PORT OF PORTLAND

Vegetation Management Plan

For Mitigation Sites & Natural Areas

Operations Environmental

May 2014

Randall Mitigation Site – May 2013

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VEGETATION MANAGEMENT PLAN

SECTION 1 - BACKGROUND AND PURPOSE

The Port of Portland (Port) is one of the largest single landowners in the Portland metropolitan area, with approximately 10,000 acres of property holdings. Stewardship of these lands can be negatively impacted by the presence of invasive species, primarily non-native invasive plants. Effective invasive species management is a critical component of the Port's internal and external stewardship role. The Port's Environmental Policy for Natural Resources is to "minimize impacts and seek opportunities to enhance natural resources while carrying out Port projects." Invasive species management is a key factor of this policy.

Invasive species can affect both ecological and economic systems. Budget and staff allocations necessary to effectively manage invasive species on Port properties continue to require a large investment, with budget allocations projected at approximately $347,500 in 2014–2015 just to control invasive plants that are currently known to occur on habitat mitigation sites. Invasive species are one of the primary maintenance concerns for the Port's wetland mitigation sites. These sites are managed under strict success criteria set by the U.S. Army Corps of Engineers and the Department of State Lands who issue wetland mitigation permits which often contain criteria for the management of invasive species.

Preventing the introduction and establishment of invasive species has been shown to be the most cost-efficient long-term management strategy. However, for invasive species that are already established, management programs must be developed and implemented in an attempt to counter their impacts. Control methods generally fall into one of the following categories: manual (hand pulling, digging, etc.), mechanical (using machinery to mow, plow, weedwack, etc.), chemical (herbicides), biological (live organisms), or hydrological (water level management). Each method has its advantages and disadvantages, and implementation must be carefully evaluated by the land manager.

This document focuses on the appropriate use of herbicides as a chemical control for invasive plant species. Herbicides can be a potent control method for invasive plant species, and have become a key tool for combating some species. However, the effects of an herbicide can extend outside the range of the target organism, particularly if applied incorrectly. Consequently, there is serious concern regarding the current use of herbicides. There are many regulations on the use of herbicides, with many more likely to be enacted in the near future. Past litigation (such as *Washington Toxics Coalition v. Environmental Protection Agency* [EPA]) has affected the way the public (and Port) use herbicides to control invasive plants near water bodies that contain fish listed under the Endangered Species Act (ESA). Specifically, this order restricts the use of certain pesticides generally, within 20 yards for ground applications and 100 yards for aerial applications, adjacent to salmon supporting waters in California, Oregon and Washington. It is imperative that the use of herbicides be conducted in a responsible and judicious fashion.

The purpose of this document is to provide Port staff and Port-contracted workers who use herbicides on Port mitigation and natural areas with accurate information on the appropriate use

of these herbicides. This information generally relates to the appropriate type of herbicide to use for a particular plant species and current restrictions and/or regulations that may apply to the use of the herbicide, or to the location where the herbicide is to be applied. Plants are ranked according the City of Portland Classification system in their Nuisance Plants List; nuisance plants threaten the health and vitality of native habitats and cause economic harm to public and private landowners. This is a working document, and is intended to be modified every two years when new invasive species, herbicides, regulations, or site locations warrant change in application procedures.

SECTION 2 - INVASIVE PLANTS

2.1 Target Invasive Species

This section lists most of the target invasive species controlled on Port mitigation sites using manual, mechanical, chemical, hydrological, and biological means. Photographs are provided for each species in addition to a brief summary of key features used for identification. Target species are arranged here by City of Portland Classifications A, B, C, D or W (Portland Plant List, 2011) as defined below:

> **Class A:** *These species are known to be invasive. These species are known to occur but are not widely distributed in the region. Distribution is limited to a few sites. They spread rapidly and they are difficult to control once they become widespread.*
> **Class B:** *These species are known to be invasive. These species are known to occur in the region. They are more abundant and widely distributed than A; however, the distribution is still limited to patches or specific habitats. Distribution is not as widespread as C plants. These species can spread rapidly and are difficult to control once they become widespread.*
> **Class C:** *These species are known to be invasive. These species are widely distributed and abundant throughout the region. Their distribution is already very extensive throughout the natural areas and they are difficult to control once they become widespread. These plants are considered ubiquitous.*
> **Class D:** *These species are known to be less aggressive than A, B, and C species. These species are known to occur in the region. These plants persist in ecosystems with native species and therefore, have less impact on the system than the A, B, and C species.*
> **Class W:** *These are watch species. Species occurrence and distribution should be monitored for presence and/or to determine the level of invasiveness in the region.*

Preferred control methods are explained for each target species along with a summary of herbicide specifications adapted from the 2012 *Pacific Northwest Weed Management Handbook* (Peachey et al. 2007) as well as the herbicide labels and other regional references found in Section 6 of this document. For consistency in nomenclature, throughout this document we use a single botanical name found in the USDA PLANTS database and the corresponding six-letter code for each species covered. The term “spray” refers to backpack spot-spraying unless otherwise noted. The Port uses broadcast spraying only where spot-spraying is not practical (such as on large expanses of land like the area surrounding the Jewett Lake mitigation site on Government Island). Broadcast spraying requires the use of a long boom that provides treatment of large areas without the benefit of species-specific application. The Port currently has

approved only glyphosate-, tricoplyr- and metsulfuron-based herbicides for use at mitigation sites, including those described in Section 3.2. The use of different herbicide formulations must be approved by the Port Senior Mitigation Specialist. Although herbicide brands are specified below, alternate brands may be used with Port approval. Surfactants approved for use on the mitigation sites are Agri-dex surfactant and LI 700, the soy-oil-derived non-ionic surfactant. Each chemical is listed and described in detail in Section 3.2.

Note: Because this is a working document and meant as a tool to be used in the field, a "Notes" section has been provided for each plant profile. This section can be used to record improved management methods learned in the field. These notes will be referenced when writing the next vegetation management plan.

Plant Treatment Methods					
The following table is a quick reference of treatment methods allowed for each plant profiled in this section					
See plant profiles for detailed control methods					
Botanical Name	**Common Name**	**Class**	**Manual and Chemical**	**Chemical Only**	**Manual only**
Phytolacca americana	American pokeweed	A	X		
Silybum marianum	blessed milk thistle		X		
Ailanthus altissima	tree-of-heaven	B	X		
Amorpha fruticosa	false indigo bush		X		
Buddleja davidii	orange eye butterflybush		X		
Centaurea spp.	knapweed		X		
Chondrilla juncea	rush skeletonweed		X		
Iris pseudacorus	paleyellow iris		X		
Lythrum salicaria	purple loosestrife		X		
Myriophyllum aquaticum	parrot feather watermilfoil		X		
Polygonum cuspidatum	Japanese knotweed		X		
Populus alba	white poplar			X	
Arrhenatherum elatius	tall oatgrass	C			
Betula pendula	European white birch		X		
Cirsium arvense	Canada thistle			X	
Cirsium vulgare	bull thistle		X		
Clematis vitalba	evergreen clematis		X		
Conium maculatum	poison hemlock		X		
Convolvulus arvensis	field bindweed			X	
Crataegus monogyna	English hawthorn		X		
Cytisu s scoparius	Scotch broom		X		
Daucus carota	Queen Anne’s lace				X
Dipsacus fullonum	Fuller's teasel		X		
Hedera helix	English ivy		X		
Ilex aquifolium	English holly		X		
Leucanthemum vulgare	oxeye daisy				X
Lotus corniculatus	bird’s-foot trefoil				
Nymphaea odorata	American white waterlily				X
Phalaris arundinacea	reed canarygrass		X		
Prunus lusitanica	Portugal laurel		X		
Robinia pseudoacacia	black locust		X		
Rosa multiflora	multiflora rose			X	
Rosa rubiginosa	Sweetbriar rose			X	
Rubus armeniacus	Himalayan blackberry		X		
Rubus laciniatus	cutleaf blackberry		X		
Senecio jacobaea	tansy ragwort		X		
Solanum dulcamara	climbing nightshade		X		
Tanacetum vulgare	common tansy		X		
Verbascum blattaria	moth mullein				X
Verbascum thapsus	common mullein				X
chicory	*Cichorium intybus*	D			X
creeping Jenny	*Lysimachia nummularia*	W		X	

Phytolacca americana – American pokeweed (PHYAME), Class A

IDENTIFICATION

- Perennial forb up to 8 feet tall with stout, purplish branching stem
- Leaves are oblong shaped, and alternate with smooth edges; up to 12 inches long and 4 inches wide
- Flowers are white or green in elongated clusters; bloom in early summer
- Fruits are deep purple berries with crimson juice that hang in distinct clusters from mid-summer to later fall

WARNING: every part of this plant is poisonous with the root and leaves being the most toxic.

CONTROL METHODS

The Port recommends manual and chemical control methods for pokeweed:

Manual Removal

Before spraying, all mature seeds should be cut, bagged, and disposed of in a landfill.

Chemical Treatments

Because American pokeweed re-sprouts from root fragments and develops a very large tap root, the Port prefers that this plant be selectively sprayed with a broadleaf herbicide (Capstone). Also, due to this plant's toxicity, the Port recommends applying herbicide in the spring before it produces seed to prevent re-seeding.

- Capstone (Triclopyr): use only in upland conditions at least 60 feet from water body
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply to actively growing plants
  - *Notes*: Use a non-ionic surfactant. Capstone is a selective broadleaf herbicide that will not harm grasses.

NOTES

Silybum marianum – blessed milk thistle (SILMAR), Class A

IDENTIFICATION

- Biennial or annual forb up to 6 feet tall
- Leaves have spiny edges with white marbling along the veins
- Flowers are showy reddish-purple with leathery spine-tipped bracts

CONTROL METHODS

The Port recommends chemical and manual control methods for blessed milk thistle:

Chemical Treatments

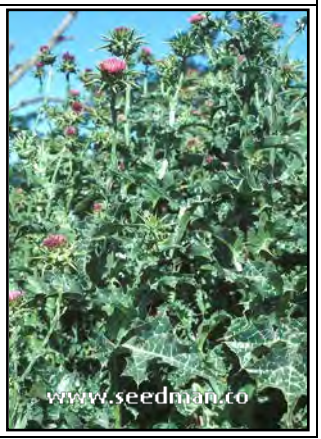
Blessed milk thistle may be treated by spot-spraying with glyphosate.

- Roundup Custom for aquatic & terrestrial use (glyphosate):
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply to actively growing plants at any stage
  - *Notes*: Use a non-ionic surfactant. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

Manual Removal

Rosettes should be dug up when possible making sure to remove the entire taproot. Flower heads should be cut, bagged, and disposed of in a landfill and remaining foliage treated with herbicide as stated above.

NOTES



Ailanthus altissima – tree-of-heaven (AILALT), Class B

IDENTIFICATION

- Deciduous tree up to 100 feet tall
- Leaves alternate, compound, to 3 feet long
- Leaflets are lanceolate; up to 5 inches long and 2 inches wide; toothed at base with unpleasant odor when crushed
- Flowers are small, greenish, and appear in dense terminal panicles
- Fruit appear in large dense clusters that hang on the tree through winter

CONTROL METHODS

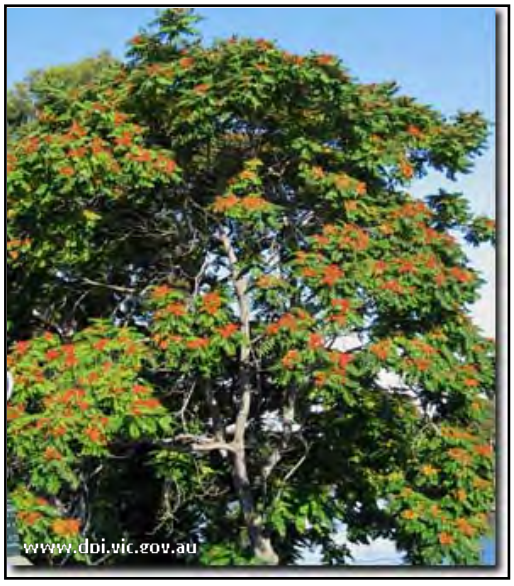
The Port recommends chemical control methods for tree-of-heaven:

Chemical Treatments

Saplings/seedlings can be dug up or pulled. Young, small trees can be cut/stump treated with glyphosate or mature trees can be drilled and injected as directed by Port staff. Mature trees should not be treated without first consulting Port staff.

- Roundup Custom for aquatic & terrestrial use (glyphosate):
  - *Rate*: Use a 50% solution immediately after cutting
  - *Time*: Apply during active growth and full leaf expansion
  - *Notes*: Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

NOTES



Amorpha fruticosa – false indigo bush (AMOFRU), Class B

IDENTIFICATION

- Perennial shrub up to 10 feet tall
- Each 4-inch- to 8-inch-long leaf is composed of 13 to 25 smaller leaflets that are 1 to 2 inches long, hairy, resinous, and dotted
- Seeds are approx. 0.25 inch long, brown, curved, and may be smooth or hairy
- Flowers are showy and purplish-blue with orange anthers; vanilla scent; blooms in early summer

CONTROL METHODS

The Port recommends manual and chemical control methods for false indigo bush:

- Young plants are to be hand-pulled in the spring before flowering occurs.
- Large, more established plants should be cut and then stump treated with glyphosate.
- Flowering plants should be cut/stump treated or pulled and removed from the site to reduce seed dispersal.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial use (glyphosate):
  - *Rate*: Use a 50% solution immediately after cutting
  - *Time*: Apply during active growth and full leaf expansion
  - *Notes*: Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

Manual Removal

Once cut or pulled, all parts of this plant must be bagged and disposed of in a landfill.

NOTES

Buddleja davidii – orange eye butterflybush (BUDDAV), Class B

IDENTIFICATION

- Deciduous shrub up to 15 feet tall
- Leaves opposite, glaucous beneath; young stems are square
- Flowers appear in dense terminal spikes up to 10 inches long, often nodding; flowers are very fragrant, light purple with orange centers
- Blooms mid-summer
- Reproduces mainly from seed
- Young stems are green while mature stems are covered in gray-brown bark

CONTROL METHODS

The Port recommends manual and chemical control methods for orange eye butterfly bush:

- Young plants are to be hand-pulled in the spring before flowering occurs (be sure to remove the roots).
- Large, more established plants should be cut and then stump treated with glyphosate.
- Flowering plants should be cut/stump treated or pulled and removed from the site to reduce seed dispersal.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial use (glyphosate):
    - *Rate*: Use a 50% solution immediately after cutting
    - *Time*: Apply during active growth and full leaf expansion
    - *Notes*: Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

Manual Removal

Once cut or pulled, all parts of this plant must be bagged and disposed of in a landfill. Branches of butterfly bush can form roots and re-grow.

NOTES

Centaurea spp. – knapweed (CENSPE), Class B

IDENTIFICATION

- Spotted knapweed (shown in photo) is most common although diffuse knapweed may also be present
- Young plants form grayish-green basal rosettes
- Plants may be 1 to 3 feet tall
- Leaves are narrow
- Bracts below the flower heads of diffuse knapweed have yellow spines with teeth rather than the distinctly black-tipped bracts of spotted knapweed

WARNING: use gloves when handling this plant as it may emit toxic skin irritants

CONTROL METHODS

The Port recommends chemical control and manual removal methods for knapweed:

Chemical Treatments

While knapweed plants can be controlled using glyphosate, annual re-applications may be necessary. In upland grasslands the Port recommends using Capstone, a selective herbicide that won't harm native grasses.

- Roundup Custom for aquatic & terrestrial uses (glyphosate): use when knapweed infestation is within 60 feet of water body
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply to actively growing knapweed when most plants are at bud stage
  - *Notes*: Use a non-ionic surfactant. Glyphosate will kill many existing knapweed plants but also kills grass that might compete with new knapweed seedlings. When using glyphosate, follow by seeding with native grass species in the spring or fall.
- Capstone (triclopyr): use only in upland conditions at least 60 feet from water bodies
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply to actively growing plants
  - *Notes*: Use a non-ionic surfactant. Capstone is a selective broadleaf herbicide that will not harm grasses.

Manual Removal

Port mitigation staff may ask that knapweed be hand-pulled in which case gloves are recommended to prevent skin irritation. All parts of this plant must be bagged, and disposed of in a landfill.

NOTES

Chondrilla juncea – rush skeletonweed (CHOJUN), Class B

IDENTIFICATION

- Grows 1 to 4 feet tall
- Highly branched; leaves are inconspicuous
- Very small yellow composite flowers with 7–15 rays (similar to dandelion) appear in July
- In early summer the lower stem has prominent, reddish, downward pointing hairs
- Forms deep, extensive root system
- Typically found in areas with well-drained soil

CONTROL METHODS

The Port recommends chemical control methods for rush skeletonweed:

Chemical Treatments

Spot-spraying with glyphosate is effective in controlling rush skeletonweed. First clip and bag any flowers or flower buds and remove them from the site to prevent seed production and then treat the plant with glyphosate.

- Roundup Custom for aquatic & terrestrial uses (glyphosate): Use when knapweed infestation is within 60 feet of water body
    - *Rate*: Maximum 1.5% solution
    - *Time*: Apply to actively growing knapweed when most plants are at bud stage
    - *Notes*: Use a non-ionic surfactant. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

Manual Removal

Manual removal of rush skeletonweed is not effective because the root systems are extensive and any mechanical injury to the plant causes roots to produce new shoots. Because of this, manual control will only slow the spread of the plant to new areas; it will not kill existing plants unless every root fragment is removed.

NOTES

Iris pseudacorus – paleyellow iris (IRIPSE), Class B

IDENTIFICATION

- Robust perennial with thick rhizomes
- Grows to 3 feet tall
- Leaves get to 1.5 inches wide and are flat
- Flowers are yellow, sometimes with purple markings
- Found at the edges of streams and ponds

CONTROL METHODS

The Port recommends a combination of manual and chemical control methods for yellow-flag iris:

Manual Removal

- ***Bag and remove seed pods before any control method is performed*** (see photo below). This can be done at any time of year and will eliminate new infestations.
- Small clumps (12 inches in diameter or less) should be dug out and removed from the site. Be sure to remove the entire rhizome as re-growth will occur from any missed rhizome fragment.
- Large stands of iris are to be spot-sprayed with Roundup custom. Flower heads should be cut and bagged before treating foliage.
- Bagged flower heads and seed pods must be disposed of in a landfill.
- Deposit dug up plant material onto upland shore area.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate):
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply pre-bloom or in the fall
  - *Notes*: Use LI 700 surfactant. Spot applications or stem injections are recommended. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

NOTES

Lythrum salicaria – purple loosestrife (LYTSAL), Class B

IDENTIFICATION

- Rhizomatous, perennial herb
- Grows up to 6 feet or greater
- Stem is square in cross section
- Leaves are lance shaped and opposite, attached directly to stem
- Blooms July–Sept
- Flowers in a terminal spike cluster of pink-purple blooms
- Grows in wetlands
- May be confused with native willow herbs (*Epilobium* spp.), which typically have round stems

CONTROL METHODS

The Port uses a combination of biological, manual, and chemical methods to control purple loosestrife. Biological agents are present and considered the only means of control at West Wye and Ramsey Lakes mitigation sites. At all other sites, the following methods are preferred:

- In late spring/summer before blooming, positively identified plants can be spot-sprayed with Roundup.
- Once flowers begin to bloom, flower heads are to be cut and bagged and the remaining foliage spot-sprayed immediately with Rodeo. This regime is to be conducted weekly until purple loosestrife is no longer flowering. Bagged flower heads must be disposed of in a landfill.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial use (glyphosate):
  - *Rate*: 1.0 to1.5% solution
  - *Time*: Apply to actively growing plants at full to late flowering stage. Seedlings may be effectively treated early in the season after a fall application to mature plants.
  - *Notes*: Use 0.5% v/v non-ionic surfactant (LI 700 recommended). Thoroughly wet foliage, but avoid runoff. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

NOTES

Myriophyllum aquaticum – parrot feather watermilfoil (YRAQU), Class B

IDENTIFICATION

- Rhizomatous, aquatic perennial
- Leaves are finely dissected and 5–6 whorled
- Forms large subsurface and surface mats of dense vegetation in shallow water and along the water's edge that displace other wetland vegetation

CONTROL METHODS

The Port recommends a combination of manual and chemical means to control parrots feather watermilfoil:

- If parrots feather is in water, then it must be hand pulled, bagged, removed from site and disposed of in a landfill.
- Once water has receded in late summer/fall, populations can be sprayed with Roundup, being careful to avoid overspray onto desirable wetland vegetation

Chemical Treatments

- Roundup Custom for aquatic and terrestrial uses (glyphosate):
  - *Rate*: 1.0 to1.5% solution
  - *Time*: Apply to plants in late summer or fall once water has receded
  - *Notes*: Do not apply over open water. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

NOTES

Polygonum cuspidatum – Japanese knotweed (POLCUS), Class B

IDENTIFICATION

- Strongly rhizomatous, woody-stemmed perennial shrub
- Grows up to 9 feet tall
- Leaves are broadly ovate and up to 6 inches long
- Stem is hollow, reddish color with prominent nodes like bamboo
- Blooms July through September in cream colored plume-like clusters
- Giant knotweed (*P. sachalinense*) occurs in similar habitats and looks similar except leaves have a more heart-shaped base

CONTROL METHODS

The Port recommends a combination of mechanical and chemical means to control Japanese knotweed:

- In spring new growth that is not in standing water should be spot-sprayed with Rodeo.
- In summer, before flowers emerge, tall patches should be cut with weedwackers and spot-sprayed with Rodeo after a few weeks of new growth.
- Flower heads should be cut, bagged and disposed of in a landfill, and the remaining foliage sprayed.
- Small infestations can be treated by using the injection method (see below for details).

Chemical Treatments

- Roundup Custom for aquatic and terrestrial uses (glyphosate):
  - *Rate*: Maximum 1.5% solution with LI 700
  - *Time*: Apply as a coarse spray when the weeds are actively growing and most have reached the bud to early flowering stage of growth.
  - *Notes*: Spray for complete, uniform coverage but do not spray to point of runoff. Use a non-ionic surfactant. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.
  - *Injection Method*: For small infestations, use 5 mL of undiluted product per stem; inject into actively growing plants; inject into the hollow stem just below a node. Each stem must be treated.

NOTES

Arrhenatherum elatius – tall oatgrass (ARRELA), Class C

IDENTIFICATION

- Leaf blades are flat, rough and 3/8 to ¾ inches wide
- Panicles are 6 to 10 inches long with exposed awns

CONTROL METHODS

The Port recommends chemical control methods for tall oatgrass:

- Spray in early spring (April –May) when plants are less than 12 inches tall. *Because the majority of our native prairie forbs are leafed out and many are in full bloom in early spring it is especially important to take caution to avoid overspray onto desirable plants*
- If plants are too tall in the spring, weedwack and treat in June

Chemical Treatments

- Roundup Custom for aquatic and terrestrial uses (glyphosate):
  - *Rate*: Maximum 1.5% solution with LI 700
  - *Time*: Apply as a coarse spray when the weeds are actively growing and most have reached the early flowering stage of growth.
  - *Notes*: Spray for complete, uniform coverage but do not spray to point of runoff. Use a non-ionic surfactant. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

NOTES

Populus alba – white poplar (POPALB), Class B

IDENTIFICATION

- Tree is 50–80 feet tall with leaves that are 2–5 lobed and 2–5 inches long
- Leaves are dark green on top and white below with wavy or coarsely toothed margins
- Bark is greenish-gray on small trees and black and furrowed on medium to large trees

CONTROL METHODS

The Port recommends chemical control methods for white poplar:

Chemical Treatments

Young, small trees can be cut/stump treated with glyphosate or mature trees can be drilled and injected as directed by Port staff. Mature trees should not be treated without first consulting Port staff.

- Roundup Custom for aquatic & terrestrial use (glyphosate):
  - *Rate*: Use a 50% solution immediately after cutting
  - *Time*: Apply during active growth and full leaf expansion
  - *Notes*: Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

NOTES

Betula pendula – European white birch (BETPEN), Class C

IDENTIFICATION

- Small to medium tree (up to 100 feet tall)
- White bark peeling in papery strips
- Leaves are 4 inches long, deciduous, alternate, oval to round with toothed margins
- Forms catkins 0.5–1.4 inches long and nutlets with wings broader than the body

CONTROL METHODS

The Port recommends chemical control methods for European white birch:

Chemical Treatments

Saplings/seedlings can be dug up or pulled. Young, small trees can be cut/stump treated with glyphosate or mature trees can be drilled and injected as directed by Port staff. Mature trees should not be treated without first consulting Port staff.

