

PM 25

62719-40

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SEP - 8 1995

Dr. Merlyn L. Jones
DowElanco
9330 Zionsville Rd.
Indianapolis, IN 46268

Dear Dr. Jones:

Subject: Worker Protection Standards
GARLON 4
EPA Reg. No. 62719-40
Your submission dated Aug. 18, 1995

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, is acceptable and a stamped copy is enclosed for your records.

Sincerely yours,

Robert J. Taylor
Product Manager 25
Fungicide-Herbicide Branch
Registration Division (H7505C)

Enclosure

CONCURRENCES							
SYMBOL							
SURNAME							
DATE							

EPA Form 1320-1 (12-70) OFFICIAL FILE COPY

ACCEPTED
~~with COMMENTS~~
In EPA Letter Dated

(Base label):

SEP - 8 1995

(logo) DowElanco

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

62719-40

Garlon* 4

For the control of woody plants and broadleaf weeds on rights-of-way, industrial sites, non-crop areas, non-irrigation ditch banks, forests and wildlife openings, including grazed areas on these sites.

Active Ingredient:

triclopyr: 3,5,6-trichloro-2-pyridinyloxyacetic acid, butoxyethyl ester	61.6%
Inert Ingredients	38.4%
Total	100.0%

Contains petroleum distillates

Acid Equivalent:

triclopyr - 44.3% - 4 lb/gal

Precautionary Statements

Hazards to Humans and Domestic Animals

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 the label, find someone to explain it to you in detail.)

Harmful If Swallowed, Inhaled Or Absorbed Through Skin

Avoid contact with eyes, skin, or clothing. Avoid breathing mists or vapors. Avoid contamination of food.

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 E on an EPA chemical resistance category selections chart.

WPS Uses: Applicators and other handlers who handle this pesticide for any use covered by the Worker Protection Standard (40 CFR Part 170) – in general, agricultural-plant uses are covered – must wear:

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber or Viton
- Shoes plus socks

Non-WPS Uses: Applicators and other handlers who handle this pesticide for any use NOT covered by the Worker Protection Standard (40 CFR Part 170) – in general, only agricultural-plant uses are covered by the WPS – must wear:

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

Follow manufacturer's instructions for cleaning/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:

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

First Aid

If on skin: Flush skin with plenty of water. Get medical attention if irritation persists.

If swallowed: Do not induce vomiting. Call a physician.

Environmental Hazards

This pesticide is toxic to fish. Do not apply directly to water, 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.

Physical or Chemical Hazards

Combustible— Do not use or store near heat or open flame. Do not cut or weld container.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to label booklet under "Agricultural Use Requirements" in the Directions for Use section for information about this standard.

Refer to label booklet for additional precautionary information including Personal Protective Equipment (PPE) and User Safety Recommendations, and Directions for Use including Storage and Disposal.

Notice: Read the entire label. Use only according to label directions. Before buying or using this product, read "Warranty Disclaimer" and "Limitation of Remedies" in the attached label booklet.

In case of emergency endangering health or the environment involving this product, call collect 517-636-4400.

Agricultural Chemical: Do not ship or store with food, feeds, drugs or clothing.

EPA Reg. No. 62719-40

EPA Est. 464-MI-1

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Specialty Herbicide

(Datapack cover):

(logo) DowElanco

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Total 100.0%

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Acid Equivalent:

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Specialty Herbicide

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(Page 1 through end):

Precautionary Statements

Hazards to Humans and Domestic Animals**CAUTION PRECAUCION**

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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 E on an EPA chemical resistance category selections chart.

WPS Uses: Applicators and other handlers who handle this pesticide for any use covered by the Worker Protection Standard (40 CFR Part 170) – in general, agricultural-plant uses are covered – must wear:

~~Applicators and other handlers must wear:~~

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as Barrier Laminate, Nitrile Rubber, Neoprene Rubber or Viton
- Shoes plus socks

Non-WPS Uses: Applicators and other handlers who handle this pesticide for any use NOT covered by the Worker Protection Standard (40 CFR Part 170) – in general, only agricultural-plant uses are covered by the WPS – must wear:

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

Follow manufacturer's instructions for cleaning/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:

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

First Aid

If on skin: Flush skin with plenty of water. Get medical attention if irritation persists.

If swallowed: Do not induce vomiting. Call a physician.

