparkleberry (Vaccinium arboreum)
- Waxmyrtle (Myrica californica)^{4,5}
- (Myrica cerifera)^{4,5}
- Willow (Salix spp.)
- Yellow-poplar (Liriodendron tulipifera)

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 as a basal or stump treatment.

18/18

DISCLAIMER

The label instructions for the use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the use or application of the product contrary to label instructions, all of which are beyond the control of BASF Corporation (BASF). All such risks shall be assumed by the user.

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