- Roundup Custom for aquatic & terrestrial use (glyphosate):
  - *Rate*: Use a 50% solution immediately after cutting
  - *Time*: Apply during active growth and full leaf expansion
  - *Notes*: Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

NOTES

Cirsium arvense – Canada thistle (CIRARV), Class C

IDENTIFICATION

- Grows 1–4 feet tall
- May form dense, rhizomatous colonies
- Shoots emerge March–May; rosette formation follows with a period of vertical growth in mid-to-late June
- Blooms June through August
- Colonizes disturbed areas; generally considered an upland species but may be found in emergent wetlands

CONTROL METHODS

The Port recommends a combination of chemical, mechanical, and manual control methods for Canada thistle:

- Rosettes are to be treated chemically in the spring with the herbicide appropriate for the conditions where the infestation is found (see Chemical Treatments below).
- In May/June, plants that are bolting (undergoing vertical growth) are to be cut down before being allowed to produce flowers.
- In June/July, any flowers present are to be cut, bagged and disposed of in a landfill.
- In September/October, new rosettes may be spot-treated with the appropriate herbicide.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate): use when thistle infestation is within 60 feet of water body
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply when thistles are actively growing but past the bud growth stage. Fall applications must occur before the first killing frost. Thistles that were mowed or tilled and have rosettes at least 6 inches wide in late summer or fall can be suppressed with 0.75 pound acid equivalent/A glyphosate plus 0.5 to 1% non-ionic surfactant applied in 3 to 10 gallon/A water (max concentration 1.5%).
  - *Notes*: Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.
- Capstone (triclopyr): use only in upland conditions at least 60 feet from water bodies
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply from rosette to bud stage to actively growing thistle
  - *Notes*: Use a non-ionic surfactant. Capstone is a selective broadleaf herbicide that will not harm grasses.

NOTES

Cirsium vulgare – bull thistle (CIRVUL), Class C

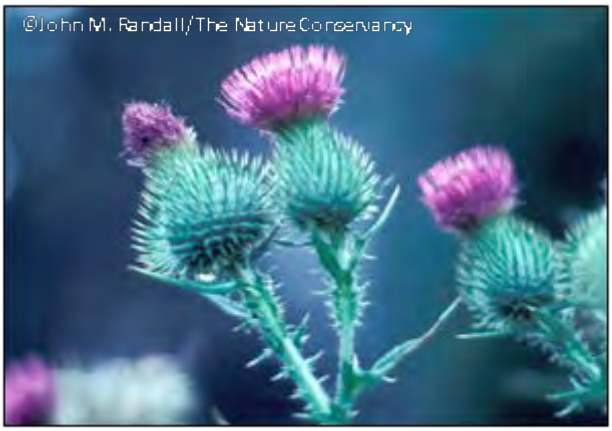
IDENTIFICATION

- Grows 2–6 feet tall
- Leaves are prickly and hairy on the upper leaf surface and covered in cotton-like webbed hairs on the underside
- Basal rosette can exceed 3 feet in diameter
- Blooms June through September
- Colonizes disturbed areas; generally considered an upland species but may be found in emergent wetlands

CONTROL METHODS

Similar to Canada thistle control measures on previous page.

NOTES



Clematis vitalba – evergreen clematis (CLEVIT), Class C

IDENTIFICATION

- Woody, perennial, climbing vine
- Leaves are divided pinnately with leaflets entire or upper lobed with stalk winding around supports
- Flowers are in loose clusters from leaf axils with 5 white/green petal-like sepals
- Very similar to native western white clematis (*C. ligusticifolia*)

CONTROL METHODS

The Port recommends a combination of manual and chemical means to control evergreen clematis:

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate): use when infestation is within 60 feet of water body
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply on leaves of actively growing vines in spring (after manually cutting back to waist height and removing lower section – see "Manual Removal"). Can also be applied directly to cut stems from spring to fall.
  - *Notes*: Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.
- Capstone (triclopyr): use only in upland conditions at least 60 feet from water bodies
  - *Rate*: Maximum 1.5% solution
  - *Time*: Can be applied to foliage and freshly cut stems of actively growing vines (except in early spring)
  - *Notes*: Use a non-ionic surfactant. Capstone is a selective broadleaf herbicide that will not harm grasses

Manual Removal

- Small plants and vines growing along the ground should be dug up and removed.
- Vines climbing in trees or shrubs should be either pulled out or cut and the stems treated with an herbicide appropriate for the conditions where the infestation is found (see "Chemical Treatments").
- Roots of this vine must be bagged, and disposed of in a landfill to avoid re-sprouting.

NOTES

Conium maculatum – poison hemlock (CONMAC), Class C

IDENTIFICATION

- Grows 6–8 feet tall, occasionally to 10 feet
- Leaves are shiny and finely dissected giving them a lacy or fern-like appearance
- Foliage gives off a musky odor, similar to dirty socks
- Stems are hollow and hairless with purple blotches (see photo, lower right)
- Blooms May through August; flowers are white and arranged in umbrella-like clusters near the ends of the branches
- Purple blotches on stems distinguish this species from native look-a-likes such as Angelica species (*Angelica* spp.), western water-hemlock (*Circuta douglasii*), and water parsley (*Oenanthe sarmentosa*). Additionally, poison hemlock has more deeply divided compound leaves than these species and is the only one of these plants with a distinctive musky odor
- Occurs primarily in uplands

WARNING: Poison hemlock is toxic and may irritate skin when handled—do not eat, and always wear gloves when handling and respirator masks when cutting with machines

CONTROL METHODS

The Port recommends a combination of chemical and mechanical means to control poison hemlock:

<u>Manual Removal</u>

- Plants should be dug up when possible making sure to remove the entire root.
- Flower heads should be cut, bagged, and disposed of in a landfill

<u>Chemical Treatments</u>

- <u>Roundup Custom for aquatic & terrestrial uses</u> (glyphosate): use when poison hemlock infestation is within 60 feet of water body
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply to actively growing plants before they begin to bolt
  - *Notes*: Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

NOTES

Convolvulus arvensis – field bindweed (CONARV), Class C

IDENTIFICATION

- Low-growing vine that will climb vertical plants and structures
- Leaves are arrow-shaped
- Blooms June through October; flowers are white to pink, trumpet-shaped, and 1 inch in diameter
- Bindweed is highly rhizomatous with extensive underground root/stem system
- This plant is typically found in upland conditions and not likely to occur in wetlands

CONTROL METHODS

The Port recommends the same chemical treatments for field bindweed and the larger morning glory vine found in our area, hedge bindweed (*Convolvulus sepium*). However, since hedge bindweed is more likely to climb native vegetation it is important to first remove it from other plants before applying herbicide.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate):
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply at full bloom early seed stage of maturity. Application on fall re-growth may provide some control.
  - *Notes*: Cover foliage thoroughly but avoid spray runoff. Repeat treatments may be needed for complete control. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

NOTES

Crataegus monogyna – English hawthorn (CRAMON), Class C

IDENTIFICATION

- Leaves are deeply lobed (like an oak leaf)
- Has showy, creamy-white flowers and clumps of red fruit that stay on the tree over winter
- Similar to native black hawthorn (*C. douglasii*), which does not have deeply lobed leaves

CONTROL METHODS

The Port recommends a combination of manual and chemical control methods for English hawthorn:

- Young plants should be hand-pulled in the spring before flowering occurs (make sure you have the correct ID—these plants are similar to black hawthorn)
- Large, more established plants should be cut and the stump treated with the appropriate herbicide for the conditions where the infestation is found (see Chemical Treatments below)
- Flowering plants should be cut/stump treated or pulled and removed from the site to reduce seed dispersal.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate): use when English hawthorn is within 60 feet of water body
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply to actively growing plants in the spring
  - *Notes*: Use a non-ionic surfactant. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.
- Capstone (triclopyr): use only in upland conditions at least 60 feet from water bodies
  - *Rate*: 1 to 1.5% concentration
  - *Time*: Apply any time the plants are actively growing
  - *Notes*: Use a non-ionic surfactant. Capstone is a selective broadleaf herbicide that will not harm grasses.

NOTES

Cytisus scoparius – Scotch broom (CYTSCO), Class C

IDENTIFICATION

- Grows up to 10 feet.
- Leaves are small and pressed close to stem; lower leaves are compound (3 leaflets), upper leaves simple
- Branch edges are strongly ridged
- Blooms late spring to early summer
- Flowers are bright yellow
- This plant is typically found in upland conditions and not likely to occur in wetlands

CONTROL METHODS

The Port recommends a combination of manual and chemical control methods for Scotch broom:

- Young plants should be hand-pulled in the spring before flowering occurs
- Large, more established plants should be cut and the stump treated with the appropriate herbicide for the conditions where the infestation is found (see Chemical Treatments below)
- Flowering plants should be cut/stump treated or pulled and removed from the site to reduce seed dispersal.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate): use when Scotch broom infestation is within 60 feet of water body
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply to actively growing plants in the spring
  - *Notes*: Use a non-ionic surfactant. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.
- Capstone (triclopyr): use only in upland conditions at least 60 feet from water bodies
  - *Rate*: 1 to 1.5% concentration
  - *Time*: Apply any time the plants are actively growing
  - *Notes*: Use a non-ionic surfactant. Capstone is a selective broadleaf herbicide that will not harm grasses.

NOTES

Daucus carota – Queen Anne's lace (DAUCAR), Class C


Doug Goldman @ USDA-NRCS PLANTS Database

IDENTIFICATION

- Fern-like/lacey leaves 2–6 inches long
- Flowers are white and in compact umbels blooming in late summer
- Stem is single and tall

CONTROL METHODS

The Port recommends manual removal of Queen Anne's lace:

- Hand-pull or weedwack flowering stalks when possible.
- In an effort to reduce herbicide use, no chemical treatments should be used to manage this species unless otherwise specified.

NOTES


Doug Goldman @ USDA-NRCS PLANTS Database

Dipsacus fullonum - Fuller's teasel (DIPFUL), Class C

IDENTIFICATION

- Grows to 6 feet or greater
- Stem leaves are lance-shaped and up to 10 inches long with spines on the underside
- Flowering stalk is armed with spines and is produced in the second year
- Blooms July through August
- The flowering heads are stiff and very spiny; small purple flowers bloom in one to a few horizontal rows around the head rather than the entire head at once
- Although considered an upland species, this plant can often be found near the edge of wetlands

CONTROL METHODS

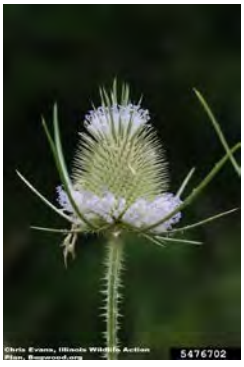
The Port recommends a combination of manual, chemical, and mechanical control methods for Fuller's teasel:

- Rosettes should be sprayed in the spring and fall with the herbicide appropriate for the conditions where the infestation is found (see Chemical Treatments below).
- Dig up rosettes whenever possible to reduce herbicide use.
- Bolting plants should be cut down before flowering begins.
- Flowering seed heads should be cut, bagged, and disposed of in a landfill.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial use (glyphosate): use on teasel infestations within 60 feet of water body
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply only to rosettes in the spring
  - *Notes*: Use a non-ionic surfactant. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.
- Capstone (triclopyr): use only in upland conditions at least 60 feet from water bodies
  - *Rate*: 1 to 1.5% concentration
  - *Time*: Apply only to rosettes in the spring
  - *Notes*: Use a non-ionic surfactant. Foliage must be thoroughly wet.

NOTES



Hedera helix – English ivy (HEDHEL), Class C

IDENTIFICATION

- Perennial, evergreen woody vine that can reach 90 feet in length
- Leaves are leathery and dark green, and borne on long leaf stalks
- Flowers, which are not present on the younger vines, are about 0.2 to 0.3 inch in diameter and white to yellow-green. Berry-like fruits appear in clusters, are green (unripe) to dark blue or black (ripe), and are about 0.24 to 0.36 inch in diameter
- Blooms in the fall
- Reproduces vegetatively (i.e., from stem fragments or by seed)
- Upland plant that can tolerate a wide variety of environmental conditions. It will invade riparian zones where soil has been disturbed by floods but won't grow in areas with a high water table or soil saturation

CONTROL METHODS

The Port recommends a combination of manual, mechanical, and chemical control methods for English ivy:

- Ivy vines found climbing trees or shrubs should be either pulled out or cut and the stems treated with Roundup.
- Large stands of ivy should be cut with weedwackers in January and immediately treated with Roundup Custom.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate):
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply to plant while in flower
  - *Notes*: Herbicide control measures should accompany a regular manual pulling regime to keep ivy vines from climbing trees and spreading over large areas. If the vine is growing up a tree, use caution as there is a danger of pulling branches off as you pull the ivy. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

NOTES

Ilex aquifolium – English holly (ILEAQU), Class C

IDENTIFICATION

- Evergreen shrub that can reach 15–50 feet
- Leaves are glossy, green, and thick with wavy edges lined with sharp spines
- Flowers are small and white; red berries are seen in the winter and are poisonous to humans

CONTROL METHODS

The Port recommends a combination of manual and chemical control methods for English holly:

- Young plants should be hand-pulled in the spring.
- Large, more established plants should be cut and the stump treated with the appropriate herbicide for the conditions where the infestation is found (see Chemical Treatments below).
- Flowering plants should be cut/stump treated or pulled and removed from the site to reduce seed dispersal.
- Foliar spraying of herbicide is not very effective as herbicide cannot easily penetrate its thick, waxy leaves.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate): use when English holly infestation is within 60 feet of water body
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply to actively growing plants in the spring
  - *Notes*: Use a non-ionic surfactant. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.
- Capstone (triclopyr): use only in upland conditions at least 60 feet from water bodies
  - *Rate*: 1 to 1.5% concentration
  - *Time*: Apply any time the plants are actively growing
  - *Notes*: Use a non-ionic surfactant. Capstone is a selective broadleaf herbicide that will not harm grasses.

NOTES

Leucanthemum vulgare – oxeye daisy (LEUVUL), Class C

IDENTIFICATION

- Basal leaves pinnately lobed and toothed; stem leaves are smaller and sessile
- One flower head per stem with fewer than 22 white "petals" (ray flowers)

CONTROL METHODS

The Port recommends manual removal of oxeye daisy:

- Hand-pull or weed-whack when possible.
- In an effort to reduce herbicide use, no chemical treatments should be used to manage this species unless otherwise specified.

NOTES

Lotus corniculatus – bird's-foot trefoil (LOTCOR), Class C

IDENTIFICATION

- Creeping to erect plant that forms dense patches up to 1.5 feet tall
- Leaves are deeply divided into 5 distinct leaflets; the two lowermost ones are attached directly to the main stem or branch. The margins of the leaves have straight, stiff hairs
- Blooms May through September; flowers are yellow, pea flower–shaped, and are arranged in tight compound flowering heads
- Bird's-foot trefoil can occur in either wetlands or uplands, and is often problematic; it thrives in moist open areas including wetland margins

CONTROL METHODS

The Port recommends chemical control methods for bird's-foot trefoil:

- During spring and summer when plants are in bloom spot-spray with the herbicide most appropriate for the conditions (see Chemical Treatments below).

Chemical Treatments

- Roundup Custom for aquatic & terrestrial use (glyphosate): use on infestations within 60 feet of water body
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply to spring plants and/or when in full bloom
  - *Notes*: Use LI 700 surfactant. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.
- Capstone (triclopyr): use only in upland conditions at least 60 feet from water bodies
  - *Rate*: 1 to 1.5% concentration
  - *Time*: Apply to spring plants and/or when in full bloom
  - *Notes*: Use a non-ionic surfactant

NOTES

Nymphaea odorata – American white waterlily (NYMODO), Class C

IDENTIFICATION

- Flowers are sweet-scented and white, cream, pink, or red in color
- Have long, branching, creeping rhizomes 0.5–1.0 inch in diameter that are densely covered with short black hairs
- Found in quiet shallow waters
- Blooms June to October

CONTROL METHODS

The Port recommends manual removal of American white waterlily:

- Dig up the entire rhizome and all plant parts (flowers and leaves) making sure to remove all roots.
- Deposit dug up plant material onto upland shore area.

NOTES

Phalaris arundinacea – reed canarygrass (PHAARU), Class C

IDENTIFICATION

- Rhizomatous, perennial grass
- Grows up to 7 feet and higher
- Mature leaves are bluish-green, flat, 0.75 inch wide and about 12 inches long
- May be identified by a very long ligule (up to 0.4 inch)
- Blooms June through August in a dense panicle
- Forms dense stands in wetlands
- May be confused with the native rice-cut grass (*Leersia oryzoides*), so correct identification is essential

CONTROL METHODS

The Port recommends a combination of hydrologic manipulation, and manual, mechanical, and chemical means to control reed canarygrass:

- In spring new growth that is not in standing water should be spot-sprayed with Roundup.
- In summer, before seed heads come on, tall patches should be cut with weed wackers and spot-sprayed with Roundup after a few weeks of new growth.
- Seed heads should be cut, bagged, and disposed of in a landfill. Remaining foliage should be sprayed.
- Hydrologic manipulation is used to control this species only at the Vanport Wetlands site where a water control structure allows the Port to hold water on-site over the winter and spring months, releasing it slowly starting in June or July. After the water has been drawn off the site, mechanical and chemical methods are used to control remaining patches in the wetland.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate):
  - *Rate*: Maximum 1.5% solution with LI 700
  - *Time*: Apply to actively growing plants in spring through fall
  - *Notes*: Use non-ionic surfactant (LI 700 recommended). Thoroughly wet foliage, but avoid runoff. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

NOTES

Prunus lusitanica – Portugal laurel (PRULUS), Class C

IDENTIFICATION

- Evergreen shrub with dark green, glossy toothed leaves
- Flowers are white and fragrant; fruit is dark purple
- Shrubs are densely branches; young branches are red in color

CONTROL METHODS

The Port recommends a combination of manual and chemical control methods for Portugal laurel:

- Young plants should be hand-pulled in the spring.
- Large, more established plants should be cut and the stump treated with the appropriate herbicide for the conditions where the infestation is found (see Chemical Treatments below).
- Flowering plants should be cut/stump treated or pulled and removed from the site to reduce seed dispersal.
- Foliar spraying of herbicide is not very effective due to the thick, waxy leaves.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate): use when Portugal laurel infestation is within 60 feet of water body
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply to actively growing plants in the spring
  - *Notes*: Use a non-ionic surfactant. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.
- Capstone (triclopyr): use only in upland conditions at least 60 feet from water bodies
  - *Rate*: 1 to 1.5% concentration
  - *Time*: Apply any time the plants are actively growing
  - *Notes*: Use a non-ionic surfactant. Capstone is a selective broadleaf herbicide that will not harm grasses.

NOTES

Robinia pseudoacacia – black locust (ROBPSE), Class C


Jennifer Anderson @ USDA-NRCS PLANTS Database


W.D. Brush @ USDA-NRCS PLANTS Database

IDENTIFICATION

- Bark is dark reddish-brown to black with a pair of thorns (0.5 to 0.75 inch long) growing at each node
- Leaves pinnately compound and are 8–14 inches long with 7–19 short leaflets (see picture on the right)
- Has creamy white, sweetly fragrant flowers with 5 petals; blooms May and June
- Produces flat brown pods (2–4 inches long) with many seeds

CONTROL METHODS

The Port recommends a combination of manual and chemical control methods for black locust:

- Young plants should be hand-pulled in the spring.
- Large, more established plants should be cut and the stump treated with the appropriate herbicide for the conditions where the infestation is found (see Chemical Treatments below).
- Flowering plants should be cut, stump treated, bagged and disposed of in a landfill.
- Make sure the entire tree is dead before placing it on-site as it may re-grow from cut woody material.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate): use when black locust infestation is within 60 feet of water body
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply to actively growing plants in the spring
  - *Notes*: Use a non-ionic surfactant. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.
- Capstone (triclopyr): use only in upland conditions at least 60 feet from water bodies
  - *Rate*: 1 to 1.5% concentration
  - *Time*: Apply any time the plants are actively growing
  - *Notes*: Use a non-ionic surfactant. Capstone is a selective broadleaf herbicide that will not harm grasses.

NOTES

Rosa rubiginosa – Sweetbriar rose (ROSEGL), Class C

IDENTIFICATION

- 3–10 foot shrub
- Olive-green stems covered with many curved thorns
- Leaves have 5–7 oval, double-toothed leaflets
- 1–8 flowers (0.5–0.75 inch long) in loose clusters with 5 prominent sepals at the base of each flower

CONTROL METHODS

The Port recommends a combination of mechanical, and chemical means to control Sweetbriar rose:

- In spring spray new growth with the herbicide appropriate for the conditions.
- Mature shrubs can be cut and injected with herbicide. Shrubs should not be treated without first consulting Port staff.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate): use on infestations within 60 feet of water body
    - *Rate*: 1 to 1.5% solutions
    - *Time*: Apply to actively growing plants in the spring
    - *Notes*: Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.
- Capstone (triclopyr): use only in upland conditions at least 60 feet from water bodies
    - *Rate*: Maximum 1.5% solution
    - *Time*: Apply when plants are actively growing
    - *Notes*: Use a non-ionic surfactant. Capstone is a selective broadleaf herbicide that will not harm grasses.

NOTES

Rosa multiflora – multiflora rose (ROSMUL), Class C

IDENTIFICATION

- Shrub or climbing vine that ranges from 5–12 feet tall
- Leaves are pinnately divided with 5–11 leaflets
- Flowers grow in clusters, are white to pink, and fragrant
- Small clusters of red fruit form in summer and continue into winter (more leathery in winter)

CONTROL METHODS

Similar to Sweetbriar rose control measures on previous page.

NOTES

Rubus armeniacus – Himalayan blackberry (RUBARM), Class C

IDENTIFICATION

- Perennial shrub with sprawling or climbing growth habit
- Leaves are deeply divided into 3–5 ovate toothed leaflets
- Flowers have five white or pinkish petals and are 1 inch or more in diameter
- Produces abundant sweet berries from mid to late summer
- Found in disturbed upland sites and along ditches and wetlands

CONTROL METHODS

The Port recommends a combination of manual, mechanical, and chemical means to control Himalayan blackberry:

- In spring, spray new growth with the herbicide appropriate for the conditions. Young plants should be hand-pulled when possible (wearing thick gloves).
- In summer, blackberry should be cut and pulled away from desirable vegetation.
- In fall, blackberry less than 2 feet tall can be sprayed with the herbicide appropriate for the conditions; larger stands should be cut manually or mechanically and then sprayed in spring.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate): use on infestations within 60 feet of water body
    - *Rate*: 1 to 1.5% solutions
    - *Time*: Apply in September to October when canes are actively growing and after berries are formed. Fall treatments must be made before a killing frost.
    - *Notes*: Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.
- Capstone (triclopyr): Use only in upland conditions at least 60 feet from water bodies
    - *Rate*: Maximum 1.5% solution
    - *Time*: Apply when plants are actively growing
    - *Notes*: Use a non-ionic surfactant. Capstone is a selective broadleaf herbicide that will not harm grasses.

NOTES

Rubus laciniatus – cutleaf blackberry (RUBLAC), Class C

IDENTIFICATION

- Leaflets deeply incised, lower surfaces are green and sparsely to moderately hairy
- Berries are round, glabrous, black, and 1.5 centimeters (cm) in diameter

CONTROL METHODS

Similar to Himalayan blackberry control measures on previous page.

NOTES

Senecio jacobaea – tansy ragwort (SENJAC), Class C

IDENTIFICATION

- Lower leaves are 8–10 inches and deeply pinnately divided
- 13 yellow ray flowers make up the flower head with numerous heads closely clustered on the top of the stem
- Stems are 1–6 feet tall
- Toxic to cattle and horses

CONTROL METHODS

The Port recommends a combination of manual, mechanical, and chemical means to control tansy ragwort:

- If plants to be controlled occur within 60 feet of water, then it is recommended they be cut down with weed wackers. If flowering then plants should be hand-pulled, bagged, and disposed of in a landfill.
- If plants occur outside of 60 feet from water, they can be sprayed with Capstone in the spring.

Chemical Treatments

- Capstone (triclopyr): use only in upland conditions at least 60 feet from water body
  - *Rate*: Maximum 1.5% solution
  - *Time*: Apply when plants are actively growing
  - *Notes*: Use a non-ionic surfactant. Capstone is a selective broadleaf herbicide that will not harm grasses.