Environmental Hazards

This pesticide is toxic to fish. Do not apply directly to water, 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.

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Physical or Chemical Hazards

Combustible— Do not use or store near heat or open flame. Do not cut or weld container.

Directions for Use

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

Read all Directions for Use carefully before applying.

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.

Do not use for manufacturing or formulating.

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, Nitrile Rubber, Neoprene Rubber or Viton
- Shoes plus socks

Storage and Disposal

Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited.

Storage: Store above 28°F or agitate before use.

Pesticide Disposal: Pesticide, spray mixture, or rinse water that cannot be used according to label instructions must be disposed of according to applicable federal, state, or local procedures.

Plastic Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Metal Container Disposal: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Container Disposal for Refillable Containers: Replace the dry disconnect cap, if applicable, and seal all openings which have been opened during use. Return the empty container to a collection site designated by DowElanco. If the container has been damaged and cannot be returned according to the recommended procedures, contact the DowElanco Customer Service Center at 1-800-258-1470 to obtain proper handling instructions.

General: Consult federal, state or local disposal authorities for approved alternative procedures.

General Information

Garlon® 4 herbicide is recommended for the control of unwanted woody plants and annual and perennial broadleaf weeds in forests, and on non-crop areas including industrial manufacturing and storage sites, rights-of-way such as electrical power lines, communication lines, pipelines, roadsides and railroads, fence rows, non-irrigation ditch banks and around farm buildings. Use on these sites may include application to grazed areas as well as establishment and maintenance of wildlife openings.

General Use Precautions

Agricultural Use Requirements for Forestry Uses: For use of this product on forestry sites, follow PPE and Reentry restrictions in the Agricultural Use Requirements section of this label.

Use Requirements for Non-cropland Areas: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is applied to non-cropland.

In Arizona: The state of Arizona has not approved Garlon 4 for use on plants grown for commercial production; specifically forests grown for commercial timber production, or on designated grazing areas.

Apply this product only as specified on this label.

Be sure that use of this product conforms to all applicable regulations.

Before using any recommended tank mixtures, read the directions and all use precautions on both labels.

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

Do not apply Garlon 4 directly to, or otherwise permit it to come into direct contact with grapes, tobacco, vegetable crops, flowers or other desirable broadleaf plants and do not permit spray mists containing it to drift onto them.

It is permissible to treat non-irrigation ditch banks, seasonally dry wetlands, flood plains, deltas, marshes, swamps, bogs and transitional areas between upland and lowland sites. Do not apply to open water such as lakes, reservoirs, rivers, streams, creeks, salt water bays or estuaries.

Avoid Injurious Spray Drift

Applications should be made only when there is little or no hazard from spray drift. Very small quantities of spray, which may not be visible may seriously injure susceptible plants. Do not spray when wind is blowing toward susceptible crops or ornamental plants near enough to be injured. It is suggested that a continuous smoke column at or near the spray site or a smoke generator on the spray equipment be used to detect air movement, lapse conditions, or temperature inversions (stable air). If the smoke layers or indicates a potential of hazardous spray drift, do not spray.

Aerial Application (Helicopter Only): For aerial application on rights-of-way or other areas near susceptible crops, use an agriculturally registered spray thickening drift control additive as recommended by the manufacturer or apply through the Microfoil™ boom, Thru-Valve boom, or equivalent drift control system. Thickened sprays prepared by using high viscosity invert systems or other drift reducing systems may be utilized if they are made as drift-free as are mixtures containing an agriculturally registered thickening agent or applications made with the Microfoil boom or Thru valve boom. If a spray thickening agent is used, follow all use recommendations and precautions on the product label. Do not use a thickening agent with the Microfoil boom, Thru Valve boom, or other systems that cannot accommodate thick sprays.

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[Editor's note: This equipment endorsement disclaimer should be inserted at bottom of page in final printed labeling following (†) in above text.]

†Reference within this label to a particular piece of equipment produced by or available from other parties is provided without consideration for use by the reader at its discretion and subject to the reader's independent circumstances, evaluation, and expertise. Such reference by DowElanco is not intended as an endorsement of such equipment, shall not constitute a warranty (express or implied) of such equipment, and is not intended to imply that other equipment is not available and equally suitable. Any discussion of methods of use of such equipment does not imply that the reader should use the equipment other than is advised in directions available from the equipment's manufacturer. The reader is responsible for exercising its own judgment and expertise, or consulting with sources other than DowElanco, in selecting and determining how to use its equipment.

With aircraft, drift can be lessened by applying a coarse spray; by using a spray boom no longer than 3/4 the rotor length; by spraying only when wind velocities are low; or by using an approved drift control system. Keep operating spray pressures at the lower end of the manufacturer's recommended pressures for the specific nozzle type used. Low pressure nozzles are available from spray equipment manufacturers. Select nozzles and pressures which provide adequate plant coverage, but minimize the production of fine spray particles.

Ground Equipment: To aid in reducing spray drift potential when making ground applications near susceptible crops or other desirable broadleaf plants, Garlon 4 should be applied through large droplet producing equipment, such as the Radiarc ~~Sprayer~~ sprayer or in thickened spray mixtures using an agriculturally registered drift control additive, or high viscosity invert systems. When using a spray thickening or inverting additive, follow all use directions and precautions on the product label. With ground equipment, spray drift can be reduced by keeping the spray boom as low as possible; by applying 20 gallons or more of spray per acre; and by spraying when wind velocity is low. Do not apply with nozzles that produce a fine droplet spray. Keep operating spray pressures at the lower end of the manufacturer's recommended pressures for the specific nozzle type used. Low pressure nozzles are available from spray equipment manufacturers. Select nozzles and pressures which provide adequate plant coverage, but minimize the production of fine spray particles.

High Volume Leaf-Stem Treatment: To minimize spray drift, keep sprays no higher than brush tops and keep spray pressures low enough to provide coarse spray droplets. A spray thickening agent may be used to reduce spray drift.

Do not apply on ditches used to transport irrigation water. Do not apply where runoff or irrigation water may flow onto agricultural land as injury to crops may result.

Do not apply this product using mist blowers unless a drift control additive, high viscosity inverting system, or equivalent is used to control spray drift.

Sprays applied directly to Christmas trees may result in conifer injury. When treating unwanted vegetation in Christmas tree plantations, care should be taken to direct sprays away from conifers.

Grazing and Haying Restrictions

Grazing or harvesting green forage:

1) Lactating dairy animals

Two quarts/acre or less: Do not graze or harvest green forage from treated area for 14 days after treatment.

Greater than 2 to 6 quarts/acre: Do not graze or harvest green forage until the next growing season.

2) Other Livestock

Two quarts/acre or less: No grazing restrictions

Greater than 2 to 6 quarts/acre: Do not graze or harvest green forage from treated area for 14 days after treatment. Note: If less than 25% of a grazed area is treated, there is no grazing restriction.

Haying (harvesting of dried forage):**1) Lactating dairy animals**

Do not harvest hay until the next growing season.

2) Other Livestock

Two quarts/acre or less: Do not harvest hay for 7 days after treatment.

Greater than 2 quarts to 4 quarts/acre: Do not harvest hay for 14 days after treatment.

Greater than 4 quarts/acre: Do not harvest hay until the next growing season.

Slaughter Restrictions:

Withdraw livestock from grazing treated grass or consumption of treated hay at least 3 days before slaughter. This restriction applies to grazing during the season following treatment or hay harvested during the season following treatment.

Plants Controlled by Garlon 4**Woody Plants Controlled**

alder	chinquapin	madrone	scotch broom
arrowwood	choke cherry	maples	sumac
ash	cottonwood	mulberry	sweetbay magnolia
aspen	Crataegus (hawthorn)	oaks	sweetgum
bear clover (bearmat)	dogwood	persimmon	sycamore
beech	Douglas-fir	pine	tanoak
birch	elderberry	poison ivy	thimbleberry
blackberry	elm	poison oak	tree-of-heaven
blackgum	gallberry	poplar	(<i>Ailanthus</i>)†
boxelder†	gorse	salmonberry	tulip poplar
Brazilian pepper	hazel	salt-bush	wax myrtle
buckthorn	hickory	(<i>Braccharis</i> spp.)	wild rose
cascara	hombear	salt-cedar†	willow
Ceanothus	kudzu††	sassafras	winged elm
cherry	locust		

†For best control, use either a basal bark or cut stump treatment.

††For complete control, retreatment may be necessary.