NOTES

Solanum dulcamara – climbing nightshade (SOLDUL), Class C

IDENTIFICATION

- Rhizomatous, climbing perennial vine
- Leaves are generally ovate with prominent basal lobes
- Blooms July through August
- Flowers are deep purple with bright yellow anthers
- Produces oval-shaped fruit that vary in color from yellow to orange to bright red
- Found in wetland and upland habitats and along ditches and waterways

CONTROL METHODS

The Port recommends a combination of manual and chemical means to control climbing nightshade:

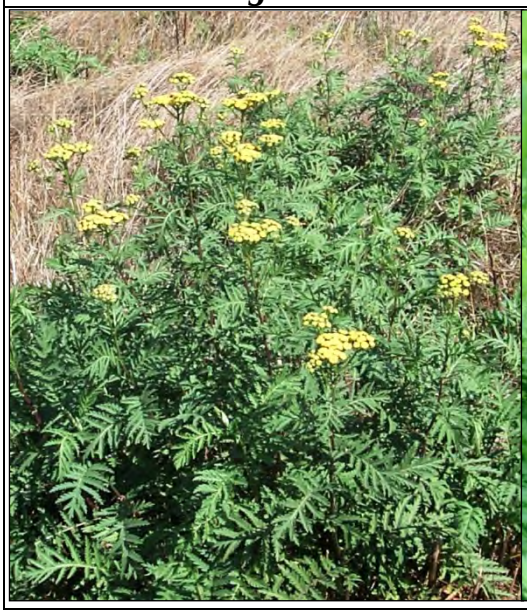
- In spring, young plants can be sprayed with Roundup.
- In summer, once flowers set, entire plants should be pulled, bagged and disposed of in a landfill. Hand-pull the stem close to the ground and pull or dig up the roots, taking care not to break the slender roots. This method is most effective with young plants and new infestations.
- In late summer to early fall, plants can be sprayed with Roundup.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate):
  - *Rate*: Maximum 1.5% solution plus LI 700
  - *Time*: Apply in late summer to early fall
  - *Notes*: Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

NOTES:

Tanacetum vulgare – common tansy (TANVUL), Class C



IDENTIFICATION

- Rhizomatous, perennial herb
- Grows to 6 feet
- Leaves are pinnately divided and toothed
- Flowers are a tightly compressed disk of yellow flowers
- The plant has a spicy odor
- Usually found in upland conditions but may occur near wetlands

CONTROL METHODS

The Port recommends a combination of manual, mechanical, and chemical means to control common tansy:

- If plants to be controlled occur within 60 feet of water, then it is recommended they be cut down with weed wackers. If flowering then plants should be hand-pulled, bagged, and disposed of in a landfill.
- If plants occur more than 60 feet from water, they can be sprayed with Capstone in the spring.

Chemical Treatments

- Capstone (triclopyr): use only in upland conditions at least 60 feet from water body
    - *Rate*: Maximum 1.5% solution
    - *Time*: Apply when plants are actively growing
    - *Notes*: Use a non-ionic surfactant. Capstone is a selective broadleaf herbicide that will not harm grasses.

NOTES

Verbascum blattaria – moth mullein (VERBLA), Class C

IDENTIFICATION

- Stem is 1.5 to 5 feet in height with toothed leaves becoming progressively smaller
- Flowers are 5-lobed, bright yellow (sometimes white), and 0.75 to 1.25 inches wide
- Rosette leaves are dark green, reddish-tinged, and usually shallowly lobed and toothed

CONTROL METHODS

The Port recommends manual removal of moth mullein:

- Hand-pull or weed-whack when possible.
- In an effort to reduce herbicide use, no chemical treatments should be used to manage this species unless otherwise specified.

NOTES

Verbascum thapsus – common mullein (VERTHA), Class C

IDENTIFICATION

- Rosette is large with fuzzy leaves
- Second year of growth stem is 2–6 feet tall with fuzzy, alternate, overlapping light green leaves
- Flowers are 5-lobed, yellow, and positioned on terminal spikes

CONTROL METHODS

The Port recommends manual removal of common mullein:

- Hand-pull or weed-whack when possible.
- In an effort to reduce herbicide use, no chemical treatments should be used to manage this species unless otherwise specified.

NOTES

Cichorium intybus – chicory (CHIINT), Class D

IDENTIFICATION

- Perennial herb with milky juice
- 1–6 feet tall with spreading branches
- Rosette: leaves are 2–10 inches long, oblanceolate, petiolate, toothed, and often pinnately parted
- Upper leaves are reduced, sessile, and sometimes entire
- Flowers are blue to purple and 1.5 inches across

CONTROL METHODS

The Port recommends manual removal of chicory:

- Hand-pull or weed-whack when possible.
- In an effort to reduce herbicide use, no chemical treatments should be used to manage this species unless otherwise specified.

NOTES

Lysimachia nummularia – creeping Jenny (LYSNUM), Class W

IDENTIFICATION

- Perennial, forb, groundcover
- Leaves are opposite and rounded; 0.5–1 inch long and nearly as wide
- Blooms June through August; flowers are yellow and nearly as large as the leaves
- Creeping Jenny is found in seasonal wetlands and may form a dense mat, outcompeting more desirable native vegetation

CONTROL METHODS

Although the city ranks creeping Jenny as a Class W invasive, the Port has found this plant to be problematic in wetlands. The Port recommends this species be treated with glyphosate during the growing season.

Chemical Treatments

- Roundup Custom for aquatic & terrestrial uses (glyphosate): use on infestations within 60 feet of water body
    - *Rate*: Maximum 1.5% solution
    - *Time*: Apply to spring plants and/or when in full bloom
    - *Notes*: Use LI 700 surfactant. Glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, so caution should be used to avoid overspray onto desirable plants.

NOTES

S. Wilson Port of Portland

2.2 Other Species to Know

Other than the species profiled in the preceding section, Port landscape contractors are expected to familiarize themselves with the following species as they may occur or are known to occur on Port properties. If one of the following species is found on a site, contact the Port mitigation site specialist for treatment instructions.

Botanical Name	Common Name	Botanical Name	Common Name
Alliaria petiolata	Garlic mustard	*Ludwigia peploides*	floating primrose-willow
Anthriscus caucalis	bur chervil	*Melilotus officinalis*	sweetclover
Cortaderia selloana	Pampas grass	*Phragmites australis*	Common reed
Cynodon dactylon	Bermudagrass	*Polygonum sachalinense*	Giant knotweed
Cynoglossum officinale	gypsyflower	*Prunus laurocerasus*	cherry laurel
Hypericum perforatum	Common St. Johnswort	*Raphanus raphanistrum*	wild radish
Lathyrus sylvestris	flat pea		

SECTION 3 - HERBICIDES

3.1 General Herbicide Information and Precautions

The terms *herbicide* and *pesticide* are both used in this section and in Appendix B, particularly in the discussion of regulations, but they are not strictly interchangeable. An herbicide is simply a type of pesticide used to control or kill unwanted plants. Thus, all herbicides are pesticides but not vice-versa. General herbicide terminology and a list of general precautions to use when applying herbicides are listed below.

3.1.1 Surfactants

Specific surfactants are discussed in Section 3.2. Surfactants are chemicals that are mixed with herbicides. These substances provide a variety of functions and, when used properly, increase the efficacy of certain herbicides. They can improve the emulsifying, dispersing, spreading, wetting, or other surface-modifying properties of liquids (National Oceanic and Atmospheric Administration [NOAA] 2004). By increasing the ability of the herbicide to stick to leaves, or other target tissues, surfactants can reduce drift and dripping of chemicals into the soil or desirable plants.

3.1.2 Selective and Non-selective Herbicides

Herbicides are often described as being *non-selective* or *selective*. A non-selective herbicide will kill all types of plants—grasses, broadleaf herbs, deciduous and evergreen trees and shrubs, and so on. A selective herbicide kills only certain types of plants. For example one type of herbicide may be selective for broadleaf herbs but will not harm grasses, whereas another selective herbicide may only kill certain grasses, such as crabgrass for instance.

3.1.3 Post-emergence and Pre-emergence Herbicides

Herbicides are also often described as being *post-emergence* or *pre-emergence*. A post-emergence herbicide is applied at some point after plants emerge, whereas a pre-emergence herbicide is applied before seeds germinate or shoots penetrate the soil surface. Some types of herbicides are effective in either post-emergence or pre-emergence applications. All the herbicides discussed below will be applied post-emergence. Pre-emergence herbicides are not allowed for use in Port natural areas.

3.1.4 Adaptive Management

The ongoing herbicide treatment of invasive plant species at Port mitigation sites and natural areas will be adaptively managed in order to most effectively control the plants and to respond to changing regulations. The efficacy of the herbicides will be monitored (see Section 5.2). If a particular herbicide is not successful in eradicating or controlling a target species, then the managers will use a different herbicide or method authorized for use in that area. If two herbicides with different active ingredients are equally effective in controlling a target species, then periodic rotation of the herbicides, for instance every few years, is suggested to prevent development of herbicide resistance in the target plants.

3.1.5 General Precautions Checklist (All Herbicides)

- Minimize herbicide applications where possible by using manual weed removal methods (see Section 5.5).
- Always read and follow all instructions on the product label (see Appendix A for more detail).
- Always read the material safety data sheet (MSDS) prior to herbicide use (see Appendix A).
- Always read the herbicide-specific use restriction subsections and checklists in this section.
- Apply herbicides in a manner consistent with all state and federal laws pertaining to application techniques, rates, record keeping, permitting, and licensing/certification of herbicide applicators.
- Contractors should take a copy of this *Vegetation Management Plan* to sites during applications.
- If there is any uncertainty regarding a plant's identity, provide a plant sample or representative photograph to the Port's mitigation site specialist for proper identification.
- Wear appropriate protective clothing or other gear, as suggested on the product label, during mixing and application of herbicides.
- Only apply the herbicides indicated, on a site- and plot-specific basis, as indicated on the site maps in Section 7. Any changes must be approved by the mitigation site specialist.

- Perform regular equipment maintenance activities to avoid leaks, spills, and other unintended discharges from application, mixing, and loading activities.
- Maintain pesticide application equipment in proper operating condition by calibrating, repairing, and cleaning the equipment to ensure effective and accurate applications.
- Assess weather conditions in the treatment area to ensure consistency with all applicable pesticide application requirements.
- Implement best management practices (Section 5) regarding the avoidance of introduction and spread of invasive species.
- At present, only approved glyphosate herbicides are permitted by the Port for use within 60 feet of water bodies or wetlands. Please refer to the maps in Section 7 to determine the restricted spray areas.
- When spot-spraying herbicide, use only a hand wand from a low-pressure backpack sprayer with a maximum 0.5 gallon per minute nozzle.
- When spot-spraying, only equipment with a single nozzle is permitted.
- All herbicide solutions for foliar treatments will be mixed with water to give an herbicide concentration no greater than 1.5%.
- Cut/stump treatments will be mixed at 50% solution or as indicated on the product label.
- Plants will be sprayed at the optimum height to allow for adequate leaf surface coverage, ease of application, minimization of drift, and minimization of drip.
- No spraying is permitted if wind speeds exceed 5 miles per hour or if rain is forecast within 24 hours of spraying.
- All contractors will have a licensed pesticide applicator on-site during application
- The Port's spill reporting procedures for all Port properties must be followed and are provided in Appendix C.
- No chemical storage, mixing, or cleaning of equipment is permitted on-site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.
- Accidental spray of native plants resulting from herbicide applications will be reported to the mitigation site specialist on the day of the incident.
- Herbicide application will be sent monthly to the mitigation site specialist (see Appendix D for the herbicide application report to be sent)
- If any wildlife, including fish, are found dead, sick, or injured as a possible result of the herbicide application activities, notify the mitigation site specialist immediately.

3.1.6 Recycling Procedures for Empty Herbicide Containers

To protect the environment and decrease landfill waste we would like to encourage recycling of used herbicide containers used at Port mitigation sites. The following steps need to be taken before depositing herbicide containers at processing facilities (Peachey et al. 2013):

- Containers must be dry, clean, and have their labels and foil seals removed, as required by landfills.
- Hard plastic lids need to be sorted into a separate container for recycling.
- Containers 5 gallons or smaller will be accepted whole.
- For more information on recycling services in the Portland area call: 503-234-300 or visit the Metro website at: www.oregonmetro.gov

3.2 Specific Herbicide Information and Instructions

The Port currently has approved only glyphosate-, tricoplyr- and metsulfuron-based herbicides for use at mitigation sites, including those described in this section. At the end of the use restrictions for each herbicide there is a checklist that summarizes the restrictions and other precautions pertaining to its use. Refer to Section 7 (individual site maps) to determine no-spray zones or restricted areas within the sites before working at the site. MSDSs provided in Appendix A should be referred to for the safe use of these chemicals.

NOTE: The use restriction subsections discuss limits on use of each herbicide. There are multiple sources for these restrictions. Many restrictions are printed on the product labels and often originate directly from the EPA's findings on the actions, toxicity, etc. of the specific herbicides. In addition some restrictions are a result of specific Oregon laws, either Oregon Administrative Rules (OARs [2004]) or Oregon Revised Statutes (ORSs [2003]). Other restrictions come from a 2004 NOAA Fisheries' Biological Opinion (BO) pertaining to U.S. Army Corps of Engineers (Corps) permit numbers 200100247 and 200100553 for the Port's Rivergate Enhancement Area and Toyota Facility at Terminal T-4 (Toyota Riverbank) sites. Finally, some of the restrictions result from a ruling in U.S. District Court in the lawsuit *Washington Toxics Coalition et al. v. the EPA* to restrict the use of 54 pesticides near water bodies that may contain threatened or endangered salmonid species in Oregon, Washington, and California (U.S. District Court of Seattle 2004). For a more detailed discussion of these restrictions and ongoing legal cases please refer to Appendix B.

3.2.1 Roundup Custom for Aquatic & Terrestrial Use: 53.8% Isopropylamine Salt of Glyphosate

Herbicide Action:
Glyphosate (the active ingredient in Rodeo Custom for Aquatic & Terrestrial Use) is a non-selective translocated herbicide that inhibits protein synthesis by disrupting the synthesis of several amino acids (William et al. 2004). Glyphosate is a rather slow-acting herbicide; symptoms appearing within a week include chlorosis (yellowing) and stunting of the youngest leaves and stem leader, but it may take more than 2 weeks for the plant to die (Connecticut Invasive Plant Working Group [CIPWG] 2004). Symptoms and death typically occur more rapidly in young, actively growing plants and when temperatures are warm. Woody plants are most susceptible to glyphosate when treated in late summer or fall, but damage may not be

apparent until the following spring; leaves either fail to emerge from buds or are dwarfed, misshapen, and yellow (CIPWG 2004).

Target Plants:
Roundup Custom is used for the control of annual or perennial broadleaf terrestrial herbaceous, woody plants, and trees that have encroached within 60 feet of a water body. Since glyphosate is a non-selective herbicide which kills both annual broadleaf weeds and grasses, caution should be used to avoid overspray onto desirable plants. Areas of large infestations sprayed with Roundup Custom should be re-seeded with the appropriate native grasses in the spring or fall.

Recommended Mix Rates and Surfactants:
Roundup Custom will be diluted to a maximum rate of 1.5% when mixed with water and will be used in a 1 to 1.5% solution depending on specific conditions (plant species, stage of growth, season).

The combined total of all treatments must not exceed 8 quarts of product (8 pounds of glyphosate acid) per acre per year.

Use Restrictions:
Glyphosate, the active ingredient in Roundup Custom, has several aspects that make it the best choice in or near environmentally sensitive areas such as wetlands or water bodies. The glyphosate formulation contained in Roundup Custom is “practically nontoxic” to freshwater fish and aquatic invertebrate animals (Appendix A). Additionally glyphosate is readily decomposed by microorganisms in the soil or water and does not persist in the environment (CIPWG 2004).

Roundup Custom is an aqueous solution of isopropylamine salt of glyphosate with which the manufacturer (Monsanto Company) recommends the use of a non-ionic surfactant. Examples of non-ionic surfactants are LI 700 (from Loveland Industries Inc.) and Agri-Dex (from Setre Chemical Company). These two surfactants are less toxic to fish and other aquatic organisms than many other surfactants. At present, these will be the only two surfactants that are permitted by the Port for use in mitigation sites and natural areas. The use of one of the two approved surfactants with Roundup Custom is required. This restriction originates from a 2004 BO (NOAA 2004) issued by NOAA Fisheries (formerly National Marine Fisheries Service [NMFS]) for the Rivergate Enhancement Area and the Toyota T-4 sites in conjunction with the re-issuance of Corps permit numbers 200100247 and 200100553. The Port extends this restriction to all the mitigation and natural area sites in this plan.

Checklist:

- Refer to the General Precautions checklist in Section 3.1.
- Always read and follow all instructions on product label and MSDS.
- Only the surfactants LI 700 or Agri-Dex will be used with Roundup Custom.
- Roundup Custom and Rodeo are the only herbicides permitted in wetlands or within 60 feet of any body of water.
- There will be no more than three main applications per year with limited spot-spraying taking place outside these three main times.

- Roundup Custom is a non-selective herbicide; exercise caution when applying in fields dominated by native, or otherwise desirable, grass species.

3.2.2 Capstone Dow AgroSciences: 2.22% triisopropanolammonium salt of 2-pyridine carboxylic acid, 16.22% triethylamine salt of [93,5,6-trichloro-2-pyridinyl)oxy] acetic acid, 81.56% other ingredients

Herbicide Action:
Triclopyr, the active ingredient in Capstone, is a selective post-emergence herbicide that regulates plant growth by mimicking the action of natural plant hormones (William et al. 2004). It is most effective when applied to actively growing plants. It is a fast acting herbicide; most herbaceous plants sprayed with triclopyr show some effects within 24 hours and will often die within a few days (CIPWG 2004). Woody plants sprayed with triclopyr in the fall, however, may not show the effects until the following spring (CIPWG 2004).

Targeted Plants:
Capstone provides control of broadleaf terrestrial herbaceous and woody plants (e.g., Scotch broom, blackberry) and is *not* for use on aquatic plants. Capstone will not harm most grasses.

Recommended Mix Rates and Surfactants:
For broadleaf herbaceous weed control using backpack sprayers, Capstone will be diluted to a maximum of 1.5% when mixed with water. According to the product label, the approximate amount of active ingredient used shall not exceed 9 pints (0.11 lb acid equivalent) per acre per annual growing season as a result of broadcast, spot, or repeat applications.

For cut/stump treatments of invasive trees or shrubs, Capstone may be used undiluted by painting the freshly cut (within 5 minutes of cutting) surface with the herbicide. The cambium area just below the bark is the most important area to treat when using this method.

The product label recommends the use of a high-quality non-ionic surfactant with at least 80% active ingredient for post-emergence applications. At the Rivergate Enhancement Area and the Toyota Riverbank sites, the only surfactants permitted are LI 700 and Agri-Dex (NOAA 2004).

Use Restrictions:
Capstone is to be used to control upland invasive broadleaf weeds at least 60 feet from wetlands or water bodies. Capstone is <u>not</u> meant for aquatic use.

Checklist:
- Refer to the General Precautions checklist in Section 3.1.
- Always read and follow all instructions on product label and MSDS.
- Capstone is not permitted in any wetland or within 60 feet of any water body.
- Capstone is not permitted in any ditches when water is present.
- All Capstone solutions will be mixed with water to give an herbicide concentration no greater than 1.5% except when used for cut/stump treatment.
- The use of non-ionic surfactants is required. The Port allows the use of LI 700 or Agri-Dex surfactants only.

3.2.3 RODEO Dow AgroSciences (53.8 % glyphosate)

Herbicide Action:
As discussed above, glyphosate (the active ingredient in Rodeo) is a non-selective translocated herbicide that inhibits protein synthesis by disrupting the synthesis of several amino acids (William et al. 2004). Glyphosate is a rather slow-acting herbicide; symptoms appearing within a week include chlorosis (yellowing) and stunting of the youngest leaves and stem leader, but it may take more than 2 weeks for the plant to die. Symptoms and death typically occur more rapidly in young, actively growing plants and when temperatures are warm. Woody plants are most susceptible to glyphosate when treated in late summer or fall, but damage may not be apparent until the following spring; leaves either fail to emerge from buds or are dwarfed, misshapen, and yellow.

Target Plants:
Rodeo is used for the control of annual or perennial broadleaf terrestrial herbaceous, woody plants, and grasses that have encroached within 60 feet of a water body. It is also appropriate for use against a wide variety of aquatic weeds (William et al. 2004). Since it is non-selective, exercise caution when using it in areas growing desirable grass species since the product will kill the desirable grasses too. Areas of large infestations sprayed with Rodeo should be re-seeded with the appropriate native grasses in the spring or fall.

Recommended Mix Rates and Surfactants:
Rodeo will be diluted to a maximum rate of 1.5% when mixed with water. It will be used in a 1 to 1.5% solution depending on specific conditions (plant species, stage of growth, season). The approximate amount of active ingredient used shall be 0.4 lbs per acre per application at the Rivergate Enhancement Area and the Toyota T-4 sites, but application amounts at other Port sites may be greater. The mix rate of added surfactants (LI 700 or Agri-Dex, see below) will be between 0.5 and 1.5% when mixed with *undiluted* herbicide. The herbicide will then, as described above, be diluted with water.

Use Restrictions:
Glyphosate, the active ingredient in Rodeo, has several aspects that make it the best choice in or near environmentally sensitive areas such as wetlands or water bodies. The glyphosate formulation contained in Rodeo is considered to be “practically nontoxic” to freshwater fish and aquatic invertebrate animals (NOAA 2004). Some other formulations (e.g., Roundup) that contain surfactants are considered to be “moderately to slightly toxic” to freshwater fish (NOAA 2004). Additionally, glyphosate is readily decomposed by microorganisms in soil or water and does not persist in the environment (CIPWG 2004).

Rodeo is an aqueous solution of the isopropylamine salt of glyphosate, with which the manufacturer (Dow AgroSciences 2002b) recommends the use of a non-ionic surfactant such as LI 700 (from Loveland Industries Inc.) or Agri-Dex (from Setre Chemical Company). At present, these are the only two surfactants that are permitted by the Port for use at mitigation sites and natural areas. These two surfactants are less toxic to fish and other aquatic organisms than many other surfactants. The restricted use of these two surfactants with Rodeo originates from a 2004 BO (NOAA 2004) issued by NOAA Fisheries (formerly NMFS) for the Rivergate Enhancement Area and the Toyota T-4 sites in conjunction with the re-issuance of Corps permits 200100247 and 200100553. The Port extends this restriction to all the mitigation and natural area sites in this plan.

Checklist:

- Refer to the General Precautions checklist in Section 3.1.
- Always read and follow all instructions on product label.
- Always read the MSDS and follow its guidelines.
- Only the surfactants LI 700 or Agri-Dex will be used with Rodeo.
- Rodeo is the only herbicide permitted in wetlands or within 60 feet of any water body.
- There will be no more than three main applications per year with limited spot-spraying taking place outside these three main times.
- Rodeo is a non-selective herbicide; exercise caution when applying in fields dominated by native, or otherwise desirable, grass species.

3.2.4 GARLON 3A - Dow AgroSciences: 44.4% triclopyr triethylamine salt

Herbicide Action:
Triclopyr amine, the active ingredient in Garlon 3A, is a selective post-emergence herbicide that regulates plant growth by mimicking the action of natural plant hormones (William et al. 2004). It is most effective when applied to actively growing plants. It is a fast acting herbicide; most herbaceous plants sprayed with triclopyr show some effects within 24 hours and often die within a few days (CIPWG 2004). Woody plants sprayed with triclopyr in the fall, however, may not show the effects until the following spring (CIPWG 2004).

Targeted Plants:
Garlon 3A is used for the control of broadleaf terrestrial herbaceous and woody plants (e.g., Scotch broom) and is *not* for use on aquatic plants. Because it is selective for broadleaf plants, it will not harm most grasses or sedges when used at recommended rates (CIPWG 2004).

Recommended Mix Rates and Surfactants:
Garlon 3A will be diluted to a maximum of 1.5% when mixed with water. Garlon 3A will be used in a 1 to 1.5% solution depending on specific conditions (plant species, stage of growth, season). The approximate amount of active ingredient used shall be 0.04 lbs per acre per application.

The product label recommends the use of a non-ionic agricultural surfactant for all applications (Dow AgroSciences 2003). At the Rivergate Enhancement Area and the Toyota T-4 sites, the only surfactants permitted are LI 700 and Agri-Dex. While the use of surfactants with Garlon 3A is not required, it is recommended (NOAA 2004).

Use Restrictions:
As of January 2004, U.S. District Court of Seattle has ruled that the EPA's finding of "no effect" for the active ingredient in Garlon 3A (triclopyr triethylamine [triclopyr TEA]) has excluded it from greater restrictions near water bodies with protected threatened or endangered salmon and steelhead species in Washington, Oregon, and California (U.S. District Court of Seattle 2004; Appendix B). Nonetheless, a NOAA BO for the Rivergate Enhancement Area and the Toyota T-4 sites restricts this herbicide to 25 feet from wetlands or water bodies that may contain listed fish species. The Port will extend the buffer to 60 feet and apply those restrictions to all its sites.

Checklist:

- Refer to the General Precautions checklist in Section 3.1.
- Always read and follow all instructions on product label and MSDS.
- Garlon 3A is not permitted in any wetland or within 60 feet of any water body.
- Garlon 3A is not permitted in any ditches when water is present.
- All Garlon 3A solutions will be mixed with water to give an herbicide concentration no greater than 1.5%.
- The use of non-ionic surfactants is required. The Port allows the use of LI 700 or Agri-Dex surfactants only.

3.2.5 ESCORT XP - DuPont: 60% metsulfuron methyl

Herbicide Action:
Escort XP is a dry, flowable granule to be mixed in water and applied as a foliar spray. The active ingredient, metsulfuron, is a selective post-emergence herbicide that interferes with the action of an enzyme, resulting in the rapid cessation of cell division in roots and shoots (William et al. 2004).