Annual and Perennial Broadleaf Weeds Controlled

black medic	curly dock	mustard	vetch
bull thistle	dandelion	Oxalis	wild carrot
burdock	field bindweed	plantain	(Queen Anne's lace)
Canada thistle	goldenrod	purple loosestrife	wild lettuce
chicory	ground ivy	ragweed	wild violet
clover	lambquarters	smartweed	yarrow
creeping beggarweed	lespedeza	sweet clover	
	matchweed		

Approved Uses**Foliar Applications**

Use Garlon 4 at rates of 1 to 8 quarts per acre to control broadleaf weeds and woody plants. In all cases use the amount specified in enough water to give uniform and complete coverage of the plants to be controlled. The recommended order of addition to the spray tank is water, spray thickening agent (if

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used), surfactant (if used), additional herbicide (if used), Garlon 4. If a standard agricultural surfactant is used, use at a rate of 1 to 2 quarts per acre. Use continuous adequate agitation.

Before using any recommended tank mixtures, read the directions and all precautions on both labels.

For best results applications should be made when woody plants and weeds are actively growing. When hard-to-control species such as ash, blackgum, choke cherry, elm, maples (other than vine or big leaf), oaks, pines, or winged elm are prevalent and during applications made during late summer when the plants are mature, or during drought conditions, use the higher rates of Garlon 4 alone or in combination with Tordon® 101 Mixture herbicide.

When using Garlon 4 in combination with 3.8 lb/gal 2,4-D low volatile ester herbicide generally the higher rates should be used for satisfactory brush control.

Use the higher dosage rates when brush approaches an average of 15 feet in height or when the brush covers more than 60% of the area to be treated. If lower rates are used on hard-to-control species, resprouting may occur the year following treatment.

On sites where easy to control brush species dominate, rates less than those recommended may be effective. Consult state or local extension personnel for such information.

High-Volume Leaf-Stem Treatment With Ground Equipment

Foliage Treatment

For control of woody plants, use Garlon 4 at the rate of 1 to 3 quarts in water to make 100 gallons of spray mixture, or Garlon 4 at 1 to 3 quarts may be tank mixed with 1/4 to 1/2 gallons of 3.8 lb/gal 2,4-D low volatile ester herbicide or Tordon 101 Mixture herbicide and diluted to make 100 gallons of spray. Apply at a volume of 100 to 400 gallons of total spray per acre depending on size and density of woody plants. Coverage should be thorough to wet all leaves, stems, and root collars.

Low Volume Foliar (Directed Spray)

For control of susceptible woody plants, mix 3 to 5 gallons of Garlon 4 in water to make 100 gallons of spray mixture, or mix 1 to 3 gallons of Garlon 4 with 1/2 to 1 gallon of Tordon K or 1 to 2 gallons of Tordon 101M Mixture in water to make 100 gallons of spray mixture. For best results, a surfactant should be added to all spray mixtures. When treating tall, high density brush, apply with a truck mounted spray gun and spray tips that deliver about 2 gallons per minute at 40 to 60 psi. For short, low to moderate density brush, backpack applications with spray tips that deliver 1 gallon or less of spray per minute are recommended. Apply at a volume that will wet the target brush, but minimize runoff. Resulting spray volumes will approximate 30 to 60 gallons per acre for truck mounted sprayers and 10 to 20 gallons per acre for backpack sprayers.

Broadcast Applications With Ground Equipment

Make application using equipment that will assure uniform coverage of spray volumes applied.

Woody Plant Control

Foliage Treatment: Use 4 to 8 quarts of Garlon 4 in enough water to make 20 to 100 gallons of total spray per acre, or Garlon 4 at 3 pints to 3 quarts may be combined with 1 to 2 gallons of 3.8 lb/gal 2,4-D low volatile ester herbicide or Tordon 101 Mixture in sufficient water to make 20 to 100 gallons of total spray per acre.

Broadleaf Weed Control

Use Garlon 4 at rates of 1 to 4 quarts in a total volume of 20 to 100 gallons per acre as a water spray mixture. Apply at any time weeds are actively growing. Garlon 4 at 1/2 to 6 pints may be tank mixed with 1 to 2 quarts of 3.8 lb/gal 2,4-D amine or low-volatile ester, Tordon® Tordon K, or Tordon 101

Mixture herbicides ~~herbicide~~ to improve the spectrum of activity. For thickened (high viscosity) spray mixtures, Garlon 4 can be mixed with diesel oil or other invert agent. When using an inverting agent, read and follow the use directions and precautions on the product label.

Aerial Application (Helicopter Only)

Aerial sprays should be applied using suitable drift control (See "General Use Precautions").

Foliage Treatment (Utility and Pipeline Rights-of-Way)

Use 4 to 8 quarts of Garlon 4 alone, or 3 to 4 quarts Garlon 4 in a tank mix combination with 1 to 2 gallons of 3.8 lb/gal 2,4-D low volatile ester herbicide or Tordon 101 Mixture and apply in a total spray volume of 10 to 30 gallons per acre. Use the higher rates and volumes when plants are dense or under drought conditions.

Basal Bark and Dormant Brush Treatments

To control susceptible woody plants in rights-of-way, and other non-crop areas, use Garlon 4 in oil or oil-water mixtures prepared and applied as described below. When preparing mixtures, use as oils either a commercially available basal oil, diesel fuel, No. 1 or No. 2 fuel oil, or kerosene. Substitute other oils or diluents only as recommended by the oil or diluent's manufacturer. When mixing with a basal oil or other oils or diluents, read and follow the use directions and precautions on the product label prepared by the oil or diluent's manufacturer.

Oil Mixture Sprays

Add Garlon 4 to the required amount of oil in the spray tank or mixing tank and mix thoroughly. If the mixture stands over 4 hours, reagitation is required.

Oil-Water Mixture Sprays

First, premix the Garlon 4, oil and surfactant in a separate container. Do not allow any water or mixtures containing water to get into the Garlon 4 or the premix. Fill the spray tank about half full with water, then slowly add the premix with continuous agitation and complete filling the tank with water. Continue moderate agitation.

Note: If the premix is put in the tank without any water, the first water added may form a thick "invert" (water in oil) emulsion which will be hard to break.

Basal Bark Treatment

To control susceptible woody plants with stems less than 6 inches in basal diameter, mix 1 to 5 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with knapsack sprayer or power spraying equipment using low pressure (20-40 psi). Spray the basal parts of brush and tree trunks to a height of 12 to 15 inches from the ground. Thorough wetting of the indicated area is necessary for good control. Spray until runoff at the ground line is noticeable. Old or rough bark requires more spray than smooth young bark. Apply at any time, including the winter months, except when snow or water prevent spraying to the ground line.

Low Volume Basal Bark Treatment

To control susceptible woody plants with stems less than 6 inches in basal diameter, mix 20 to 30 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using low pressure and a solid cone or flat fan nozzle. Spray the basal parts of brush and tree trunks in a manner which thoroughly wets the lower stems, including the root collar area, but not to the point of runoff. Herbicide concentration should vary with size and susceptibility of species treated. Apply at any time, including the winter months, except when snow or water prevent spraying to the ground line.

Streamline Basal Bark Treatment (Southern and Western States)

To control or suppress susceptible woody plants for conifer release, mix 20 to 30 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using equipment which provides a directed straight stream spray. Apply sufficient spray to one side of stems

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less than 3 inches in basal diameter to form a treated zone that is 6 inches in height. When the optimum amount of spray mixture is applied, the treated zone should widen to encircle the stem within approximately 30 minutes. Treat both sides of stems which are 3 to 4 inches in basal diameter. Direct the spray at bark that is approximately 12 to 24 inches above ground. Pines (loblolly, slash, shortleaf, and Virginia) up to 2 inches in diameter breast height (dbh) can be controlled by directing the spray at a point approximately 4 feet above ground. Vary spray mixture concentration with size and susceptibility of the species being treated. Best results are achieved when applications are made to young vigorously growing stems which have not developed the thicker bark characteristic of slower growing, understory trees in older stands. This technique is not recommended for scrub and live oak species, including blackjack, turkey, post, live, bluejack and laurel oaks or bigleaf maple. Apply from approximately 6 weeks prior to hardwood leaf expansion in the spring until approximately 2 months after leaf expansion is completed. Do not apply when snow or water prevent spraying at the desired height above ground level.