Targeted Plants:
Escort XP is selective for broadleaf herbaceous or woody weeds. Weeds should be actively growing when treated. Best results occur when applications are made to annual weeds less than 10 cm (~4 inches) tall or broad, or to perennial weeds up to the early bud stage.

Recommended Mix Rates and Surfactants:
The product label publishes a wide range of mix and application rates depending on target species and volumes of spray to be used. The use of surfactants with this product is generally recommended by the manufacturer, except in a few cases as noted on the label. Surfactants should be approved by the EPA and should contain a minimum of 80% active ingredient. The surfactant should be mixed at a minimum concentration of 0.25% volume/volume with the spray solution (e.g., 1 quart per 100 gallons of spray solution). The manufacturer does not recommend the use of surfactants that contain acetic acid (e.g., LI 700; DuPont 2007).

Use Restrictions:
Metsulfuron methyl is not among the 54 herbicides reviewed by the U.S. District Court of Seattle and thus does not have any special new restrictions near water bodies with listed threatened or endangered species of salmon or steelhead (U.S. District Court of Seattle 2004).

While the label indicates that it is permissible to use this product in "…low lying areas where water is drained but may be isolated in pockets…," the Port requires that this product *not* be used in or near wetlands, waterways, or any area containing standing water even if "isolated."

Checklist:

- Refer to the General Precautions checklist in Section 3.1.
- Always read and follow all instructions on product label and MSDS.

- Never use Escort in or near *any* water bodies or wetlands. At present only Rodeo is permitted by the Port for use within 60 feet of water bodies or wetlands. Please refer to the maps in Section 7 to determine restricted spray areas.
- There will be only one main application per year with limited spot-spray follow-up.

SECTION 4 – METHODS AND EQUIPMENT

This section lists and briefly describes the equipment to be used for the various methods of herbicide application, as well as some specific precautions regarding the use of this equipment. Section 5 (Best Management Practices) contains additional general precautions regarding equipment use.

4.1 Spot-spray

The spot-spray technique is used in various situations, such as where the invasive plants are widely scattered and/or mixed with desirable native species and thus the boom spray technique (described below) is not appropriate. Additionally, the spot-spray technique is used in follow-up applications to target individual plants that were missed or not killed by boom sprayers.

4.1.1 Equipment

The equipment used for the spot-spray method consists of low-pressure hand sprayers with a small tank, typically backpack mounted. Be sure that the nozzle and spray-tip type selected is appropriate for the herbicide in use; the herbicide labels will suggest which droplet-size nozzle to use (Shenk 2004). The droplet size (classified as very fine, fine, medium, coarse, very coarse, and extremely coarse) can influence the effectiveness of an herbicide as well as the amount of drift (Shenk 2004). The nozzle also influences the application rate. Additionally, be sure that the spray pattern of the spray tip is appropriate for the job. A spray pattern that is too narrow or the wrong shape can increase labor time, whereas a spray pattern that is too broad may deliver herbicide to desirable native species. Consider using a multi-pattern spray nozzle if different spray patterns are likely to be required on a site. Always be sure the equipment does not leak prior to use on the site(s).

4.2 Boom Spray

The boom spray technique is used in situations where sizable populations of invasive plants are not mixed with desirable native species and thus the relatively broad application of herbicide will not harm desirable species. The boom spray technique shall be used only with permission from Port mitigation staff and only with low-pressure (generally 20 to 60 pounds per square inch [psi]) boom sprayers.

4.2.1 Equipment

Low-pressure sprayers are generally mounted on ATVs, tractors, trucks, trailers etc. The equipment used for the low-pressure spray method (Shenk 2004) consists of:

- roller pump or centrifugal pump;
- tank;
- agitation system (generally a hydraulic agitator);
- flow control valves; and
- several nozzles along the boom (a pipe or other structure).

As with the spot-spray technique, be sure that the nozzle and spray-tip type selected is appropriate for the herbicide in use; herbicide labels will suggest which droplet-size nozzle to use (Shenk 2004). The droplet size (often classified as very fine, fine, medium, coarse, very coarse, and extremely coarse) can influence the effectiveness of an herbicide as well as the amount of drift (Shenk 2004). Additionally, be sure that the spray pattern of the spray tip is appropriate for the job. Since a spray boom uses multiple nozzles, it is especially important that the nozzles are calibrated to achieve proper pattern overlap so that application is even. Consider using multi-pattern spray nozzles if different spray patterns are likely to be required on a site. Always be sure the equipment does not leak prior to use on the site(s).

4.3 Weed Wick

The weed wick technique has been used in the past to control cattail where it was overcrowding native wetland species. The Port is currently not targeting cattail but may again in the future if the need arises.

4.3.1 Equipment

The equipment used for the weed wick technique is a small plastic squeeze-bottle with a sponge applicator, like those used to apply various household products such as detergents. Always be sure the equipment does not leak prior to use on the site(s).

4.4 Stem Injection

The stem injection technique may be used to treat small stands of Japanese or giant knotweed. The undiluted glyphosate (5 mL) is injected into the hollow stem just below a node. Each stem must be treated (see Section 2, Japanese knotweed, Chemical Treatments).

4.4.1 Equipment

The equipment used for the stem injection technique includes a large plastic syringe filled with undiluted glyphosate (Rodeo) and a sharp instrument to make an air hole in the stem.

4.5 Cut/stump Treatment

The cut/stump treatment may be used to control woody species that are too large to pull out of the ground, including butterfly bush, indigo bush, Scotch broom, tree-of-heaven, and black locust. Cut/stump treatments typically require a 50% solution or as indicated on the product label.

4.5.1 Equipment

The equipment used for the cut/stump treatment is the same as that used for spot-spraying. However, the stump must be treated immediately after it is cut.

4.6 Equipment Maintenance

Never store, mix, or clean equipment within a mitigation site or natural area; these activities must be performed in a confined area at a minimum of 300 feet from any water body. It is beyond the scope of this plan to provide detailed information on equipment maintenance. However, the contractor should be diligent in the maintenance of all herbicide application equipment. Particular care should be exercised in cleaning the spray-nozzles as this will affect the performance (spray pattern, velocity, application rates). The nozzles should be examined for wear and discarded when they no longer perform according to specifications.

Please refer to Oregon State University's *Oregon Pesticide Safety Education Manual* (Shenk 2004) and the equipment owner's manual/specification for greater detail.

SECTION 5 - BEST MANAGEMENT PRACTICES

This section describes general best management practices with regard to preventing the spread of invasive plant populations, as well as monitoring the control of established invasive species. Best management practices regarding the proper application of herbicides were discussed previously in Section 3.

In addition, Section 5.6 (Resources) provides a brief description of various local groups and organizations as well as governmental agencies that can provide further information. Addresses, phone numbers, and website URLs for these organizations are provided. Section 5.6 also provides Port contact information and emergency information.

5.1 Prevention

The goals of prevention are twofold: to prevent the introduction of new invasive species into the Port's mitigation sites and restoration areas, and to prevent the spread of existing invasive species either within a given site or from one of the Port's sites to another. Vehicles, clothing, and tools are common vectors for weed seed transfer, so due diligence is required with respect to these items. Most of the measures suggested are common sense, and most apply to both

preventing the establishment of new invasive plant populations as well as controlling the spread of established weeds.

- Always inspect clothing and boots for weed seeds before traveling from site to site or from an infested portion of a site to uninfested areas. Brush off (using scrub brush) any weed seeds or soil from boots and equipment before moving to the next area and dispose of them properly.
- Inspect all equipment (e.g., vehicles and tires, hand tools) for weed seed before entering or leaving a site. Please remove any weed seeds or contaminated soil and dispose of them properly.
- Cut and bag all seed heads of killed invasive plants; remove them from the site and dispose of them properly.
- Never operate heavy machinery (e.g., trucks, tractors) on wet soils. Many weedy species *require* disturbed soil, such as tire tracks, in order to become established.
- Clear piles of material in such a way as to prevent dropping seed in the site. If plant material will be composted, be certain that the herbicides used are permissible in compost. For example, clopyralid, an active ingredient in Curtail, is not permitted in compost.
- Use approved dyes in herbicide sprays. Marking the sprayed plants will help ensure even and adequate coverage and will prevent missed applications. Additionally the dye has a safety factor: the public will be less likely to handle, or in the case of blackberries, eat, treated plants.
- If blackberries are sprayed at any time when the potential for persons harvesting berries exists, signs should be posted near the plants to alert people not to eat any berries due to herbicide contamination.
- Report new species at once. If a new weedy species appears on any of the Port's property, notify the mitigation site specialist or the Port consultant so that they can positively identify the species. Because of ships' ballasts being emptied into waters at docks on the Columbia and Willamette Rivers, exotic species are often first seen in areas near or on Port facilities.

5.2 Monitoring

5.2.1 Record Keeping During Application of Herbicides

During application of herbicide, accurate records must be kept in accordance with the Herbicide Application Report in Appendix D. This information is also required by NOAA at the Rivergate Enhancement Area and Toyota T-4 sites. Please refer to Appendix D for the minimum information to be recorded at each application.

5.2.2 Monitoring of Invasive Plants Treated With Herbicides

The Port has a regular schedule of plant community monitoring (along fixed transects) and invasive species mapping that is beyond the scope of this plan. During monitoring events and bimonthly site visits, Port staff assess each mitigation site and develop site maps based on observations and maintenance needs. These maps are updated regularly and incorporated into the most recent version of this plan. Maps provided in Section 7 were compiled based on invasive plant populations identified over the last three monitoring seasons.

The regular quantitative transect monitoring provides, among other things, a sample with which to calculate the percentages of invasive plants present each year. However, the Port tracks the efficacy of herbicide treatments on a larger scale through a more qualitative monitoring process. Effects of herbicide application should be visible within two to three weeks following application to an herbaceous invasive weed infestation. At that point a Port employee or qualified subcontractor visits and inspects the previously treated infestation. Specific observations pertaining to the success of the herbicide application are recorded. At a minimum, the following types of information are recorded:

- Approximate percent of target plant species killed by the herbicide application. This can be done by a simple visual estimation, preferably by a person who observed the infestation prior to treatment. If necessary, "before" and "after" meter-square plot data along fixed transects would provide more accurate percentages, but would be *much* more labor-intensive, as well as causing the investigators to handle treated plants while recording the plot data.
- For large infestations, "before" and "after" photographs taken from one or more fixed photo-documentation points will provide good evidence of efficacy of the herbicide treatments.
- Any patches of plants that were missed or where the herbicide was apparently under-applied should be marked in the field (with approved spray paint or flagging), if necessary, to aid applicators in locating patches or individual plants for follow-up spot-spray treatment.
- Damaged, non-targeted plants must be noted. The investigators must record some estimate of percentages of non-targeted plants that have been injured or killed as a result of the herbicide application. These steps are critical; if desirable native plants are being killed, then the herbicide application strategy must be adapted. This may mean switching from boom-spray to hand-spray if drift is a problem, changing nozzle size, using a more selective herbicide, or using other options.

The above monitoring scheme is very general and will be adapted by investigators on a site-by-site basis. Nonetheless, the Port will employ most all of these monitoring methods when the efficacy of herbicide use under certain circumstances is unknown. The suggested monitoring schedule mentioned above (two to three weeks post-application) is suitable for herbaceous plants. For woody plants treated in the fall, effects may not be visible until the following spring and may therefore require additional monitoring once herbicide effects are visible.

5.3 Wildlife

Port mitigation staff and consultants are diligent in scheduling invasive vegetation management activities around critical life cycle stages of native wildlife. This ensures minimally disturbed habitat for new and existing wildlife populations on Port mitigation sites. Below is a critical life cycle table outlining when certain maintenance activities are not permitted on Port mitigation sites. If a nesting bird or turtle is seen while working on a mitigation site, please report this sighting to the mitigation site specialist as soon as possible.

<table>
<tr><th colspan="4">Critical Life Cycle Stages for Native Species in Portland, Oregon</th></tr>
<tr><th>Month</th><th>Bird</th><th>Turtle</th><th>Amphibian</th></tr>
<tr><td>January</td><td></td><td></td><td rowspan="4">Egg masses in water
No work in water. Look out for egg masses even in shallow water near the shore.</td></tr>
<tr><td>February</td><td></td><td></td></tr>
<tr><td>March</td><td></td><td>Baby turtles moving from nest to water
No earth-disturbing activities and no work to be done in nesting habitat areas. Be vigilant of turtles.</td></tr>
<tr><td>April</td><td rowspan="4">Primary Nesting Season
No mowing, weed-whacking, or limbing of trees unless explicitly instructed to do so. Be vigilant of nests on the ground when walking.</td><td></td></tr>
<tr><td>May</td><td></td><td></td></tr>
<tr><td>June</td><td rowspan="3">Adult female turtles nesting on land
No earth-disturbing activities and no work to be done in nesting habitat areas. Be vigilant of turtles.</td><td></td></tr>
<tr><td>July</td><td></td></tr>
<tr><td>August</td><td></td><td></td></tr>
<tr><td>September</td><td></td><td></td><td></td></tr>
<tr><td>October</td><td></td><td></td><td></td></tr>
<tr><td>November</td><td></td><td></td><td></td></tr>
<tr><td>December</td><td></td><td></td><td></td></tr>
</table>

5.4 Equipment Cleaning Protocol*

The purpose of this protocol is to outline preventative steps to control the spread of known and potential amphibian diseases. Two major amphibian diseases known to be present in parts of Oregon (but not yet recorded on Port mitigation properties) are Ranavirus and Chytrid fungus.

Ranavirus consist of large, double-stranded DNA viruses that are known to infect invertebrates and cold-blooded vertebrates (Johnson et al. 2007). Fish, amphibians, and reptiles are all vulnerable to Ranaviruses, but they are an especially major pathogen of amphibians. Between 1996 and 2001, the most common cause of death in a study of 64 amphibian illness and death events was infection with Iridoviruses. Another major known amphibian disease is Chytrid fungus. Chytrid fungus has an alarmingly wide host-range, and due to its recognition as an invasive species and its status as an emerging infectious disease, it was listed as a notifiable disease by the World Organization for Animal Health in 2009 (Olson et al. 2013). This has resulted in an international effort to prevent the spread of this disease by humans.

Both Chytrid fungus and Ranavirus can be spread by improperly cleaned clothing and equipment. Mud and other debris left on equipment used in wetland improvement projects (including invasive plant control projects) can carry these diseases and be spread from site to site. When one of these diseases is introduced to a new site, it can result in a mass die-off of frogs and salamanders in the area. In 2013, the Port witnessed a die-off of tadpole and juvenile American bullfrogs (*Lithobates catesbeianus*) at the Troutdale Reynolds Industrial Park (TRIP) mitigation property. A lab analysis of deceased tadpoles and frogs was conducted. Results were inconclusive, but Ranavirus was suspected based on visual observations of lesions consistent with Ranavirus, thereby amplifying the need to establish an effective cleaning protocol.

5.4.1 Equipment Checklist:

Make sure that you have all of the below items before visiting any wetland mitigation site:

- Large waterproof dry bag
- Labeled squirt bottle containing Quat 256 mixture (See “how to make Quat 256 mixture” below)
- Labeled squirt bottle with water
- Scrub brush

How to make Quat 256 mixture
Mix approximately 7 drops of Quat 256 concentrate with 1 liter of water (0.016% concentration). Be sure to follow all safety information in the MSDS when working with Quat 256 (see Appendix A). Pour mixture into a squirt bottle labeled “Quat 256.” When spraying solution be sure not to inhale any mist.

5.4.2 Directions:

1. ***Before leaving any wetland site*** you must scrub mud or other debris from your boots and equipment using scrub brush.
2. After the mud is removed, place your boot in the dry bag and spray the Quat 256 mixture over the entire outside surface of your boot. Be sure to empty the entire squirt bottle of mixture onto the boot and immerse and saturate boot for 5 minutes, mixing occasionally. ***Be sure to follow all safety information in the MSDS when working with Quat 256. Be sure to wear proper PPE including safety glasses and water resistant gloves and avoid inhaling spray***. Make sure that the mixture does not get inside your boot by keeping the

boot opening outside of the dry bag. ***Make sure that the excess Quat 256 mixture stays inside the dry bag and that you are spraying your boots in an upland area 60 feet away from any wetland.***

3. After 5 minutes, spray boots off with water (using the water squirt bottle) ***making sure that all water/mixture is contained in the dry bag***.
4. After the boots have been sprayed off with water, seal the dry bag with excess water and Quat 256 mixture inside.
5. At the end of the day, dispose of the remaining Quat 256 in your dry bag by pouring it down any sink drain or discard the quat mixture in broken-down organic soil in a non-vegetated area at least 100 feet away from any wetland. Cover lightly with soil.
6. All of the above steps also apply to any piece of equipment (like gloves, shovels, nets, etc.) that is exposed to mud or water in a wetland.

***If you believe you have found a population of sick frogs*:**
Contact Carrie Butler, Senior Mitigation Specialist, at (503) 415-6319 or carrie.butler@portofportland.com. The Port will investigate the population as soon as possible.

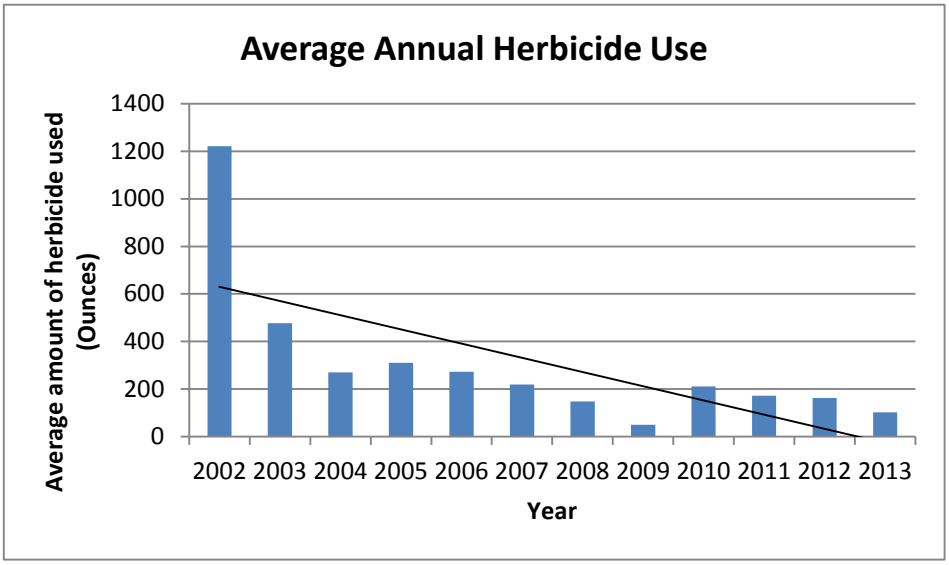
*Quat 256 protocol was partially based on cleaning protocol used in Yosemite National Park.
Contact: Daniele, Ninette - Wildlife Biologist: Resources Management and Science Division, Yosemite National Park 5083 Foresta rd., El Portal, CA. 95318.

5.4.3 Seed Cleaning Protocol:

To insure that invasive seeds are not spread across sites it is very important that boots and equipment are cleared of any seeds before leaving a site. See section 5.1 (prevention) for detailed seed cleaning protocol.

5.5 Herbicide Use Over Time

Preventing the introduction and establishment of invasive species has been shown to be the most cost-efficient long-term invasive plant management strategy. The Port continually strives to reduce the amount of herbicide used over time by employing an effective vegetation management plan and by continually monitoring sites so that new populations of invasive plants are treated immediately, thereby preventing their spread. This not only reduces the cost to maintain each mitigation site but it also reduces dependence on chemical herbicides. As seen in the graph below, the total average amount of herbicide used over time at the Port's mitigation sites is trending downward, indicating that these efforts are succeeding.



This above graph illustrates the average amount of herbicides used at all Port mitigation sites (Ramsey Lakes, Ramsey Enhancement, Buffalo, Elrod, Randall, Vanport Wetlands, T5, West Wye, N&S Slough, 40-mile loop, PIC-E zone, West Hayden Island, and TRIP) per year, excluding Jewett Lake. All non-active mitigation sites (having a value of "0" herbicide used that year) were excluded from the annual average calculation. This was done because mitigation sites were established (and began herbicide treatment) in different years. While this data may not be entirely precise due to variances in spray report record keeping throughout the years, this information provides a snapshot of the general declining trend of herbicide use at Port sites over time.

5.6 Resources

5.6.1 Government Agencies

Oregon Department of Agriculture (ODA)

635 Capitol St. NE
Salem, OR
97301-2532
(503) 986-4550

The ODA is the primary state regulatory agency responsible for authorizing pesticide uses in Oregon. The ODA also administers the licensing programs for state certification of pesticide applicators. The ODA has an excellent website that is easy to navigate with pages that provide links to useful pesticide-related topics.

- ODA Home Page: http://www.oregon.gov/ODA/
- ODA Pesticide Page (with links to permitting, applicator training, licensing information, and laws governing pesticide use): http://www.oregon.gov/ODA/PEST/index.shtml

- ODA Noxious Weed Program (with links to noxious weed list, plant profiles, and much more): http://www.oregon.gov/ODA/PLANT/WEEDS/index.shtml

Washington State Noxious Weed Control Board
This board has an excellent website with a photo gallery, articles, and other informational materials regarding noxious weeds in Washington: http://www.nwcb.wa.gov/INDEX.htm.

Oregon Invasive Species Council
The purpose of the Oregon Invasive Species Council (OISC) is to conduct a coordinated and comprehensive effort to keep invasive species out of Oregon and to eliminate, reduce, or mitigate the impacts of invasive species already established in Oregon. Find out about local initiatives, events, and how to report invasive species in Oregon. The URL is http://www.oregon.gov/OISC/index.shtml.

Oregon Department of Environmental Quality (DEQ)

DEQ State Headquarters
811 SW Sixth Avenue
Portland, OR 97204-1390
Telephone: (503) 229-5696
Toll Free in Oregon: (800) 452-4011
TTY: (503) 229-6993
Fax: (503) 229-6124
deq.info@deq.state.or.us

In addition to local programs, the EPA delegates authority to DEQ to operate federal environmental programs within the state such as the federal Clean Air, Clean Water, and Resource Conservation and Recovery Acts. DEQ must be notified in case of a pesticide spill. The URL is http://www.oregon.gov/DEQ/index.shtml.

The DEQ partners with the Department of Human Services' Pesticide Analytical and Response Center (PARC), which runs a Pesticide Poisoning Prevention Program:

Pesticide Poisoning
Prevention Program
800 NE Oregon St. #827
Portland, OR 97232
(503) 731-4025,
pesticides.health@state.or.us

PARC's home page: http://www.oregon.gov/DHS/ph/pesticide/

United States EPA
The EPA is the primary federal regulatory agency responsible for authorizing pesticide uses in the United States. The EPA has a website that provides links to many useful pesticide-related topics as well as several other environmental topics.

- EPA Home Page: http://www.epa.gov/
- EPA Pesticide Page: http://www.epa.gov/pesticides/index.htm

- EPA Pesticide Fact Sheets Page (with links to search engine that retrieves EPA fact sheets for individual pesticides):
  http://www.epa.gov/pesticides/factsheets/chemical_fs.htm

5.6.2 Port of Portland Contacts

The following persons at the Port may be contacted if you have questions regarding any information in this plan or for specific on-location needs:

- **Carrie Butler** (Senior Mitigation Specialist) Mitigation Program oversight
  Phone: (5030 415-6319
  Cell: (503) 928-1611
  Fax: (503) 548-5998
  carrie.butler@portofportland.com

- **Sarah Wilson** (Mitigation Site Specialist) for questions regarding schedules, maps, monitoring, species identification, and wildlife issues
  Phone: (503) 415-6527
  Cell: (503) 820-1163
  sarah.wilson@portofportland.com

5.6.3 Emergency Contacts

Listed below are the primary emergency contact numbers and other information.

- **Medical or Other Emergencies**
  - In case of medical emergency, fire, or situations requiring police: Dial 911
  - If you think you have been poisoned by herbicides call the Oregon Poison Center: 1-(800) 222-1222

- **Chemical Spills**
  - To report a spill on Port-owned property, please notify:
    - Marine Security at (503) 240-2230 for spills on Rivergate sites
    - PDX Communications Center at (503) 460-4000 for spills on sites near the Portland International Airport
    - Notify Carrie Butler at 503-928-1611
  - For other spills contact OERS (Oregon Emergency Response System) at (800) 452-0311.
  - Please also refer to the Spill Response Policies in Appendix C.

SECTION 6 – REFERENCES

Connecticut Invasive Plant Working Group (CIPWG). 2004. Safety and Environmental Considerations for the Use of Herbicides to Control Invasive Plants. Available at: http://www.hort.uconn.edu/cipwg/art_pubs/GUIDE/consideration.htm.

Johnson, A. J., Jacobson, E. R., and Pessier, A. P. 2007. Experimental transmission and induction of Ranaviral disease in western ornate box turtles (*Terrapene ornata ornata*) and red-eared sliders (*Trachemys scripta elegans*). *Veterinary Pathology* 44(3):285–297.