Low Volume Stem Bark Band Treatment (North Central and Lake States)

To control susceptible woody plants with stems less than 6 inches in basal diameter, mix 20 to 30 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using low pressure and a solid cone or flat fan nozzle. Apply the spray in a 6 to 10-inch wide band that completely encircles the stem. Spray in a manner that completely wets the bark but not to the point of runoff. The treatment band may be positioned at any height up to the first major branch. For best results apply the band as low as possible. Spray mixture concentration should vary with size and susceptibility of species to be treated. Applications may be made at any time, including winter months.

Thinline Basal Bark Treatment

To control susceptible woody plants with stems less than 6 inches in diameter, apply undiluted Garlon 4 in a thin stream to all sides of the lower stems. The stream should be directed horizontally to apply a narrow band of Garlon 4 around each stem or clump. From 2 to 15 ml of chemical will be required for treatment of single stems and from 25 to 100 ml to treat clumps of stems. Use an applicator metered or calibrated to deliver the small amounts required.

Dormant Stem Treatment

Dormant stem treatments will control susceptible woody plants and vines with stems less than 2 inches in diameter. Plants with stems greater than 2 inches in diameter may not be controlled and resprouting may occur. This treatment method is best suited for sites with dense, small diameter brush. Dormant stem treatments of Garlon 4 can also be used as a chemical side-trim for controlling lateral branches of larger trees that encroach onto roadside, utility, or other rights-of-way.

Mix 4 to 8 quarts of Garlon 4 in 2 to 3 gallons of crop oil concentrate or other recommended oil and add this mixture to enough water to make 100 gallons of spray solution. Use continuous adequate agitation. Apply with Radiarc, OC nozzles, or handgun using 70 to 100 gallons of spray per acre to ensure uniform coverage of stems. Garlon 4 may be mixed with 4 quarts of Weedone 170 herbicide to improve the control of black cherry and broaden the spectrum of herbicidal activity. Apply anytime within 10 weeks of budbreak, generally February through April. Do not apply to wet or saturated bark as poor control may result.

Cut Stump Treatment

To control resprouting of cut stumps of susceptible species, mix 20 to 30 gallons of Garlon 4 in enough oil to make 100 gallons of spray mixture. Apply with a backpack or knapsack sprayer using low pressures and a solid cone or flat fan nozzle. Spray the root collar area, sides of the stump, and the outer portion of the cut surface including the cambium until thoroughly wet, but not to the point of runoff. Spray mixture concentration should vary with size and susceptibility of species treated. Apply at any time, including in winter months, except when snow or water prevent spraying to the ground line.

Treatment of Cut Stumps in Western States

To control resprouting of salt-cedar and other *Tamarix* species, bigleaf maple, tanoak, Oregon myrtle and other susceptible species, apply undiluted Garlon 4 to wet the area adjacent to the cambium and bark around the entire circumference of cut stumps. Treatments may be applied throughout the year.

however, control may be reduced with treatment during periods of moisture stress as in late summer. Use an applicator which can be calibrated to deliver the small amounts of material required.

Note: All basal bark and dormant brush treatment methods may be used to treat susceptible woody species on range and permanent pasture land provided that no more than 1.5 quarts of Garlon 4 are applied per acre. Large plants or species requiring higher rates of Garlon 4 may not be completely controlled.

Forest Management Applications

For broadcast applications apply the recommended rate of Garlon 4 in a total spray volume of 5 to 25 gallons per acre by air or 10 to 100 gallons per acre by ground. Use spray volumes sufficient to provide thorough coverage of treated foliage. Use application systems designed to prevent spray drift to off-target sites. Nozzles or additives that produce larger droplets may require higher spray volumes to provide adequate coverage.

Broadcast Treatments for Forest Site Preparation (Not For Conifer Release)

Southern States including Alabama, Arkansas, Delaware, Florida, Georgia, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas and Virginia: To control susceptible woody plants and broadleaf weeds, apply Garlon 4 at a rate of 4 to 8 quarts per acre. To broaden the spectrum of woody plants and broadleaf weeds controlled, apply 2 to 4 quarts per acre of Garlon 4 in tank mix combination with 6 to 8 quarts per acre of Tordon[®] Tordon 101 Mixture herbicide or 2 to 2 1/2 quarts per acre of Tordon K herbicide. Tordon 101 Mixture and Tordon K are not registered for use in the state of California. Where grass control is also desired, Garlon 4, alone or in combination with Tordon K or Tordon 101 Mixture, may be tank-mixed with 1 to 4 quarts per acre of Accord or Roundup herbicide, or 8 to 16 fluid ounces per acre of Arsenal Applicator's Concentrate herbicide. Susceptible woody plants, broadleaf weeds and grasses may also be controlled using a tank mix of 2 to 4 quarts per acre of Garlon 4 and 16 to 24 fluid ounces of Arsenal Applicator's Concentrate. When applying tank mixes, follow use directions and precautions on each product label.

In Western, Northeastern, North Central and Lake States (States Not Listed Above As Southern States): To control susceptible woody plants and broadleaf weeds, apply Garlon 4 at a rate of 3 to 6 quarts per acre. To broaden the spectrum of woody plants and broadleaf weeds controlled, apply 1.5 to 3 quarts per acre of Garlon 4 in tank mix combination with 4 to 8 quarts of Tordon 101 Mixture, 2 quarts per acre of Tordon K, or 1 to 2 gallons per acre of 3.8 lb/gal 2,4-D low volatile ester. Tordon 101 Mixture and Tordon K are not registered for use in the state of California. Where grass control is also desired, Garlon 4, alone or in tank mix combination with Tordon 101 Mixture or Tordon K, may be applied with 1 to 3 quarts per acre of Accord or Roundup herbicide, 2 to 4 ounces per acre of Oust, a combination of Accord (or Roundup) plus Oust at the rates listed, or 8 to 16 fluid ounces of Arsenal Applicator's Concentrate. When applying tank mixes, follow the use directions and precautions on each product label.

Applications for Site Preparation in Southern Coastal Flatwoods: To control susceptible broadleaf weeds and woody species such as gallberry and wax-myrtle, and for partial control of saw-palmetto, apply 2 to 4 quarts per acre of Garlon 4. To broaden the spectrum of species controlled to include fetterbush, staggerbush, titi and grasses, apply 2 to 3 quarts per acre of Garlon 4 in tank mix combination with 8 to 16 fl oz of Arsenal Applicator's Concentrate herbicide. Where control of gallberry, wax-myrtle, broadleaf weeds and grasses is desired, 2 to 3 quarts per acre of Garlon 4 may be applied in tank mix combination with 2 to 3 quarts per acre of Accord herbicide.

These treatments may be broadcast during site preparation of flat planted or bedded sites or, on bedded sites, applied in bands over the top of beds. For best results, make applications in late summer or fall. Efficacy may not be satisfactory when applications are made in early season prior to August. **Note:** Do not apply after planting pines.

Note: Conifers planted sooner than one month after treatment with Garlon 4 at less than 1 gallon per acre or sooner than two months after treatment at 1 to 2 gallons per acre may be injured. When tank mixtures of herbicides are used for forest site preparation, labels for all products in the mixture should be consulted and the longest recommended waiting period observed.

Directed Spray Applications for Conifer Release

To release conifers from competing hardwoods such as red maple, sugar maple, striped maple, sweetgum, red and white oaks, ash, hickory, alder, birch, aspen, and pin cherry, mix 1 to 5 gallons of Garlon 4 in enough water to make 100 gallons of spray mixture. This spray should be directed onto foliage of competitive hardwoods using knapsack or backpack sprayers with flat fan nozzles or equivalent any time after the hardwoods have reached full leaf size, but before autumn coloration. The majority of treated hardwoods should be less than 6 feet in height to ensure adequate spray coverage. Care should be taken to direct spray solutions away from conifer foliage, particularly foliage of desirable pines.

Note: Sprays may cause temporary damage and growth suppression where contact with conifers occurs; however, injured conifers should recover and grow normally. Over-the-top spray applications can kill pines.

Broadcast Applications for Mid-Rotation Understory Brush Control in Southern Coastal Flatwoods Pine Stands (Ground Equipment Only)

For control of susceptible species such as gallberry and wax-myrtle and broadleaf weeds, apply 2 to 4 quarts per acre of Garlon 4. To broaden the spectrum of woody plants controlled to include fetterbush, staggerbush and tili, apply 2 to 3 quarts per acre of Garlon 4 in tank mix combination with 8 to 16 fl oz of Arsenal Applicator's Concentrate. Saw-palmetto will be partially controlled by use of Garlon 4 at 4 quarts per acre or by mixtures of Garlon 4 at 2 to 3 quarts per acre in tank mix combination with either 8 to 16 fl oz of Arsenal Applicator's concentrate or 2 ounces of Escort herbicide.