National Oceanic and Atmospheric Administration (NOAA). 2004. Biological Opinion by NOAA regarding Army Corp of Engineers permits 200100247 (Rivergate Enhancement mitigation) and 200100553 (Toyota Riverbank Enhancement). On file at the Port of Portland, Environmental Operations, Mitigation Library.

Olson, D. H., Aanensen, D. M., Ronnenberg, K. L., Powell, C. I., Walker, S. F., Bielby, J., and Fisher, M. C. 2013. Mapping the global emergence of *Batrachochytrium dendrobatidis*, the amphibian Chytrid fungus. *Plos ONE* 8(2):1–13. doi:10.1371/journal.pone.0056802

Oregon Department of Agriculture (ODA). 2004. Federal Court Case: Washington Toxics Coalition v. United States Environmental Protection Agency Federal Court Decision Affecting Pesticide Use in Oregon. Available at: http://www.eswr.com/docs/cts/cca9/washtoxics_v_epa_2008op.pdf Accessed May 6, 2014.

Oregon State Administrative Rules (OAR). 2004. Department Of Agriculture Division 57 Pesticide Control 603-057-0001 through 603-057-0535. OARs filed through July 15, 2004. Available at: http://arcweb.sos.state.or.us/rules/OARS_600/OAR_603/603_057.html. Accessed August 2004.

Oregon State Revised Statutes (ORS). 2003. Chapter 634- Pesticide Control. 2003 edition. Available at: http://landru.leg.state.or.us/ors/634.html. Accessed August 2004.

Peachey, E., Ball, D., Hulting, A., Miller, T., Morishita, D., and Hutchinson, P. 2014. Pacific Northwest 2013 Weed Control Handbook. Available at: http://pnwhandbooks.org/weed/.

Peachey, E., Ball, D., Parker, R., Yenish, J.P., Miller, T.W., Morishita, D.W., and Hutchinson, P.J.S. 2007. *Pacific Northwest Weed Management Handbook.* Oregon State University Extension Service Publication, Corvallis

Shenk, Myron (editor). 2004. *Oregon Pesticide Safety Education Manual-A Guide to the Safe Use and Handling of Pesticides*. Oregon State University, Corvallis, Oregon.

The Oregonian. 2004. Groups Serve EPA Notice Over Pesticides. July 27:B1 and B4.

U.S. District Court of Seattle. 2004. Case No. C01-0132C. Order. Washington Toxics Coalition, Northwest Coalition for Alternatives to Pesticides, Pacific Coast Federation of Fisherman's Association and Institute for Fisheries Resources, Plaintiffs *v.* Environmental Protection Agency and Mike Leavitt, Administrator, Defendants, *v.* American Crop Protection Association, et. al., Intervenor-Defendants. Court Order dated January 22, 2004. Western District of Washington, Seattle.

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William, R.D., A.G. Dailey, D. Ball, J. Colquhoun, T.L. Miller, R. Parker, J.P. Yenish, T.W. Miller, D.W. Morishita, and P.J.S. Hutchinson. 2004. *Pacific Northwest 2004 Weed Control Handbook.* Oregon State University Extension Publication, Corvallis, Oregon.

The following resources were used in Section 2 to develop the summarized identification keys and chemical treatment plans:

A Guide to Field Identification TREES OF NORTH AMERICA
Brockman, C. F. 1986. Golden Press. New York

A Field Guide to the Common Wetland Plants of Western Washington & Northwestern Oregon
Cooke, Sarah Spear. 1997. Seattle Audubon Society, Seattle, Washington.

Aquatic and Riparian Weeds of the West
DiTomaso, Joseph M. and Evelyn A. Healy. 2003. Publication No. 3421. University of California.

Flora of the Pacific Northwest
Hitchcock, C. Leo and Arthur Cronquist. 1973. University of Washington. Seattle.

King County Washington – Noxious Weed Control Agency
www.kingcounty.gov

Pacific Northwest Weed Management Handbook 2007
Peachey, Ed., D. Ball, R. Parker, J.P. Yenish, T.W. Miller, D.W. Morishita, P.J.S. Hutchinson. 2007. Oregon State University Extension Service Publication.

Plants of the Pacific Northwest Coast
Pojar, Jim and Andy MacKinnon. 1994. Lone Pine Press, Canada.

Portland Plant List
Bureau of Planning and Sustainability, City of Portland, Oregon. September, 2011.

Thurston County Washington – Noxious Weed Control Agency
http://www.co.thurston.wa.us/tcweeds/factsheets.htm

USDA PLANTS Database
www.plants.usda.gov

Weeds of the West
Whitson, T. D., L. C. Burrill, S. A. Dewey, D. W. Cudney, B. E. Nelson, R. D. Lee., and R. Parker. 1996. 5th Edition. Pioneer of Jackson Hole, Jackson Wyoming.

Wetland Plants of Oregon and Washington
Guard, B. Jennifer. 1995. Lone Pine Press, Canada.

Wildflowers of the Pacific Northwest
Turner, M. and P. Gustafson. 2010. Timber Press, Inc. Portland, Oregon.

SECTION 7 – PORT SITE MAPS

This section contains site-specific materials. The following aerial mitigation site maps show the last known locations of specific invasive species on each site. A table is provided on each map listing the species present, chemicals allowed for use on the site, and any other restrictions such as distance from water bodies. The Port may conduct weed control and maintenance activities on natural areas other than those listed below, particularly riverbank enhancements and Columbia Slough sites. It is important to use these maps in conjunction with the textual materials presented in this document.

Site figures are listed alphabetically as follows:

Figure No.	Site Name
1	Berth 503 Bank Stabilization
2	Berth 607 Honda Dock Improvements
3	Buffalo
4	Elrod
5	Columbia Slough Sites – PDX/PIC
6	Columbia Slough Sites - Rivergate
7	Jewett Lake
8	Leadbetter
9	North & South Sloughs
10	PIC E-Zone
11	Ramsey Lakes
12	Randall
13	T-4, Pier 2 Greenway
14	T-5 Powerline Site
15	Toyota Riverbank
16	TRIP Phase I, Company Lake
17	TRIP Phase I, East Lake
18	TRIP Phase I, 300 Trees
19	Vanport Wetlands
20	West Hayden Island
21	West Wye
22	40-Mile Loop Trail

KEY

PDX – Portland International Airport
PIC – Portland International Center

BERTH 503 BANK STABILIZATION

Invasive species known to occur on site:

Code	Botanical Name	Common Name
LYTSAL	*Lythrum salicaria*	purple loosestrife
RUBARM	*Rubus armeniacus*	Himalayan blackberry
TANVUL	*Tanacetum vulgare*	common tansy

Herbicide use conditions for Berth 503:

No spraying is permitted within 30 feet of the River

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at Berth 503 include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 15 30 60 90 120 Feet

N

Figure 1
Berth 503 Bank Stabilization
Vegetation Management Plan

BERTH 607 HONDA DOCK IMPROVEMENTS

Invasive species known to occur on site:

Code	Botanical Name	Common Name
CIRARV	*Cirsium arvense*	Canada thistle
CIRVUL	*Cirsium vulgare*	bull thistle
HYPPER	*Hypericum perforatum*	common St. Johnswort
PHAARU	*Phalaris arundinacea*	reed canarygrass
RUBARM	*Rubus armeniacus*	Himalayan blackberry
TANVUL	*Tanacetum vulgare*	common tansy

Herbicide use conditions for Berth 607:

No spraying is permitted within 30 feet of the River

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at Berth 607 include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 12.5 25 50 75 100 Feet

N

Figure 2
Berth 607 Honda Dock Improvements
Vegetation Management Plan

BUFFALO

Invasive species known to occur on site:

Code	Botanical Name	Common Name
BETPEN	*Betula pendula*	European white birch
CIRARV	*Cirsium arvense*	Canada thistle
CONARV	*Convolvulus arvensis*	field bindweed
CONMAC	*Conium maculatum*	poison hemlock
DIPFUL	*Dipsacus fullonum*	Fuller's teasel
HEDHEL	*Hedera helix*	English ivy
IRIPSE	*Iris pseudacorus*	paleyellow iris
PHAARU	*Phalaris arundinacea*	reed canarygrass
PHYAME	*Phytolacca americana*	American pokeweed
PRULUS	*Prunus lusitanica*	Portugal laurel
RUBARM	*Rubus armeniacus*	Himalayan blackberry
TANVUL	*Tanacetum vulgare*	common tansy

Herbicide use conditions for Buffalo:

No spraying is permitted within 30 feet of the Columbia or Buffalo Sloughs

No spraying is permitted within 3 feet of other wetlands

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at Buffalo include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 37.5 75 150 225 300 Feet

N

Figure 3
BUFFALO
Vegetation Management Plan

ELROD

Invasive species known to occur on site:

Code	Botanical Name	Common Name
ARRELA	*Arrhenatherum elatius*	tall oatgrass
CIRARV	*Cirsium arvense*	Canada thistle
CIRVUL	*Cirsium vulgare*	bull thistle
CLEVIT	*Clematis vitalba*	evergreen clematis
CONMAC	*Conium maculatum*	poison hemlock
CRAMON	*Crataegus monogyna*	oneseed hawthorn
DIPFUL	*Dipsacus fullonum*	Fuller's teasel
EPISPE	*Epipactus sp.*	helleborine orchid
HEDHEL	*Hedera helix*	English ivy
ILEAQU	*Ilex aquifolium*	English holly
POLCUS	*Polygonum cuspidatum*	Japanese knotweed
RUBARM	*Rubus armeniacus*	Himalayan blackberry

Herbicide use conditions for Elrod:

No spraying is permitted within 30 feet of ditches

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at Elrod include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Mowed by MCDD

Port contractor to mow as buffer

Site Boundary

Known Weed Areas

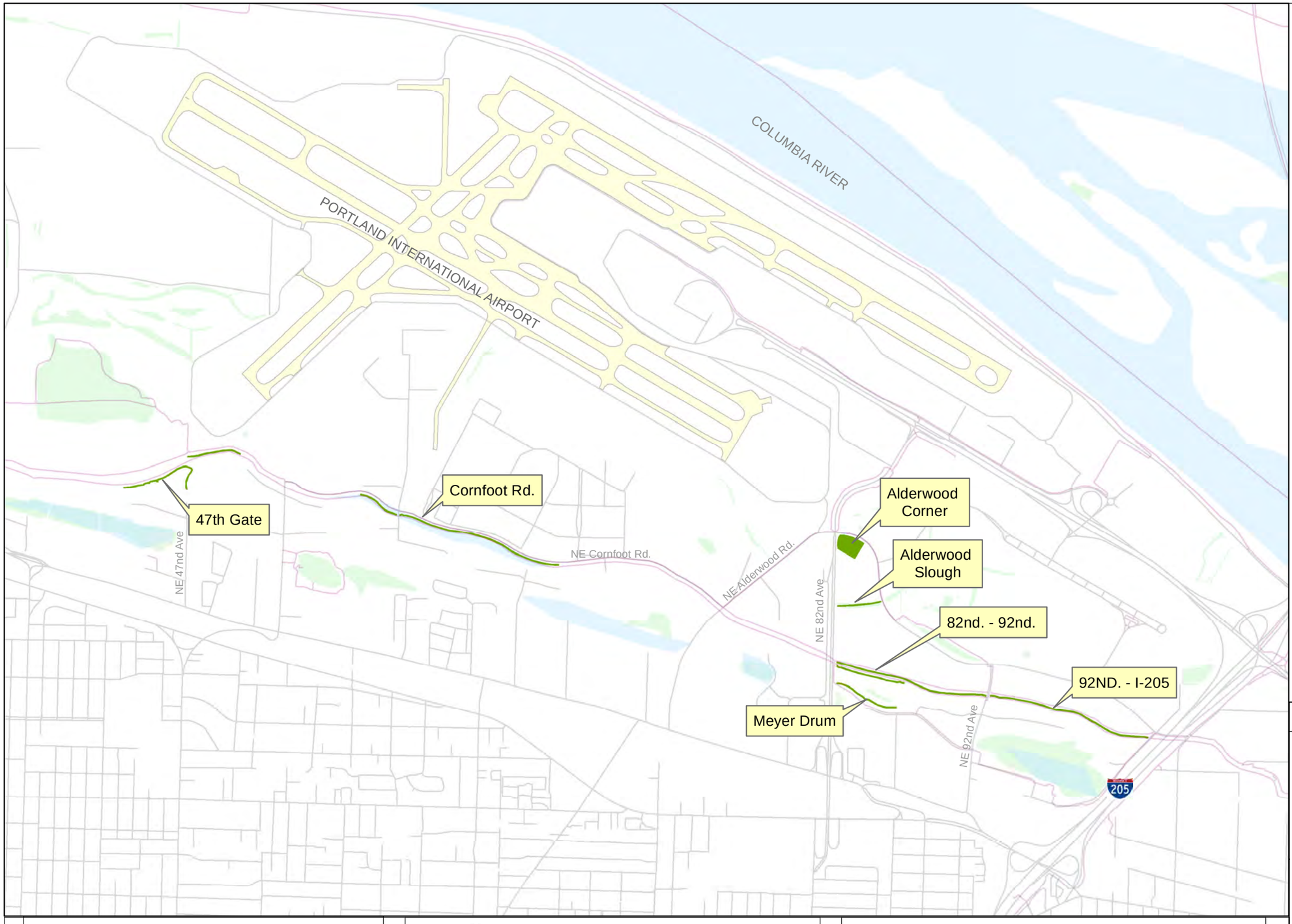
Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 37.5 75 150 225 300 Feet

N

Figure 4
ELROD
Vegetation Management Plan



COLUMBIA SLOUGH REVEGETATION

Control invasive species as directed by the Port

Herbicide use conditions for Slough sites:

No spraying is permitted within 30 feet of the Columbia Slough

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use on Slough Sites:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Revegetation Sites

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 1,150 2,300 4,600 Feet

N

Figure 5
COLUMBIA SLOUGH SITES - PDX/PIC
Vegetation Management Plan

COLUMBIA SLOUGH REVEGETATION

Control invasive species as directed by the Port

Herbicide use conditions for Slough sites:

No spraying is permitted within 30 feet of the Columbia Slough

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use on Slough Sites:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Revegetation Sites

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 1,375 2,750 5,500 Feet

N

Figure 6
COLUMBIA SLOUGH SITES - RIVERGATE
Vegetation Management Plan

JEWETT LAKE

Invasive species known to occur on site:

Code	Botanical Name	Common Name
CIRARV	*Cirsium arvense*	Canada thistle
CIRVUL	*Cirsium vulgare*	bull thistle
DIPFUL	*Dipsacus fullonum*	Fuller's teasel
PHAARU	*Phalaris arundinacea*	reed canarygrass
RUBARM	*Rubus armeniacus*	Himalayan blackberry

Herbicide use conditions for Jewett Lake:

No spraying is permitted within 3 feet of the wetland

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at Jewett Lake include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 185 370 740 1,110 1,480 Feet

N

Figure 7

JEWETT LAKE - GOVERNMENT ISLAND

Vegetation Management Plan

RIVERGATE ENHANCEMENT MITIGATION
LEADBETTER PENINSULA

Invasive species known to occur on site:

Code	Botanical Name	Common Name
CHOJUN	*Chondrilla juncea*	rush skeletonweed
CONMAC	*Conium maculatum*	poison hemlock
IRIPSE	*Iris pseudacorus*	paleyellow iris
LOTCOR	*Lotus corniculatus*	bird's-foot trefoil
LYSNUM	*Lysimachia nummularia*	creeping jenny
LYTSAL	*Lythrum salicaria*	purple loosestrife
MYRAQU	*Myriophyllum aquaticum*	parrot feather watermilfoil
NYMODO	*Nymphaea odorata*	American white waterlily
PHAARU	*Phalaris arundinacea*	reed canarygrass
RUBARM	*Rubus armeniacus*	Himalayan blackberry

Herbicide use conditions for Leadbetter:

Only **Rodeo®** and **Roundup custom™ for aquatic and terrestrial uses** and **LI 700®** surfactant may be applied with low-pressure back-pack sprayers

No spraying is permitted within 30 feet of the Columbia Slough or within 3 feet of other waters

Herbicide shall be diluted to a maximum of 1.5% when mixed with water; surfactant shall be diluted to a maximum of 1.5% concentration when mixed with undiluted chemical.

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Known Weed Areas

Site Boundary

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 50 100 200 300 400 Feet

N E S W

Figure 8
LEADBETTER
Vegetation Management Plan

RIVERGATE ENHANCEMENT MITIGATION
NORTH & SOUTH SLOUGH

Invasive species known to occur on site:

Code	Botanical Name	Common Name
AMOFRU	*Amorpha fruticosa*	false indigo bush
ARRELA	*Arrhenatherum elatius*	tall oatgrass
BETPEN	*Betula pendula*	European white birch
CHOJUN	*Chondrilla juncea*	rush skeletonweed
LOTCOR	*Lotus corniculatus*	bird's-foot trefoil
LYSNUM	*Lysimachia nummularia*	creeping jenny
LYTSAL	*Lythrum salicaria*	purple loosestrife
MYRAQU	*Myriophyllum aquaticum*	parrot feather watermilfoil
PHAARU	*Phalaris arundinacea*	reed canarygrass
PRULUS	*Prunus lusitanica*	Portugal laurel
QUEPAL	*Quercus palustris*	pin oak
RUBARM	*Rubus armeniacus*	Himalayan blackberry

Herbicide use conditions for N&S Slough:

No spraying is permitted within 30 feet of the Columbia Slough or within 3 feet of other waters

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at N&S Slough include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 37.5 75 150 225 300 Feet

N E S W

Figure 9
NORTH & SOUTH SLOUGH
Vegetation Management Plan

PIC E-ZONE

Invasive species known to occur on site:

Code	Botanical Name	Common Name
CIRARV	*Cirsium arvense*	Canada thistle
CONMAC	*Conium maculatum*	poison hemlock
CRAMON	*Crataegus monogyna*	oneseed hawthorn
DIPFUL	*Dipsacus fullonum*	Fuller's teasel
EPISPE	*Epipactis helleborine*	broadleaf helleborine
PHAARU	*Phalaris arundinacea*	reed canarygrass
RUBARM	*Rubus armeniacus*	Himalayan blackberry

Herbicide use conditions for PIC E-Zone:

- No spraying is permitted within 30 feet of conveyance ditches or within 3 feet of other waters
- No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying
- No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.
- A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.
- Herbicides shall be diluted to a maximum of 1.5% when mixed with water.
- Herbicides allowed for use at PIC E-Zone include:
- **Capstone™** Shall not be applied within 60 feet from any water body.
- **Roundup custom™ for aquatic and terrestrial uses** may be used within 60 feet of water with low-pressure back-pack sprayers.
- **Garlon 3A®** shall not be applied within 60 feet from any water body.
- **Rodeo®** may be used within 60 feet of water with low-pressure back-pack sprayers.
- **Escort®** may only be used in uplands at least 60 feet from any water body.
- **LI 700®** or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Port contractor to mow as buffer | **Site Boundary** | **Known Weed Areas**

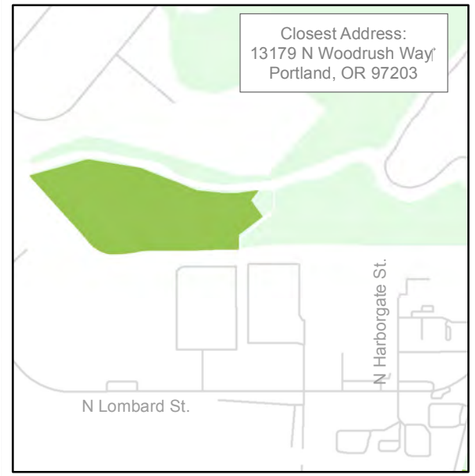
Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 40 80 160 240 320 Feet

N

Figure 10
PIC E-ZONE
Vegetation Management Plan



RAMSEY LAKES

Invasive species known to occur on site:

Code	Botanical Name	Common Name
ARRELA	*Arrhenatherum elatius*	tall oatgrass
CIRARV	*Cirsium arvense*	Canada thistle
CIRVUL	*Cirsium vulgare*	bull thistle
DIPFUL	*Dipsacus fullonum*	Fuller's teasel
IRIPSE	*Iris pseudacorus*	paleyellow iris
LOTCOR	*Lotus corniculatus*	bird's-foot trefoil
LYSNUM	*Lysimachia nummularia*	creeping jenny
MYRAQU	*Myriophyllum aquaticum*	parrot feather watermilfoil
NYMODO	*Nymphaea odorata*	American white waterlily
PHAARU	*Phalaris arundinacea*	reed canarygrass
POPALB	*Populus alba*	white poplar
ROBPSE	*Robinia pseudoacacia*	black locust
RUBARM	*Rubus armeniacus*	Himalayan blackberry
RUBLAC	*Rubus laciniatus*	cutleaf blackberry
VERBLA	*Verbascum blattaria*	moth mullein
VERTHA	*Verbascum thapsus*	common mullein

Herbicide use conditions for Ramsey Lakes:

No spraying is permitted within 30 feet of the Columbia Slough or within 3 feet of other waters

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying.

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at Ramsey include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Known Weed Areas

Site Boundary

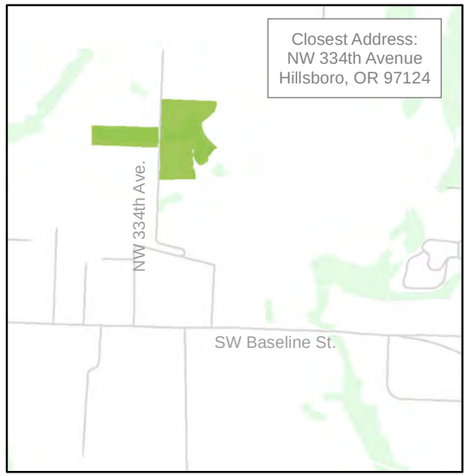
Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 75 150 300 450 600 Feet

N E S W

Figure 11
RAMSEY LAKES
Vegetation Management Plan



RANDALL

Invasive species known to occur on site:

Code	Botanical Name	Common Name
AILALT	*Ailanthus altissima*	tree of heaven
ARRELA	*Arrhenatherum elatius*	tall oatgrass
CICINT	*Cichorium intybus*	chicory
CIRARV	*Cirsium arvense*	Canada thistle
CONARV	*Convolvulus arvensis*	field bindweed
CRAMON	*Crataegus monogyna*	oneseed hawthorn
DAUCAR	*Daucus carota*	Queen Anne's lace
IRIPSE	*Iris pseudacorus*	paleyellow iris
LEUVUL	*Leucanthemum vulgare*	oxeye daisy
LOTCOR	*Lotus corniculatus*	bird's-foot trefoil
PHAARU	*Phalaris arundinacea*	reed canarygrass
RAPRAP	*Raphanus raphanistrum*	wild radish
ROBPSE	*Robinia pseudoacacia*	black locust
RUBARM	*Rubus armeniacus*	Himalayan blackberry
VINMIN	*Vinca minor*	common periwinkle

Herbicide use conditions for Randall:

No herbicides shall be used within 30 feet of Dairy Creek or within 3 feet of other waters

No herbicides shall be used along residential farm fence where neighbors horses are kept.