These mixtures should be broadcast applied over target understory brush species, but to prevent injury to pines, make applications underneath the foliage of pines. It is recommended that sprays be applied in 30 or more gallons per acre of total volume. For best results, make applications in late summer or fall. Efficacy may not be satisfactory when applications are made in early season prior to August.

Broadcast Applications for Conifer Release in the Pacific Northwest and California

On Dormant Conifers Before Bud Swell (Excluding Pines): To control or suppress deciduous hardwoods such as vine maple, bigleaf maple, alder or willow before leaf-out or evergreen hardwoods such as madrone, chinquapin, and *Ceanothus* spp., use Garlon 4 at 1 to 2 qt per acre. Diesel or fuel oil carrier may be used especially on deciduous hardwood species. On evergreen hardwoods, water carrier with 1 to 2 gallons of diesel oil per acre or a suitable surfactant or oil substitute at manufacturer's recommended rates are equally effective.

On Conifer Plantations (Excluding Pines) After Hardwoods Begin Growth and Before Conifer Bud Break ("Early Foliar" Hardwood Stage): Use Garlon 4 at 1 to 1.5 qt alone or with 3.8 lb/gal 2,4-D low volatile ester herbicide in water carrier to provide no more than 3 lb acid equivalent per acre from both products. After conifer bud break, these sprays may cause more serious injury to the crop trees. Added surfactant may cause unacceptable injury to conifers especially after bud break.

On Conifer Plantations (Excluding Pines) After Conifers Harden Off In Late Summer and While Hardwoods Are Still Growing Actively: Use Garlon 4 at rates of 1 to 1.5 qt per acre alone or plus 3.8 lb/gal 2,4-D low volatile ester herbicide to provide no more than 3 lb acid equivalent per acre from both products. Treat as soon after conifer bud hardening as possible so that hardwoods are actively growing. Added oil, oil substitute or surfactant may cause unacceptable injury to the conifers.

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Note: Sprays may cause discolored needles and temporary growth suppression of some conifers, but they should recover and grow normally.

Broadcast Applications for Conifer Release in the Eastern United States

To release spruce, fir, red pine and white pine from competing hardwoods such as red maple, sugar maple, striped maple, alder, birch (white, yellow, and grey), aspen, ash, pin cherry, and *Rubus* spp. and perennial and annual broadleaf weeds, use Garlon 4 at rates of 1.5 to 3 quarts per acre alone or plus 3.8 lb/gal 2,4-D amine or low-volatile ester herbicides herbicide to provide no more than 4 pounds acid equivalent per acre from both products. Applications should be made in late summer or early fall after conifers have formed their overwintering buds and hardwoods are in full leaf and prior to autumn coloration.

Note: Sprays may cause discolored needles and temporary growth suppression of some conifers, but they should recover and grow normally.

Broadcast Applications for Conifer Release in the Lake States Region

To release spruce, fir and red pine from competing hardwoods such as aspen, birch, maple, cherry, willow, oak, hazel, and *Rubus* spp. and perennial and annual broadleaf weeds, use Garlon 4 at rates of 1.5 to 3 quarts per acre. Applications should be made in late summer or early fall after conifers have formed their overwintering buds and hardwoods are in full leaf and prior to autumn coloration.

Spot Treatment to Control Clumps of Resprouting Hardwoods Such as Big Leaf Maple Using a Hovering Helicopter in Forests

Stem Treatment Before Leaf-Out: Mix 1 to 2 gallons of Garlon 4 with about 20 gallons diesel oil and enough water to make 100 gallons of solution. Apply as an invert emulsion by means of a hovering helicopter equipped with a nozzle system to direct sufficient spray to cover the stems to the ground line of the sprouted trees, usually 3/4 to 1 1/2 gallon per clump.

Note: Conifers contacted by this spray may be seriously injured; in existing plantations, drift control systems, such as invert emulsions, should be used to minimize injury to adjacent conifers. A dye or other marking system to designate treated trees may be used.

Warranty Disclaimer

DowElanco warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. DowElanco MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

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It is impossible to eliminate all risks associated with use of this product. Plant injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperature, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of DowElanco or the seller. All such risks shall be assumed by buyer.

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The exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at DowElanco's election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used

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