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at Randall include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 37.5 75 150 225 300 Feet

N

Figure 12
RANDALL
Vegetation Management Plan

T-4, Pier 2 Greenway

Invasive species known to occur on site:

Code	Botanical Name	Common Name
BUDDAV	*Buddleja davidii*	orange eye butterflybush
CIRARV	*Cirsium arvense*	Canada thistle
CIRVUL	*Cirsium vulgare*	Bull thistle
CYTSCO	*Cytisus scoparius*	Scotch broom
DIPFUL	*Dipsacus fullonum*	Fuller's teasel
HEDHEL	*Hedera helix*	English ivy
RUBARM	*Rubus armeniacus*	Himalayan blackberry
SENJAC	*Senecio jacobaea*	stinking willie (tansy ragwort)
TANVUL	*Tanacetum vulgare*	common tansy

Herbicide use conditions for T-4, Pier 2:

No spraying is permitted within 30 feet of the River

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at T-4, Pier 2 include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 20 40 80 120 160 Feet

N

Figure 13
T-4, Pier 2 Greenway
Vegetation Management Plan

T-5 POWERLINE

Invasive species known to occur on site:

Code	Botanical Name	Common Name
ALLVIN	*Allium vineale*	wild garlic
ARRELA	*Arrhenatherum elatius*	tall oatgrass
CHOJUN	*Chondrilla juncea*	rush skeletonweed
CIRVUL	*Cirsium vulgare*	bull thistle
CONMAC	*Conium maculatum*	poison hemlock
HESMAT	*Hesperis matronalis*	dames rocket
LOTCOR	*Lotus corniculatus*	bird's-foot trefoil
LYTSAL	*Lythrum salicaria*	purple loosestrife
ROSCAN	*Rosa canina*	dog rose
ROSMUL	*Rosa multiflora*	multiflora rose
RUBARM	*Rubus armeniacus*	Himalayan blackberry
SENJAC	*Senecio jacobaea*	stinking willie (tansy ragwort)

Herbicide use conditions for T-5 Powerline:

No herbicides shall be used within 30 feet of Willamette River or within 3 feet of other waters

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at T-5 Powerline include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

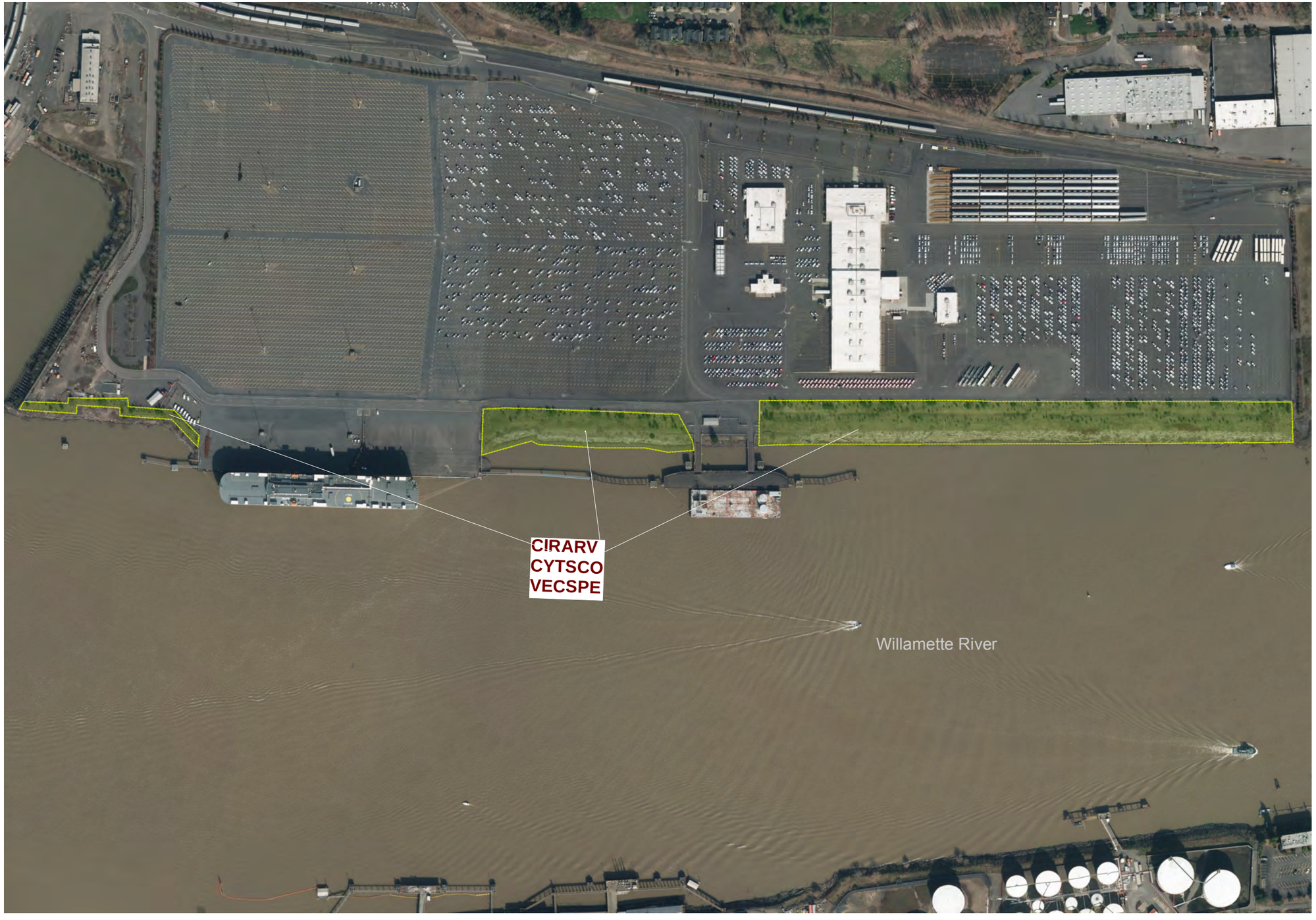
Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 37.5 75 150 225 300 Feet

N

Figure 14
T5 POWERLINE SITE
Vegetation Management Plan



TOYOTA RIVERBANK

Invasive species known to occur on site:

Code	Botanical Name	Common Name
BUDDAV	*Buddleja davidii*	orange eye butterflybush
CIRARV	*Cirsium arvense*	Canada thistle
CYTSCO	*Cytisus scoparius*	Scotch broom
RUBARM	*Rubus armeniacus*	Himalayan blackberry
VECSPE	*Vicia sp.*	Vetch

Herbicide use conditions:

No spraying is permitted within 30 feet of the River

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at Toyota include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 90 180 360 540 720 Feet

N E S W

Figure 15
TOYOTA RIVERBANK
Vegetation Management Plan

TRIP - COMPANY LAKE

Invasive species known to occur on site:

Code	Botanical Name	Common Name
BETPEN	*Betula pendula*	European white birch
CENDIF	*Centaurea diffusa*	diffuse knapweed
CIRARV	*Cirsium arvense*	Canada thistle
CIRVUL	*Cirsium vulgare*	bull thistle
CYTSCO	*Cytisus scoparius*	Scotch broom
LOTCOR	*Lotus corniculatus*	bird's-foot trefoil
PHAARU	*Phalaris arundinacea*	reed canarygrass
RUBARM	*Rubus armeniacus*	Himalayan blackberry

Herbicide use conditions for TRIP:

No spraying is permitted within 3 feet of wetlands

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at TRIP include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

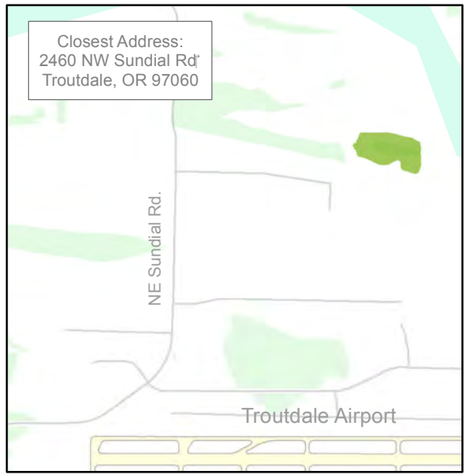
Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 25 50 100 150 200 Feet

N

Figure 16
TRIP PHASE 1
Company Lake - Vegetation Management Plan



TRIP - EAST LAKE

Invasive species known to occur on site:

Code	Botanical Name	Common Name
CENDIF	*Centaurea diffusa*	diffuse knapweed
CIRARV	*Cirsium arvense*	Canada thistle
CIRVUL	*Cirsium vulgare*	bull thistle
LOTCOR	*Lotus corniculatus*	bird's-foot trefoil
PHAARU	*Phalaris arundinacea*	reed canarygrass
RUBARM	*Rubus armeniacus*	Himalayan blackberry

Herbicide use conditions for TRIP:

No spraying is permitted within 3 feet of wetlands

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at TRIP include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

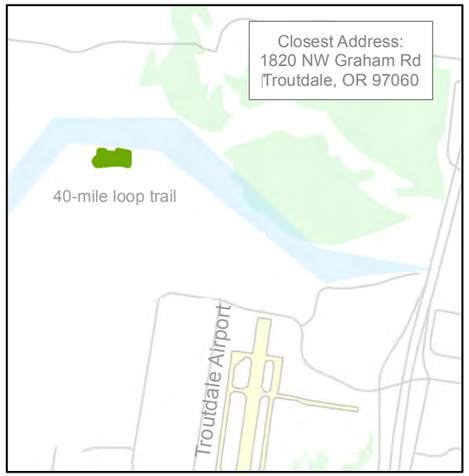
Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 20 40 80 120 160 Feet

N

Figure 17
TRIP PHASE 1
East Lake - Vegetation Management Plan



TRIP - 300 TREES

Invasive species known to occur on site:

Code	Botanical Name	Common Name
CIRVUL	*Cirsium vulgare*	bull thistle
RUBARM	*Rubus armeniacus*	Himalayan blackberry

Herbicide use conditions for 300 Trees:

No spraying is permitted within 30 feet of the Sandy River

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying.

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at 300 Trees include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 12.5 25 50 75 100 Feet

N E S W

Figure 18
TRIP PHASE 1
300 Trees - Vegetation Management Plan

VANPORT WETLANDS

Invasive species known to occur on site:

Code	Botanical Name	Common Name
ARRELA	*Arrhenatherum elatius*	tall oatgrass
CLEVIT	*Clematis vitalba*	evergreen clematis
CONMAC	*Conium maculatum*	poison hemlock
DIPFUL	*Dipsacus fullonum*	Fuller's teasel
HEDHEL	*Hedera helix*	English ivy
ILEAQU	*Ilex aquifolium*	English holly
LATSYL	*Lathyrus sylvestris*	flat pea
LUDPEP	*Ludwigia peploides*	floating primrose-willow
PHAARU	*Phalaris arundinacea*	reed canarygrass
ROSMUL	*Rosa multiflora*	multiflora rose
RUBARM	*Rubus armeniacus*	Himalayan blackberry
SOLDUL	*Solanum dulcamara*	climbing nightshade
SOLNIG	*Solanum nigrum*	black nightshade

Herbicide use conditions for Vanport Wetlands:

No spraying is permitted within 3 feet of wetlands or

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at Vanport include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 75 150 300 450 600 Feet

N

Figure 19
VANPORT WETLANDS
Vegetation Management Plan

WEST HAYDEN ISLAND (WHI)

Invasive species known to occur on site:

Code	Botanical Name	Common Name
CENSPE	*Centaurea diffusa*	diffuse knapweed
CIRARV	*Cirsium arvense*	Canada thistle
CIRVUL	*Cirsium vulgare*	bull thistle
CYNDAC	*Cynodon dactylon*	Bermudagrass
CYNOFF	*Cynoglossum officinale*	gypsyflower
PHAARU	*Phalaris arundinacea*	reed canarygrass
RUBARM	*Rubus armeniacus*	Himalayan blackberry
SILMAR	*Silybum marianum*	blessed milkthistle

Herbicide use conditions for WHI:

No spraying is permitted within 3 feet of wetlands

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at WHI include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Known Weed Areas

Site Boundary

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 20 40 80 120 160 Feet

N

Figure 20
WEST HAYDEN ISLAND
Vegetation Management Plan

WEST WYE

Invasive species known to occur on site:

Code	Botanical Name	Common Name
ANTCAU	*Anthriscus caucalis*	bur chervil
BETPEN	*Betula pendula*	European white birch
CHOJUN	*Chondrilla juncea*	rush skeletonweed
DIPFUL	*Dipsacus fullonum*	Fuller's teasel
LEUVUL	*Leucanthemum vulgare*	oxeye daisy
LYTSAL	*Lythrum salicaria*	purple loosestrife
PHAARU	*Phalaris arundinacea*	reed canarygrass
QUEPAL	*Quercus palustris*	pin oak
ROSCAN	*Rosa canina*	dog rose
RUBARM	*Rubus armeniacus*	Himalayan blackberry
SENJAC	*Senecio jacobaea*	stinking willie (tansy ragwort)
SOLDUL	*Solanum dulcamara*	climbing nightshade
VICSPE	*Vicia Sp.*	Vetch

Herbicide use conditions for West Wye:

No spraying is permitted within 3 feet of wetlands

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at West Wye include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom℠ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Site Boundary

Known Weed Areas

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 25 50 100 150 200 Feet

N

Figure 21
WEST WYE
Vegetation Management Plan

RIVERGATE ENHANCEMENT MITIGATION
40-MILE LOOP MITIGATION SITE - 5 acres

Invasive species known to occur on site:

Code	Botanical Name	Common Name
CIRARV	*Cirsium arvense*	Canada thistle
DIPFUL	*Dipsacus fullonum*	Fuller's teasel
IRIPSE	*Iris pseudacorus*	paleyellow iris
LYTSAL	*Lythrum salicaria*	purple loosestrife
PHAARU	*Phalaris arundinacea*	reed canarygrass
ROSEGL	*Rosa eglanteria*	sweetbriar rose
RUBARM	*Rubus armeniacus*	Himalayan blackberry

Herbicide use conditions for 40-Mile Loop:

No spraying is permitted within 30 feet of the Columbia Slough and within 3 feet of other waters

No spraying is permitted if wind speeds exceed 5 mph or if rain is forecast within 24 hours of spraying.

No chemical storage, mixing or cleaning of equipment is permitted on site. These activities must be carried out in a confined area at a minimum of 300 feet from any water body.

A maximum of 3 major treatments (Spring, Summer and Fall) may occur per year, with limited spot spraying occurring between treatments.

Herbicides shall be diluted to a maximum of 1.5% when mixed with water.

Herbicides allowed for use at 40-Mile Loop include:

Capstone™ Shall not be applied within 60 feet from any water body.

Roundup custom™ for aquatic and terrestrial uses may be used within 60 feet of water with low-pressure back-pack sprayers.

Garlon 3A® shall not be applied within 60 feet from any water body.

Rodeo® may be used within 60 feet of water with low-pressure back-pack sprayers.

Escort® may only be used in uplands at least 60 feet from any water body.

LI 700® or **Agri-dex®** surfactant may be used at a maximum concentration of 1.5% when mixed with undiluted herbicide.

Known Weed Areas

Site Boundary

Port of Portland

Prepared by Sarah Wilson - Port Environmental Department | 2014

0 25 50 100 150 200 Feet

N

Figure 22
40-MILE LOOP TRAIL
Vegetation Management Plan

APPENDIX A

Herbicide Product Labels and Material Safety Data Sheets (MSDS)

1. **Capstone (triethylamine)**
2. **Escort XP (metsulfuron methyl)**
3. **Garlon 3A (triclopyr triethylamine)**
4. **Quat 256 (disinfectant/cleaner)**
5. **Rodeo (glyphosate)**
6. **Roundup Custom for Aquatic & Terrestrial Use (glyphosate)**

Specimen Label

Dow AgroSciences

Capstone™

Specialty Herbicide

™Trademark of Dow AgroSciences LLC

For control of herbaceous broadleaf weeds and woody plants in rangeland, permanent grass pastures (including grasses grown for hay*), Conservation Reserve Program (CRP), forests, and on non-cropland areas including industrial sites, rights-of-way (such as roadsides, electric utility and communication transmission and distribution lines, pipelines, and railroads), fencerows, non-irrigation ditch banks, natural areas (such as wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads and trails), and grazed areas in and around these sites.

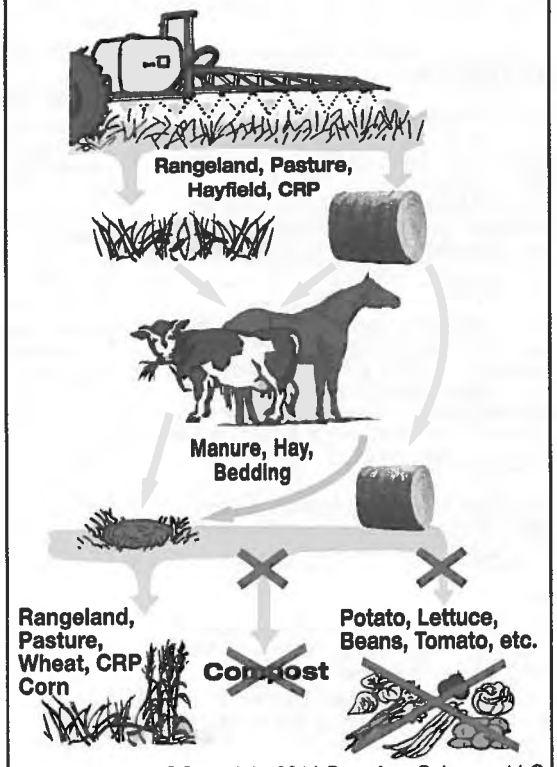
Use within sites listed above may include applications to seasonably dry wetlands (including flood plains, marshes, swamps, or bogs) and around standing water on sites such as deltas and riparian areas.

***Hay from grass treated with Capstone within the preceding 18-months can only be used on the farm or ranch where the product is applied unless allowed by supplemental labeling**

IMPORTANT USE PRECAUTIONS AND RESTRICTIONS TO PREVENT INJURY TO DESIRABLE PLANTS

- Carefully read the section ***"Restrictions in Hay or Manure Use ."***
- It is mandatory to follow the ***"Use Precautions and Restrictions"*** section of this label.
- Manure and urine from animals consuming grass or hay treated with this product may contain enough aminopyralid to cause injury to sensitive broadleaf plants.
- Hay can only be used on the farm or ranch where product is applied unless allowed by supplemental labeling.
- Consult with a Dow AgroSciences representative if you do not understand the "Use Precautions and Restrictions". **Call [1-(800) 263-1196] Customer Information Group.**

Forage and Manure Management



Not For Sale, Distribution, or Use in New York State.

GROUP	4	HERBICIDE

Active Ingredient:

Triisopropanolammonium salt of 2-pyridine carboxylic acid, 4-amino-3,6-dichloro-	2.22%
Triethylamine salt of [(3,5,6-trichloro-2-pyridinyl)oxy]acetic acid)	16.22%
Other Ingredients	81.56%
Total	100.0%

Acid Equivalents:
aminopyralid (2-pyridine carboxylic acid, 4-amino-3,6-dichloro-) – 1.15% (0.1 lb/gal)
triclopyr (3,5,6-trichloro-2-pyridinyloxyacetic acid) – 11.63% (1 lb/gal)

Precautionary Statements

Hazards to Humans and Domestic Animals

CAUTION

EPA Reg. No. 62719-572

Harmful if Swallowed • Causes Moderate Eye Irritation

Avoid contact with eyes, skin or clothing.

Personal Protective Equipment (PPE)

Some of the materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for category C on an EPA chemical-resistance category selection chart.

Applicators and other handlers must wear:
- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical resistant gloves (≥ 14 mils) such as butyl rubber, natural rubber, neoprene rubber or nitrile rubber

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

Engineering Controls

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the WPS (40 CFR 170.240(d)(4-6), the handler PPE requirements may be reduced or modified as specified in the WPS.

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.
- 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.

First Aid

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
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 a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

Environmental Hazards

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 washwater or rinsate.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

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.

Not For Sale, Distribution, or Use in New York State.

Entry Restrictions: For applications on non-cropland areas, do not enter or allow others to enter the treated area until sprays have dried.

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
- Protective eyewear
- Chemical-resistant gloves (≥ 14 mils) such as butyl rubber, natural rubber, neoprene rubber or nitrile rubber

Non-Agricultural Use Requirements

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for Agricultural Pesticides (40 CFR Part 170). The WPS does not pertain to non-agricultural use on sites, such as, rangeland, permanent grass pastures, or non-cropland. See the Agricultural Use Requirements section for information where the WPS applies.

Entry Restrictions for Non-WPS Uses: For applications on rangeland and permanent grass pastures (not harvested for hay) and non-cropland areas, do not allow entry into areas until sprays have dried, unless applicator and other handler PPE is worn.

Storage and Disposal

Do not contaminate water, food, feed or fertilizer by storage or disposal. Open dumping is prohibited.
Pesticide Storage: If this product is exposed to subfreezing temperatures, the active ingredient may crystallize and settle out of solution. Under these conditions the product should be warmed to at least 40°F and agitated well to dissolve any crystallized active ingredient prior to use.
Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

Nonrefillable containers 5 gallons or less:
Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.
Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** 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. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a 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 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 containers larger than 5 gallons:
Container Handling: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the

Storage and Disposal (Cont.)

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

Nonrefillable containers larger than 5 gallons:
Container Handling: Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.
Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** 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 a 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 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.

Resistance Management Guidelines

- Development of plant populations tolerant to auxiliary growth regulator mode-of-action is usually not a problem on non-cropland sites because these sites receive infrequent pesticide applications.
- Similar looking biotypes of a given weed species occurring in a treated area may vary in their susceptibility to a herbicide. Application of a herbicide below its labeled rate may allow more tolerant weeds to survive and a shift to more tolerant biotypes within the treated area.
- Where identified, spreading of resistant weeds to other fields may be prevented by cleaning harvesting and tillage equipment before moving to other areas and by planting weed-free seed.
- Contact your extension specialist, certified crop consultant, or Dow AgroSciences representative for the latest resistance management information.

Non-Cropland Areas, Forests, Industrial Non-Crop Areas, Rangeland, Pastures and CRP

Capstone™ specialty herbicide controls broadleaf weeds **and woody plants in rangeland, permanent grass pastures (including grasses grown for hay*), Conservation Reserve Program (CRP), forests, and on non-cropland areas**, including invasive and noxious weeds on forests and non-cropland areas including industrial sites, rights-of-way (including roadsides, electric utility and communication transmission and distribution lines, pipelines, and railroads), non-irrigation ditch banks, natural areas (including wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads and trails), and grazed areas in and around these sites without injury to most grasses.

***Hay from grass treated with Capstone within the preceding 18-months can only be used on the farm or ranch where the product is applied unless allowed by supplemental labeling**

Use within sites listed above may include applications to seasonably dry wetlands (including flood plains, marshes, swamps, or bogs) and around standing water on sites such as deltas and riparian areas.

Use Precautions and Restrictions

Consult with a Dow AgroSciences representative if you do not understand the "Use Precautions and Restrictions." Call (1-800-263-1196) for more information.

- **Do not use grasses treated with Capstone in the preceding 18-months for hay intended for export outside the United States.**
- **Hay from areas treated with Capstone in the preceding 18-months CAN NOT be distributed or made available for sale off the farm or ranch where harvested unless allowed by supplemental labeling.**
- **Hay from areas treated with Capstone in the preceding 18-months CAN NOT be used for silage, haylage, baylage and green chop unless allowed by supplemental labeling.**
- **Do not move hay made from grass treated with Capstone within the preceding 18-months off farm unless allowed by supplemental labeling.**
- **Do not use hay or straw from areas treated with Capstone within the preceding 18-months or manure from animals feeding on hay treated with Capstone in compost.**
- **Do not use grasses treated with Capstone in the preceding 18-months for seed production.**
- It is permissible to treat non-irrigation ditch banks, seasonally dry wetlands (such as flood plains, deltas, marshes, swamps, or bogs) and transitional areas between upland and lowland sites only when dry.
- Minimize overspray to open water when treating target vegetation in and around non-flowing, quiescent or transient water. When making applications to control unwanted plants on banks or shorelines of flowing water, minimize overspray to open water. **Note:** Consult local public water control authorities before applying this product in and around public water. Permits may be required to treat such areas.
- **Avoiding Injury to Non-Target Plants:** Do not aerially apply Capstone within 50 feet of a border downwind (in direction of wind movement), or allow spray drift to come in contact with, any broadleaf crop or other desirable broadleaf plants, including, but not limited to, alfalfa, cotton, dry beans, flowers, grapes, lettuce, potatoes, radishes, soybeans, sugar beets, sunflowers, tobacco, tomatoes or other broadleaf or vegetable crop, fruit trees, ornamental plants, or soil where sensitive crops are growing or will be planted. Avoid application under conditions that may allow spray drift because very small quantities of spray may seriously injure susceptible crops. Follow Precautions for Avoiding Spray Drift and Spray Drift Advisory under General Mixing and Application Instructions to minimize the potential for spray drift.
- **Capstone is highly active against many broadleaf plant species.** Do not use this product on areas where loss of desirable broadleaf plants, including legumes, cannot be tolerated.
- Do not apply this product on lawns, turf, ornamental plantings, urban walkways, driveways, tennis courts, golf courses, athletic fields, commercial sod operations, or other high-maintenance, fine turfgrass areas, or similar areas.
- **Do not use this product for impregnation on dry fertilizer, unless specified in a Dow AgroSciences state specific product bulletin.**
- **Chemigation:** Do not apply this product through any type of irrigation system.
- **Do not contaminate water intended for irrigation or domestic purposes.** Do not treat inside banks or bottoms of irrigation ditches, either dry or containing water, or other channels that carry water that may be used for irrigation or domestic purposes.
- Untreated trees can occasionally be affected by root uptake of Capstone through movement into the soil or by excretion of the product from the roots of nearby treated trees. Do not apply Capstone within the root zone of desirable trees.
- **Crop Rotation:** Do not rotate non-cropland to cropland for one year following an application of Capstone. Do not plant a broadleaf crop until an adequately sensitive field bioassay shows that the level of aminopyralid present in the soil will not adversely affect that broadleaf crop.
- Applications made during periods of intense rainfall, to soils saturated with water, surfaces paved with materials such as asphalt or concrete, or soils through which rainfall will not readily penetrate may result in runoff and movement of Capstone. Injury to crops may result if treated soil and/or runoff water containing Capstone is washed, or moved onto land used to produce crops. Exposure to Capstone may injure or kill susceptible crops and other plants, such as grapes, soybeans, tobacco, sensitive ornamentals. Do not treat frozen soil where runoff could damage sensitive plants.
- **Seeding grasses:**
  - **Preemergence:** In general, Capstone may be applied in the spring or early summer, depending on the target weed species, and grass planted after 4 months when conditions are favorable for grass establishment. With fall applications, do not plant grasses the following spring. Do not overseed ryegrass for 4 months after treatment.

- **Postemergence:** During the season of establishment, Capstone should be applied only after perennial grasses are well established (have developed a secondary root system and are vigorous. Most perennial grasses are tolerant to Capstone at this stage of development. Capstone may suppress certain established grasses, such as smooth bromegrass (*Bromus inermis*), especially when plants are stressed by adverse environmental conditions. Plants should recover from this transient suppression with the onset of environmental conditions favorable to grass growth and upon release from weed competition.

- **Seeding Legumes or Wildflowers:** Do not plant legumes or wildflowers until a soil bioassay has been conducted to determine if residues of Capstone remaining in the soil will adversely affect establishment of legumes and wildflowers.
- **Field Bioassay Instructions:** In a representative section of an area previously treated with this product, plant short test rows of the intended species across the original direction of application in a manner to sample variability in field conditions such as soil texture, soil organic matter, soil pH, rainfall pattern or drainage. The field bioassay can be initiated at any time after application and before the planting of the intended species. Observe the seeded species for symptoms of herbicidal activity, such as poor stand (effect on seed germination), chlorosis (yellowing), necrosis (dead leaves or shoots), or stunting (reduced growth). If herbicidal symptoms do not occur, the intended seeded species may be planted. If herbicidal activity is observed, do not plant the field to the intended seeded species.
- **Restrictions in Hay or Manure Use:**
  - ♦ Do not use treated plant residues, including hay or straw from areas treated within the preceeding 18-months, in compost, mulch or mushroom spawn.
  - ♦ Do not use manure from animals that have grazed forage or eaten hay harvested from treated areas within the previous 3 days, in compost, mulch or mushroom spawn.
  - ♦ Do not spread manure from animals that have grazed or consumed forage or hay from treated areas within the previous 3 days on land used for growing susceptible broadleaf crops.
  - ♦ Manure from animals that have grazed forage or hay harvested from Capstone-treated areas within the previous 3 days may only be spread on pasture grasses, grass grown for seed, wheat and corn.
- Do not plant a broadleaf crop (including soybeans, sunflower, tobacco, vegetables, field beans, peanuts, and potatoes) in fields treated with manure from animals that have grazed forage or eaten hay harvested from aminopyralid-treated areas until an adequately sensitive field bioassay is conducted to determine that the aminopyralid concentration in the soil is at level that is not injurious to the crop to be planted.
  - ♦ Do not plant a broadleaf crop in fields treated in the previous year with manure from animals that have grazed forage or hay harvested from Capstone-treated areas until an adequately sensitive field bioassay is conducted to determine that the Capstone residues in the soil is at a level that is not injurious to the crop to be planted.
  - ♦ To promote herbicide decomposition, plant residues should be evenly incorporated in the surface soil or burned. Breakdown of Capstone in plant residues or manure is more rapid under warm, moist soil conditions and may be accelerated by supplemental irrigation.
- **Grazing and Haying Restrictions:** There are no restrictions on grazing or hay harvest following application of Capstone at labeled rates. Do not transfer grazing animals from areas treated with Capstone to areas where sensitive broadleaf crops occur without first allowing 3 days of grazing on an untreated pasture. Otherwise, urine and manure may contain enough Capstone to cause injury to broadleaf plants.
- **Grazing Poisonous Plants:** Herbicide application may increase palatability of certain poisonous plants. Do not graze treated areas until poisonous plants are dry and no longer palatable to livestock.
- **Maximum Application Rate:** On non-cropland areas, do not apply more than 9 pints per acre of Capstone (0.11 lb acid equivalent aminopyralid and 1.12 lb acid equivalent triclopyr) per year. The total amount of Capstone applied broadcast, as a re-treatment, and/or spot treatment per year, must not exceed 9 pints per acre. If products containing the same active ingredient are tank mixed, do not exceed the maximum allowable active ingredient rate per acre per application per year.

Application Methods

(Broadcast Equipment)

Ground Broadcast Application: Apply the labeled rate of Capstone as a coarse low-pressure spray. Spray volume should be sufficient to uniformly cover foliage. Higher volumes (greater than 10 gallons per acre) generally provide better coverage and better control, particularly in dense and/or tall foliage canopies situations. To enhance foliage wetting and coverage, an approved non-ionic agricultural surfactant may be added to the spray mixture as recommended by the surfactant manufacturer.

Do not apply this product with mist blower systems that deliver very fine spray droplets. Use of mist blower equipment can reduce weed control and increase spray drift potential.

Aerial Broadcast Application: Apply the labeled rate of Capstone as a coarse low-pressure spray. Spray volume should be sufficient to uniformly cover foliage. Increase spray volume to ensure thorough and uniform coverage when target vegetation is tall and/or dense. Spray volumes greater than 2 gallons per acre generally provide better coverage and better control, particularly when the foliage canopy is dense and/or tall. To enhance foliage wetting and coverage, an approved non-ionic agricultural surfactant may be added to the spray mixture as recommended by the surfactant manufacturer. Also see Precautions for Avoiding spray Drift and Aerial Spray Drift Advisory.

(Hand-Held Equipment)

High-Volume Foliar Application: High volume foliar applications may be applied at rates equivalent to a maximum of 9 pints per acre per annual growing season. Use sufficient spray volume to thoroughly and uniformly wet foliage and stems. To ensure thorough wetting of high volume treatments, a high quality non-ionic agricultural surfactant such as a non-ionic or methylated seed oil may be added to the spray mixture as recommended by the surfactant manufacturer. Multiple applications may be made, but the total amount of Capstone applied must not exceed 9 pints per acre per year.

Low Volume Foliage Treatment

To control susceptible woody plants, apply up to 9 pints of Capstone in 10 to 100 gallons of finished spray depending on plant density. The spray concentration of Capstone and total spray volume per acre should be adjusted according to the size and density of target woody plants and kind of spray equipment used. With low volume sprays, use sufficient spray volume to obtain uniform coverage of target plants including the surfaces of all foliage, stems, and root collars (see General Use Precautions and Restrictions). For best results, a surfactant such as a non-ionic or methylated seed oil should be added to all spray mixtures. Match equipment and delivery rate of spray nozzles to height and density of woody plants. When treating tall, dense brush, a hose and spray gun with spray tips that deliver up to 2 gallons per minute at 40 to 60 psi may be required. Backpack or other types of specialized spray equipment with spray tips that deliver less than 1 gallon of spray per minute may be appropriate for short, low to moderate density brush.

Spot Application: Spot applications may be made at rates equivalent to the broadcast-applied rate of 4 to a maximum of 9 pints per acre per annual growing season. Spray volume should be sufficient to thoroughly and uniformly wet weed foliage. A high quality non-ionic agricultural surfactant may be added to the spray mixture as recommended by the surfactant manufacturer. Repeat treatments may be made, but the total amount of Capstone applied must not exceed 9 pints per acre per year. To prevent misapplication, spot treatments should be applied with a calibrated boom, boomless spray system, hand-held, or backpack sprayers.

Spot applications may be made at a rate of up to 0.22 lb acid equivalent aminopyralid (9 quarts of Capstone) per acre; however, not more than 50% of an acre may be treated. Do not apply more than a total of 0.11 lb acid equivalent aminopyralid per acre (9 pints per acre of Capstone) per annual growing season as a result of broadcast, spot or repeat applications.

Aerial Application

Aerial sprays should be applied using suitable drift control. (See Precautions for Avoiding Spray Drift and Aerial Drift Reduction Advisory). Add an agriculturally labeled non-ionic surfactant.

Herbaceous Broadleaf Weed and Woody Plant Control

Rangeland, Permanent Grass Pastures and CRP Acres

Capstone may be applied to rangeland, permanent pasture or CRP acres seeded to permanent grasses as an aerial or ground broadcast treatment, as a spot application, or as a high or low volume foliar application (see Application Methods section) to control susceptible broadleaf weeds, including invasive and noxious weeds (see Broadleaf Weeds Controlled section). Capstone may be applied alone or in tank mix combinations with labeled rates of other herbicides provided that: (1) the tank mix product is labeled for the timing and method of application for the use site to be treated and (2) tank mixing is not prohibited by the label of the registered tank mixed products. When tank mixing, follow the use directions on the labeling of each tank mix partner. Follow Mixing Instructions under the General Mixing and Application Instructions section.

Do not use Capstone if loss of legumes species or other broadleaf species cannot be tolerated.

During the season of establishment, Capstone should be applied only after perennial grasses are well established (have developed a good secondary root system and show good vigor). Most perennial grasses are tolerant to Capstone at this stage of development. Only Smooth Brome grass (*Bromus inermis*) has been identified to be suppressed by Capstone, this appears to occur under adverse environmental conditions. Plants should recover from this transient suppression with the onset of environmental conditions favorable to grass growth and upon release from weed competition.

Non-Cropland, Forests, and Industrial Non-Crop Areas

Capstone may be applied to non-cropland, forests, and industrial non-crop areas as an aerial or ground broadcast application, as a spot application, or as a high volume foliar application (see Application Methods section) to control herbaceous broadleaf weeds and woody plants. Capstone may be applied alone or in tank-mix combinations with labeled rates of other herbicides provided: (1) the tank mix product is labeled for the timing and method of application for the use site to be treated and (2) mixing is not prohibited by the label of the registered tank mixed products. Use as directed in the Directions of Use section of the tank-mix partner. Follow Mixing Instructions under the General Mixing and Application Instructions section below.

Forest Management Applications

For best control from broadcast applications of Capstone, use a spray volume which will provide thorough plant coverage. Recommended spray volumes are usually 10 to 25 gallons per acre by air or 10 to 100 gallons per acre by ground. To improve spray coverage of spray volumes less than 50 gallons per acre, add an agriculturally labeled non-ionic surfactant. Application systems should be used to prevent hazardous drift to off-target sites. Nozzles or additives that produce larger droplets of spray may require higher spray volumes.

Forest Site Preparation (Not for Conifer Release)

Use up to 9 pints of Capstone and apply in a total spray volume of 10 to 30 gallons per acre. Use a non-ionic agricultural surfactant for all foliar applications. Tank mixtures with other herbicides registered for forest use may be necessary to control woody brush if brush is not sensitive to the use rates of this product. When tank mixtures of herbicides are used for forest site preparation, labels for all products in the mixture must be followed and the longest recommended waiting period before planting 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 9 pints Capstone in enough water to make 100 gallons of spray mixture. To improve spray coverage, add an agriculturally labeled non-ionic surfactant. The spray mixture should be directed onto foliage of competitive hardwoods using knapsack or backpack sprayers with flat fan nozzles or equivalent any time after 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 away from contact with conifer foliage, particularly foliage of desirable pines.

Note: Over-the-top spray applications can severly injure or kill some species such as redbud and locust.

Cut-Stump Treatment

To control unwanted trees of hardwood species such as elm, maple, oak and conifers, apply Capstone, undiluted, by spraying or painting the cut surfaces of freshly cut stumps and stubs as soon as possible after cutting, if possible within about 5 minutes; waiting longer will reduce efficacy due to loss of turgor pressure (suction) in the cut stump. The cambium area next to the bark is the most vital area to wet.

With Tree Injector Method

Apply by injecting 1 milliliter of undiluted Capstone through the bark at intervals of 3 to 4 inches between centers of the injector wound. The injections should completely surround the tree at any convenient height. **Note: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is injected directly into plants.**

With Hack and Squirt Method

Make cuts around the tree trunk at a convenient height with a hatchet or similar equipment so that the cuts overlap slightly and make a continuous circle around the trunk. Spray 1 milliliter of undiluted Capstone into the pocket created between the bark and the inner stem/trunk by each cut.

With Frill or Girdle Method

Make a single girdle through the bark completely around the tree at a convenient height. The frill should allow for the herbicide to remain next to the inner stem and absorb into the plant. Wet the cut surface with undiluted solution.

Both of the above methods may be used successfully at any season except during periods of heavy sap flow of certain species - for example, maples.

Herbaceous Broadleaf Weed and Woody Plant Management Practices

Capstone may be applied postemergence as a broadcast spray or as a spot application to control broadleaf weeds listed on this label; weeds other than those listed may also be controlled by this herbicide. Postemergence applications should be made before bud stage or early flowering, unless otherwise specified. When a rate range is given, use a higher rate in the range to control weeds at advanced growth stages or under less than favorable growing conditions (such as drought stress). Best weed control results are obtained when spray volume is sufficient to provide uniform coverage of treated plants. For optimum uptake and translocation of the herbicide, avoid mowing, haying, shredding, burning or soil disturbance in treated areas for at least 7 days following application.

Capstone also provides preemergence control of germinating seeds or emerging seedlings of susceptible broadleaf weeds following application.

Capstone can provide long-term control of weeds. The length of control is dependent upon the application rate, condition and growth stage of target weeds, environmental conditions at and following application, and the density and vigor of competing desirable vegetation. Long-term broadleaf weed control is most effective where grasses and other desirable vegetation is allowed to recover from adverse environmental conditions (such as drought) and compete with susceptible broadleaf weeds.

Capstone can be an important component of integrated vegetation management programs designed to renovate or restore desired non-cropland plant communities. To maximize and extend the benefits of weed control provided by Capstone, it is important that other vegetation management practices, including mowing, fertilization, haying, etc., be used in appropriate sequences and combinations to further alleviate the adverse effects of weeds on desirable plant species and to promote development of desired non-cropland plant communities. Natural resources specialists with federal and state government agencies can provide guidance on best management practices and development of integrated vegetation management programs.

Herbaceous Broadleaf Weeds Controlled

The following weeds will be controlled with the rates of Capstone indicated in Table 1 below. For best results, most weeds should be treated when they are actively growing and under conditions favorable for growth. Use a higher rate in the rate range when growing conditions are less than favorable or when weed foliage is tall and dense. Capstone also provides preemergence control of germinating seeds and control of emerged seedlings of susceptible broadleaf weeds following application.

Table 1: Broadleaf Weeds Controlled (Rate Range 4-6 pints/acre)

amaranth, spiny	*Amaranthus spinosus*	annual	Amaranthaceae
bedstraw	*Galium spp.*	perennial	Rubiaceae
beggarticks	*Bidens spp.*	annual	Asteracea
bindweed, field	*Convolvulus arvensis*	perennial	Convolvulaceae
broomweed, annual	*Amphiachyris dracunculoides*	annual	Asteraceae
burdock, common*, **	*Arctium minus*	biennial	Asteraceae
buttercup, hairy*	*Ranunculus sardous*	annual	Ranunculaceae
buttercup, tall*, **	*Ranunculus acris*	perennial	Ranunculaceae

Table 1: Broadleaf Weeds Controlled (Rate Range 4-6 pints/acre) (Cont.)

Common Name	Scientific Name	Life Cycle	Plant Family
camelthorn	*Alhagi pseudalhagi*	perennial	Fabaceae
chamomile, scentless	*Matricaria inodora*	annual	Asteraceae
chickweed	*Stellaria media*	annual	Caryophyllaceae
chicory*	*Cichorium intybus*	perennial	Asteraceae
cinquefoil, sulfur (1)*, **	*Potentilla recta*	perennial	Rosaceae
clover	*Trifolium spp.*	perennial	Fabaceae
cocklebur	*Xanthium strumarium*	annual	Asteraceae
croton, tropic	*Croton glandulosus*	annual	Euphorbiaceae
crownvetch	*Securigera varia*	perennial	Fabaceae
cudweed, purple	*Gamochaeta purpurea*	annual	Asteraceae
daisy, oxeye (1)*, **	*Leucanthemum vulgare*	perennial	Asteraceae
dandelion, common	*Taraxacum officinale*	perennial	Asteraceae
dock, curly*	*Rumex crispus*	perennial	Polygonaceae
evening primrose, cutleaf	*Oenothera laciniata*	annual	Onagraceae
fiddleneck, common	*Amsinckia intermedia*	annual	Boraginaceae
fireweed	*Epilobium angustifolium*	perennial	Onagraceae
fleabane, flax-leaf or hairy	*Conyza bonariensis*	annual	Asteraceae
hawkweed, orange (2)*, **	*Hieracium aurantiacum*	perennial	Asteraceae
hawkweed, yellow (2)*, **	*Hieracium caespitosum*	perennial	Asteraceae
henbit*	*Lamium amplexicaule*	annual/ biennial	Lamiaceae
hogweed, giant	*Heracleum mantegazzianum*	perennial	Apiacea
horsenettle, Carolina**	*Solanum carolinense*	perennial	Solanaceae
horseweed (marestail)	*Conyza canadensis*	annual	Asteraceae
ironweed, tall	*Vernonia gigantea*	perennial	Asteraceae
ironweed, western	*Vernonia baldwinii*	perennial	Asteraceae
knapweed, diffuse (3)*, **	*Centaurea diffusa*	biennial/ perennial	Asteraceae
knapweed, Russian (4)*, **	*Acroptilon repens*	perennial	Asteraceae
knapweed, spotted (3)*, **	*Centaurea stoebe*	biennial/ perennial	Asteraceae
knapweeds	*Centaurea spp.*	biennial/ perennial	Asteraceae
knotweeds, Japanese, bohemian	*Reynoutria japonica*	perennial	Polygonaceae
kudzu*, **	*Pueraria montana*	perennial	Fabaceae
lady's thumb*	*Polygonum persicaria*	annual	Polygonaceae
lambsquarters	*Chenopodium album*	annual	Chenopodiaceae
lespedeza, annual	*Lespedeza striata*	annual	Fabaceae
licorice, wild	*Glycyrrhiza lepidota*	Perennial	Fabaceae
loosestrife, purple	*Lythrum salicaria*	Perennial	Lythraceae
marshelder, annual	*Iva annua*	annual	Asteraceae
mayweed, scentless*	*Tripleurospermum perforata*	annual	Asteraceae
mayweed, stinking*, **	*Anthemis cotula*	annual	Asteraceae
medic, black*	*Medicago lupulina*	perennial	Fabaceae
mullein	*Verbascum spp.*	biennial	Scrophulariaceae
nightshade, silverleaf	*Solanum elaeagnifolium*	perennial	Solanaceae
oxtongue, bristly	*Picris echioides*	biennial	Asteraceae
pea, Swainson	*Sphaerophysa salsula*	perennial	Fabaceae
povertyweed	*Iva axillaris*	perennial	Asteraceae
plantain spp.	*Plantago spp.*	perennial	Plantaginaceae
ragweed, common**	*Ambrosia artemisiifolia*	annual	Asteraceae
ragweed, western	*Ambrosia psilostachya*	perennial	Asteraceae
ragwort, tansy*, **	*Senecio jacobaea*	perennial	Asteraceae
rush skeletonweed	*Chondrilla juncea*	perennial	Asteraceae
sicklepod	*Cassia obtusifolia*	perennial	Fabaceae
smartweed, Pennsylvania	*Polygonum pensylvanicum*	annual	Polygonaceae
sneezeweed, bitter	*Helenium amarum*	annual	Asteraceae
soda apple, tropical (5)*, **	*Solanum viarum*	perennial	Solanaceae
sowthistle, perennial*, **	*Sonchus arvensis*	perennial	Asteraceae
sowthistle, annual	*Sonchus oleraceae*	Annual	Asteraceae
spanishneedles	*Bidens bipinnata*	annual	Asteraceae
St. Johnswort, common	*Hypericum perforatum*	perennial	Clusiaceae
star thistle, yellow (6)*, **	*Centaurea solstitialis*	annual	Asteraceae
starthirstle, purple (6) *.**	*Centaurea calcitrapa*	biennial	Asteraceae
star-thistle, Malta (6) *,**	*Centaurea melitensis*	annual	Asteraceae
stiltgrass, Japanese	*Microstegium vimineum*	annual	Poacea
sunflower, common	*Helianthus annuus*	annual	Asteraceae
teasel	*Dipsacus spp.*	biennial	Dipsacaceae
teasel, fuller's*	*Dipsacus sativus*	biennial	Dipsacaceae
thistle, artichoke	*Cynara cardunculus*	perennial	Asteraceae
thistle, blessed milk	*Silybum marianum*	biennial	Asteraceae

Table 1: Broadleaf Weeds Controlled (Rate Range 4-6 pints/acre) (Cont.)

Common Name	Scientific Name	Life Cycle	Plant Family
thistle, bull (7)*, **	*Cirsium vulgare*	biennial	Asteraceae
thistle, Canada (8)*, **	*Cirsium arvense*	perennial	Asteraceae
thistle, Italian	*Carduus pycnocephalus*	annual	Asteraceae
thistle, musk (7)*, **	*Carduus nutans*	biennial	Asteraceae
thistle, plumeless (7)*, **	*Carduus acanthoides*	biennial	Asteraceae
thistle, Scotch*, **	*Onopordum acanthium*	biennial	Asteracea
thistle, woolly distaff	*Carthamus lanatus*	annual	Asteraceae
Tree of heaven	*Ailanthus altissima*	perennial	Simaroubaceae
vetch	*Vicia spp.*	perennial	Fabaceae
wild carrot	*Daucus carota*	biennial	Apiaceae
willoweed, panicle	*Epilobium brachycarpum*	annual	Onagraceae
wormwood, absinth *, **	*Artemisia absinthium*	perennial	Asteraceae
yarrow, common	*Achillea millefolium*	perennial	Asteraceae

*Invasive plants are introduced species that are indicated to be invasive in the USDA-NRCS, PLANTS Database (http://plants.usda.gov/index.html).
**Plants designated as noxious weeds in at least one state (PLANTS Database, USDA-NRCS, http://plants.usda.gov/index.html).

(1) **Sulfur cinquefoil or oxeye daisy:** Apply Capstone at 5 to 8 pints per acre to plants in the prebud stage of development.
(2) **Orange or yellow hawkweeds:** Apply Capstone at 5 to 8 pints per acre to plants in the bolting stage of development.
(3) **Diffuse and spotted knapweeds:** Apply Capstone at 6 to 9 pints per acre when plants are actively growing with the optimum time of application occurring from rosette to the bolting stages of development or in the fall.
(4) **Russian knapweed:** Apply Capstone at 5 to 8 pints per acre to plants in the spring and summer that are in the bud to flowering stage and to dormant plants in the fall.
(5) **Tropical soda apple:** Apply Capstone at 6 to 9 pints per acre at any growth stage, but application at flowering will reduce seed production potential.
(6) **Yellow starthistle:** Apply Capstone at 4 to 6 pints per acre to plants at the rosette through bolting growth stages.
(7) **Bull, musk and plumeless thistles:** Apply Capstone at 4 to 6 pints per acre in the spring and early summer to rosette or bolting plants or in the fall to seedlings and rosettes. Apply at 5 to 6 pints when plants are at the late bolt through early flowering growth stages.
(8) **Canada thistle:** Apply Capstone at 8 to 9 pints per acre either in the spring after all plants have fully emerged (some may be budding) until the oldest plants are in full flower stage. Use the higher rate when applying to the flower stage. Applications are also effective in the fall before a killing frost.

Invasive knotweeds: Japanese, Bohemian, giant knotweeds: Apply Capstone at 8-9 pints per acre broaadcast using high volume per acre (100 gallons per acre) or apply as a spot treatment using the spot treatment rate (see Spot Treatment section). Optimum results for suppression of plant growth are obtained when applications are made to plants that are about 3 to 4 feet in height in early summer. Multiple applications/retreatments will be necessary for control of resprouts. the total amount of Capstone applied broadcast, as a re-treatment, and/or spot treatment cannot exceed 9 pints per acre per year.

Purple loosestrife: For optimum control apply Capstone at 8-9 pints per acre plus 1 pt to 1 qt of 2,4-D amine. Spot treatments may also be made by applying Capstone at the Spot treatment rate (see Spot Treatment section of the label) with or without the addition of 2,4-D.

Woody Plants Controlled

The following woody plants will be controlled or partially controlled with Capstone at 6 to 9 pints/acre. For best results, woody plants should be treated when they are actively growing and under conditions favorable for growth. Use a higher rate with plants listed as Partial Control, when growing conditions are less than favorable, or when weed foliage is tall and dense.

Table 2: Woody Plants Controlled or Partially Controlled

Common Name	Scientific Name	Plant Family
arrowwood	*Viburnum spp.*	Viburnum
aspen	*Populus spp.*	Salicaceae
Australian pine	*Pinus nigra*	Pinaceae
blackberry	*Rubus spp*	Rosaceae
ceanothus	*Ceanothus spp.*	Rhanaceae
choke cherry	*Prunus virginiana*	Rosaceae
cottonwood	*Populus spp.*	Salicaceae
Kudzu	Pueraria lobata	Fabaceae
locust	*Robinia spp.*	Fabaceae
locust, black	*Robinia pseudoacacia*	Fabaceae
locust, honey	*Gleditsia triacanthos*	Fabaceae
mimosa	*Albizia julibrissin*	Fabaceae
poison ivy	*Toxicodendron radicans*	Anacardiaceae
poison oak	*Toxicodendron diversilobum*	Anacardiaceae
poplar	*Populus spp.*	Salicaceae
poplar, tulip	*Liriodendron tulipera*	Salicaceae
redbud	*Cercis spp.*	Fabaceae
Scotch broom	*Cytisus scoparius*	Fabaceae
sumac	*Rhus spp.*	Anacardiaceae
rose	*Rosa spp*	Rosaceae
wisteria	*Wisteria brachybotris*	Fabaceae

Partial Control

Common Name	Scientific Name	Plant Family
Ash	*Fraxinus spp.*	Oleaceae
bear clover (bearmat)	Chamaebatia foliolosa	Rosaceae
beech	*Fagus spp.*	Fagaceae
birch	*Betula dpp.*	Betulaceae
blackgum	*Nyssa sylvatica*	Cornaceae
Brazilian pepper	*Schinus terebinthifolius*	Anacardiaceae
cascara	*Rhamnus purshiana*	Rhamnaceae
chinquapin	*Castanea spp.*	Fagaceae
Douglas-fir	*Pseudotsuga spp.*	Pinacea
dogwood	*Cornus drummondii*	Cornaceae
elderberry	*Sambucus spp.*	Adoxaceae
elm	*Ulmus spp.*	Ulmaceae
gallberry	*Ilex glabra*	Aquifoliaceae
hazel	*Corylus*	Betulaceae
hornbean	*Carpinus caroliniana*	Betulaceae
madrone	*Arbutus spp.*	Ericaceae
maples	*Acer spp,*	Sapindaceae

Partial Control (Cont.)

Common Name	Scientific Name	Plant Family
Mulberry	*Morus*	Moraceae
oaks	*Quercus*	Fagaceae
persimmon	*Diospyros*	Ebenaceae
pine	*Pinus spp.*	Pinaceae
salt-bush ~~*(Baccharis spp.)*~~	*Baccharis spp.*	Asteraceae
salt cedar	*Tamarix spp.*	Tamaricaceae
salmonberry	*Rubus spectabilis*	Rosaceae
sassafras	*Sassafras albidum*	Lauraceae
sweetbay magnolia	*Magnolia virginiana*	Magnoliaceae
sweetgum	*Liquidambar spp.*	Altingiaceae
sycamore	*Platanus occidentalis*	Platanaceae
tanoak	*Lithocarpus densiflorus*	Fagaceae
thimbleberry	*Rubus parviflorus*	Rosaceae
waxmyrtle	*Myrica cerifera*	Myricaceae
western hemlock	*Tsuga heterophylla*	Pinaceae
willow	*Salix spp.*	Salicaceae
winged elm	*Ulmus alata*	Ulmaceae

Partial control: a sequential application or tank mixes with additional Garlon® 3A, Accord® or other herbicides may be necessary for complete control.

General Mixing and Application Instructions

Mixing Instructions

Mixing with Water: To prepare the spray, add about half the required amount of water in the spray tank. Then, with agitation, add Capstone and other registered tank mix herbicides. Finally, with continued agitation, add the rest of the water and additives such as surfactants or drift reduction and deposition aids.

Tank Mixing with Other Herbicides: Capstone at rates of up to 9 pints per acre may be mixed with labeled rates of other herbicides registered for application on listed sites to broaden the spectrum of weeds controlled or to improve control of certain weeds. Capstone may be applied in tank-mix combination with labeled rates of other herbicides provided: (1) the product tank-mixed with Capstone is labeled for the timing and method of application for the use site to be treated; (2) mixing is not prohibited by the label of the product to be tank mixed with Capstone; and (3) Capstone is compatible with the product to be included in a tank-mix. Use as directed in the Directions for Use section of the tank mix partner.

- For direct injection or other spray equipment where the product formulations will be mixed in undiluted form, special care should be taken to ensure tank mix compatibility (see Tank Mix Compatibility Testing below.)
- Always perform a jar test to ensure the compatibility of products to be used in tank mixture.

Note: If tank mixing with Accord®Concentrate or Rodeo® herbicides, mix the Capstone with at least 75% of the total spray volume desired and ensure that the Capstone is well mixed before adding the Accord Concentrate or Rodeo to avoid incompatibility.

Tank-Mix Compatibility Testing: Perform a jar test prior to mixing in a spray tank to ensure compatibility of Capstone and other pesticides or carriers. Use a clear glass jar with lid and mix ingredients in the same order and proportions as will be used in the spray tank. The mixture is compatible if the materials mix readily when the jar is inverted several times. The mixture should remain stable after standing for 1/2 hour or, if separation occurs, should readily remix if agitated. An incompatible mixture is indicated by separation into distinct layers that do not readily remix when agitated and/or the presence of flakes, precipitates, gels, or heavy oily film in the jar. Use of an appropriate compatibility aid such as Unite or Complex may resolve mix incompatibility. If the mixture is incompatible do not use that tank mix partner in tank mixtures.

Use with Surfactants: For post-emergence applications, a high quality surfactant such as a non-ionic surfactant of at least 80% active ingredient, should be added at 0.25% to 0.5% by volume (unless otherwise specified) to enhance herbicide activity under adverse environmental conditions (such as, high temperature, low relative humidity, drought conditions, dusty plant surfaces) or when weeds are heavily pubescent or more mature.

Sprayer Clean-Out Instructions

Do not use spray equipment used to apply Capstone for other applications to land planted to susceptible crops or desirable sensitive plants unless it has been determined that all residues of this herbicide has been removed by thorough cleaning of equipment.

Equipment used to apply Capstone should be thoroughly cleaned before reusing to apply any other chemicals as follows:

1. Rinse and flush application equipment thoroughly after use. Dispose of rinse water in non-cropland area away from water supplies.
2. Rinse a second time, adding 1 quart of household ammonia or tank cleaning agent for every 25 gallons of water. Circulate the solution through the entire system so that all internal surfaces are contacted (15 to 20 minutes). Let the solution stand for several hours, preferably overnight.
3. Flush the solution out of the spray tank through the boom.
4. Rinse the system twice with clean water, recirculating and draining each time.
5. Spray nozzles and screens should be removed and cleaned separately.

Precautions for Avoiding Spray Drift

Avoid application under conditions that may allow spray drift because very small quantities of spray, which may not be visible, may injure susceptible crops. This product should be applied only when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, non-target crops and other plants) is minimal (e.g., when wind is blowing away from the sensitive areas. A drift control aid may be added to the spray solution to further reduce the potential for drift. If a drift control aid is used, follow the use directions and precautions on the manufacturer's label. Do not use a thickening agent with Microfoil, Thru-Valve booms, or other spray delivery systems that cannot accommodate thickened spray solutions.

Ground Equipment: With ground equipment spray drift can be lessened by keeping the spray boom as low as possible; by applying 10 gallons or more of spray per acre; by keeping the operating spray pressures at the manufacturer's recommended minimum pressures for the specific nozzle type used (low pressure nozzles are available from spray equipment manufacturers); and by spraying when the wind velocity is low (follow state regulations). Avoid calm conditions which may be conducive to thermal inversions. Direct sprays no higher than the tops of target vegetation and keep spray pressures low enough to provide coarse spray droplets to minimize drift.

Aerial Application: Avoid spray drift at the application site. The interaction of many equipment-and weather-related factors determine the potential for spray drift. Users are responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications:

1. The distance of the outer most operating nozzles on the boom must not exceed 75% of wingspan or 85% of the rotor diameter.
2. Nozzles should be pointed backward parallel with the air stream or not pointed downwards more than 45 degrees.

Where states have more stringent regulations, they should be observed.

The applicator should be familiar with and take into account the information covered in the following **Aerial Drift Reduction Advisory**. This information is advisory in nature and does not supersede mandatory label requirements.

Aerial Drift Reduction Advisory

Information on Droplet Size: The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

Controlling Droplet Size:

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that will provide uniform coverage.
- **Nozzle Orientation** - Orient nozzles so that the spray is released parallel to the airstream. This produces larger droplets than other orientations. Significant deflection from horizontal will reduce droplet size and increase drift potential.

- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Length: For some use patterns, reducing the effective boom length to less than 75% of wingspan or 85% of the rotor diameter may further reduce drift without reducing swath width.

Application Height: Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment: When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

Wind: Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. **Note**: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions: Applications should not occur during a local, low level temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of the smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Terms and Conditions of Use

If terms of the following Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. To the extent permitted by law, otherwise, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies.

Warranty Disclaimer

Dow AgroSciences 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. To the extent permitted by law, Dow AgroSciences MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Crop 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 temperatures, 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 Dow AgroSciences or the seller. To the extent permitted by law, all such risks shall be assumed by buyer.

Limitation of Remedies

To the extent permitted by law, 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 Dow AgroSciences' 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.

To the extent permitted by law, Dow AgroSciences shall not be liable for losses or damages resulting from handling or use of this product unless Dow AgroSciences is promptly notified of such loss or damage in writing. To the extent permitted by law, in no case shall Dow AgroSciences be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer, Inherent Risks of Use and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or this Limitation of Remedies in any manner.

Produced for
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268

Label Code: D02-405-001
Initial printing
LOES Number: 010-02257

EPA accepted: 05/26/11

Dow AgroSciences LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
CAPSTONE* Herbicide

COMPANY IDENTIFICATION
Dow AgroSciences LLC
A Subsidiary of The Dow Chemical Company
9330 Zionsville Road
Indianapolis, IN 46268-1189
USA

Customer Information Number: 800-992-5994
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. Hazards Identification

Emergency Overview
Color: Red to brown
Physical State: Liquid.
Odor: Mild
Hazards of product:

CAUTION! Combustible liquid and vapor. May cause eye irritation. May cause skin irritation. Eliminate ignition sources. Toxic fumes may be released in fire situations.

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential Health Effects
Eye Contact: May cause slight eye irritation. May cause slight temporary corneal injury.
Skin Contact: Brief contact may cause skin irritation with local redness.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation: Prolonged exposure is not expected to cause adverse effects.

Ingestion: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.
Effects of Repeated Exposure: In animals, effects have been reported on the following organs: For the active ingredient(s): Triclopyr triethylamine salt. Kidney. For similar active ingredient(s). Triclopyr. Aminopyralid. Liver. Gastrointestinal tract.

3. Composition Information

Component	CAS #	Amount
Triclopyr Triethylamine Salt	57213-69-1	16.22 %
Aminopyralid Triisopropanolamine Salt	566191-89-7	2.22 %
Ethylenediamine tetraacetic acid	60-00-4	0.8 %
Balance	Not available	80.76 %

4. First-aid measures

Description of first aid measures
General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Inhalation: Move person to fresh air; if effects occur, consult a physician.
Skin Contact: Wash skin with plenty of water.
Eye Contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.
Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.
Most important symptoms and effects, both acute and delayed
Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.
Indication of immediate medical attention and special treatment needed
No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. Fire Fighting Measures

Suitable extinguishing media
To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

Special hazards arising from the substance or mixture
Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Hydrogen chloride. Carbon monoxide. Carbon dioxide.
Unusual Fire and Explosion Hazards: This material will not burn until the water has evaporated. Residue can burn. May produce flash fire. If exposed to fire from another source and water is evaporated, exposure to high temperatures may cause toxic fumes.
Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.
Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. No smoking in area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.
Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

7. Handling and Storage

Handling
General Handling: Keep away from heat, sparks and flame. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Keep out of reach of children. Do not swallow. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling.
Other Precautions: Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.

Storage
Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
Triclopyr Triethylamine Salt	Dow IHG	TWA	2 mg/m3 D-SEN

A D-SEN notation following the exposure guideline refers to the potential to produce dermal sensitization, as confirmed by human or animal data.
RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

Personal Protection

Eye/Face Protection: Use safety glasses (with side shields).

Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyethylene. Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl chloride ("PVC" or "vinyl"). Avoid gloves made of: Polyvinyl alcohol ("PVA"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, if material is heated or sprayed, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls

Ventilation: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Appearance	
Physical State	Liquid.
Color	Red to brown
Odor	Mild
Odor Threshold	No test data available
pH	7.3
Melting Point	Not applicable
Freezing Point	No test data available
Boiling Point (760 mmHg)	No test data available.
Flash Point - Closed Cup	78.8 °C (173.8 °F) *Closed Cup*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammable Limits In Air	**Lower:** No test data available **Upper:** No test data available
Vapor Pressure	No test data available
Vapor Density (air = 1)	No test data available
Specific Gravity (H2O = 1)	1.0528 *Unspecified*
Solubility in water (by weight)	Soluble
Partition coefficient, n-octanol/water (log Pow)	No data available for this product. See Section 12 for individual component data.
Autoignition Temperature	*92/69/EEC A15* none below 400degC
Decomposition Temperature	No test data available
Dynamic Viscosity	< 3 mPa.s
Kinematic Viscosity	No test data available
Oxidizing properties	No
Liquid Density	1.0528 g/cm3 *Digital density meter*

10. Stability and Reactivity

Reactivity
No dangerous reaction known under conditions of normal use.
Chemical stability
Thermally stable at recommended temperatures and pressures.

Possibility of hazardous reactions
Polymerization will not occur.
Conditions to Avoid: Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible Materials: Avoid contact with: Oxidizers.
Hazardous decomposition products
Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen chloride. Nitrogen oxides. Toxic gases are released during decomposition.

11. Toxicological Information

Acute Toxicity
Ingestion
As product: LD50, Rat, female 3,752 mg/kg
Dermal
As product: LD50, Rat > 5,000 mg/kg
Inhalation
As product: LC50, 4 h, Aerosol, Rat > 5.34 mg/l
No deaths occurred at this concentration.
Eye damage/eye irritation
May cause slight eye irritation. May cause slight temporary corneal injury.
Skin corrosion/irritation
Brief contact may cause skin irritation with local redness.
Sensitization
Skin
Did not demonstrate the potential for contact allergy in mice.
Respiratory
No relevant data found.
Repeated Dose Toxicity
In animals, effects have been reported on the following organs: For the active ingredient(s): Triclopyr triethylamine salt. Kidney. For similar active ingredient(s). Triclopyr. Aminopyralid. Liver. Gastrointestinal tract.
Chronic Toxicity and Carcinogenicity
As product: No relevant information found.
Developmental Toxicity
Active ingredient did not cause birth defects in laboratory animals.
Reproductive Toxicity
As product: No relevant information found.
Genetic Toxicology
For the active ingredient(s): Triclopyr triethylamine salt. In vitro genetic toxicity studies were negative. Genetic toxicity studies in animals were negative for component(s) tested.

12. Ecological Information

Toxicity

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested). Material is slightly toxic to birds on an acute basis (LD50 between 501 and 2000 mg/kg).

Fish Acute & Prolonged Toxicity
LC50, rainbow trout (Oncorhynchus mykiss), flow-through, 96 h: > 800 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, water flea Daphnia magna, flow-through, 48 h, immobilization: > 800 mg/l
Aquatic Plant Toxicity
ErC50, diatom Navicula sp., Growth rate inhibition, 96 h: > 100 mg/l
Toxicity to Above Ground Organisms
oral LD50, bobwhite (Colinus virginianus): 1839 mg/kg bodyweight.
oral LD50, Honey bee (Apis mellifera): 133.0 micrograms/bee
contact LD50, Honey bee (Apis mellifera): > 191.6 micrograms/bee
Toxicity to Soil Dwelling Organisms
LC50, Earthworm Eisenia foetida, adult, 14 d: > 0.3333 mg/kg

Persistence and Degradability

Data for Component: **Triclopyr Triethylamine Salt**
Chemical degradation (hydrolysis) is expected in the environment. Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD > 40%).
Chemical degradation (hydrolysis) is expected in the environment.

Data for Component: **Aminopyralid Triisopropanolamine Salt**
For similar material(s): Aminopyralid. Material is not readily biodegradable according to OECD/EEC guidelines.

Data for Component: **Ethylenediamine tetraacetic acid**
Material is inherently biodegradable (reaches > 20% biodegradation in OECD test(s) for inherent biodegradability).
OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
37 %	14 d	OECD 302B Test	Not applicable

Theoretical Oxygen Demand: 1.37 mg/mg

Bioaccumulative potential

Data for Component: **Triclopyr Triethylamine Salt**
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 0.196 - 0.309 Shake flask (OECD 107 Test)
Bioconcentration Factor (BCF): 1; invertebrate; Measured

Data for Component: **Aminopyralid Triisopropanolamine Salt**
Bioaccumulation: For similar active ingredient(s). Aminopyralid. Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Data for Component: **Ethylenediamine tetraacetic acid**
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): -5.005 Estimated.
Bioconcentration Factor (BCF): 1.1; fish; Measured

Mobility in soil

Data for Component: **Triclopyr Triethylamine Salt**
Partition coefficient, soil organic carbon/water (Koc): 4,523 Estimated.
Henry's Law Constant (H): 3.724E-14 atm*m3/mole; 25 °C Estimated.

Data for Component: **Aminopyralid Triisopropanolamine Salt**

Mobility in soil: For similar active ingredient(s)., Aminopyralid., Potential for mobility in soil is very high (Koc between 0 and 50).

Data for Component: **Ethylenediamine tetraacetic acid**

Mobility in soil: Potential for mobility in soil is high (Koc between 50 and 150).
Partition coefficient, soil organic carbon/water (Koc): 98**Henry's Law Constant (H):** 7.7E-16 atm*m3/mole Estimated.

13. Disposal Considerations

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. Transport Information

DOT Non-Bulk
NOT REGULATED

DOT Bulk
Proper Shipping Name: COMBUSTIBLE LIQUID, NOS
Technical Name: CONTAINS TRIETHYLAMINE
Hazard Class: COMBUSTIBLE LIQUID **ID Number:** NA1993 **Packing Group:** PG III

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. Regulatory Information

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.
Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.
Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103
This product contains the following substances which are subject to CERCLA Section 103 reporting requirements and which are listed in 40 CFR 302.4.

Component	CAS #	Amount
Ethylenediamine tetraacetic acid	60-00-4	0.8%

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

Toxic Substances Control Act (TSCA)
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

16. Other Information

Hazard Rating System

NFPA	Health	Fire	Reactivity
	3	1	1

Revision
Identification Number: 1007086 / 1016 / Issue Date 08/25/2011 / Version: 2.3
DAS Code: GF-1883
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

Dow AgroSciences LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is

provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

H - 65699

DuPont™ Escort® XP

herbicide

DuPont™ Escort® XP

herbicide

Dry Flowable

Active Ingredient	*By Weight*
Metsulfuron methyl Methyl 2-[[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino]-carbonyl]amino]sulfonyl]benzoate	60%
Inert Ingredients	40%
TOTAL	100%

EPA Reg. No. 352-439 EPA Est. No. _____

Nonrefillable Container

Net: _____

OR

Refillable Container

Net: _____

KEEP OUT OF REACH OF CHILDREN

CAUTION

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand 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 further 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 eye. 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. You may also contact 1-800-441-3637 for emergency medical treatment information.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

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

PERSONAL PROTECTIVE EQUIPMENT

Applicators and other handlers 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.

ENVIRONMENTAL HAZARDS

Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

This herbicide is injurious to plants at extremely low concentrations. Nontarget plants may be adversely effected from drift and run-off.

IMPORTANT

DO NOT USE ON FOOD OR FEED CROPS EXCEPT AS SPECIFIED BY THIS LABEL OR SUPPLEMENTAL LABELING. Injury to or loss of desirable trees or other plants may result if the precautions listed below are not followed.

- Do not apply DuPont™ ESCORT® XP herbicide (except as directed), or drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend or in locations where the product may be washed or moved into contact with their roots.
- Do not use on lawns, walks, driveways, tennis courts, or similar areas.
- Prevent drift of spray to desirable plants.
- Do not contaminate any body of water, including irrigation water.
- Keep from contact with fertilizers, insecticides, fungicides and seeds.

Low rates of ESCORT® XP can kill or severely injure most crops. Following an ESCORT® XP application, the use of spray equipment to apply other pesticides to crops on which ESCORT® XP is not registered may result in their damage. The most effective way to reduce this crop damage potential is to use dedicated mixing and application equipment.

GENERAL INFORMATION

ESCORT® XP herbicide is a dispersible granule that is mixed in water and applied as a spray by ground or aerial application.

ESCORT® XP is registered for the control of annual and perennial weeds and unwanted woody plants on private, public and military lands, on rights-of-way, industrial sites, non-crop areas, ditchbanks of dry drainage ditches, certain types of unimproved turf grass, and conifer and hardwood plantations, including grazed areas on these sites. Do not use on irrigation ditches.

ESCORT® XP controls weeds and woody plants primarily by postemergent activity. Although ESCORT® XP has preemergence activity, best results are generally obtained when ESCORT® XP is applied to foliage after emergence or dormancy break. Generally, for the control of annual weeds, ESCORT® XP provides the best results when applied to young, actively growing weeds. For the control of perennial weeds, applications made at the bud/bloom stage or while the target weeds are in the fall rosette stage may provide the best results. The use rate depends upon the weed species and size at the time of application.

The degree and duration of control may depend on the following:

- weed spectrum and infestation intensity
- weed size at application
- environmental conditions at and following treatment
- soil pH, soil moisture, and soil organic matter.

ESCORT® XP may be applied on conifer and hardwood plantations, and non-crop 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 management activities. It is permissible to treat intermittently flooded low lying sites, seasonally dry flood plains and transitional areas between upland and lowland sites when no water is present. It is also permissible to treat marshes, swamps and bogs after water has receded as well as seasonally dry flood deltas. DO NOT make applications to natural or man-made bodies of water such as lakes, reservoirs, ponds, streams and canals.

ENVIRONMENTAL CONDITIONS AND BIOLOGICAL ACTIVITY

ESCORT® XP is absorbed primarily through the foliage of plants, and by the roots to a lesser degree. Plant cell division is generally inhibited in sensitive plants within a few hours following uptake. Two to 4 weeks after application, leaf growth slows followed by discoloration and tissue death. The final affects on annual weeds are evident about 4 to 6 weeks after application. The ultimate affect on perennial weeds and woody plants occurs in the growing season following application.

Warm, moist conditions following treatment promote the activity of ESCORT® XP, while cold, dry conditions may reduce or delay activity. Weeds and brush hardened off by cold weather or drought stress may not be controlled.

The use of a surfactant is recommended to enhance the control of susceptible plants, except where noted. Apply at a minimum rate (concentration) of 1/4% volume/volume (1 quart per 100 gallons of spray solution), or at the manufacturer's recommended rate. Use only EPA approved surfactants containing at least 80% active ingredient. Certain types of surfactants, such as those incorporating acetic acid (i.e. LI- 700), may not be compatible with ESCORT® XP and may result in decreased performance. Certain surfactants may not be suitable for use on desirable plants, such as turf and conifers, listed on this label. Consult the surfactant manufacturer's label for appropriate uses.

Weed and brush control may be reduced if rainfall occurs soon after application.

RESISTANCE

When herbicides that affect the same biological site of action are used repeatedly over several years to control the same weed species in the same field, naturally-occurring resistant biotypes may survive a correctly applied herbicide treatment, propagate, and become dominant in that field. Adequate control of these resistant weed biotypes cannot be expected. If weed control is unsatisfactory, it may be necessary to retreat the problem area using a product affecting a different site of action.

To better manage herbicide resistance through delaying the proliferation and possible dominance of herbicide resistant weed biotypes, it may be necessary to change cultural practices within and between crop seasons such as using a combination of tillage, retreatment, tank-mix partners and/or sequential herbicide applications that have a different site of action. Weed escapes that are allowed to go to seed will promote the spread of resistant biotypes.

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

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

INTEGRATED PEST MANAGEMENT

This product may be used as part of an Integrated Pest Management (IPM) program that can include biological, cultural, and genetic practices aimed at preventing economic pest damage. IPM principles and practices include field scouting or other detection methods, correct target pest identification, population monitoring, and treating when target pest populations reach locally determined action thresholds. Consult your state cooperative extension service, professional consultants or other qualified authorities to determine appropriate action treatment threshold levels for treating specific pest/crop systems in your area.

DIRECTIONS FOR USE

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

DuPont™ ESCORT® XP must be used only in accordance with instructions on this label or in separately published DuPont instructions.

DuPont will not be responsible for losses or damages resulting from the use of this product in any manner not specified on this label. User assumes all risks associated with such non-specified use.

Do not apply more than 4 ounces of ESCORT® XP per acre per year.

Do not use on food or feed crops except as specified by this label or supplemental 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 in your State responsible for pesticide regulation.

TANK MIXES

ESCORT® XP may be tank mixed with other herbicides registered for the use sites described in this label. Use only those tank mix partners which are labeled for the appropriate use site. When tank mixing, use the most restrictive label limitations for each of the products being used in the tank mix.

AGRICULTURAL USES

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours. PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

- Coveralls
- Shoes plus socks

CONIFER PLANTATIONS

Application Information

ESCORT® XP is registered for the control of many species of weeds and deciduous trees on sites where conifers are growing or are to be planted. Apply by ground equipment or by air (helicopter only). Refer to the "Weeds Controlled" and "Brush Species Controlled" for a listing of susceptible species.

Application Timing

Apply ESCORT® XP after weeds have emerged or after undesirable hardwoods have broken winter dormancy and have reached the point of full leaf expansion.

Conifer Site Preparation --Application Before Transplanting

After consulting the "Weeds Controlled" and "Brush Species Controlled" tables, apply the rates of ESCORT® XP specified for the most difficult to control species on the site.

Southeast—Apply up to 4 ounces per acre for loblolly and slash pines. Transplant the following planting season.

Northeast and Lake States—Apply up to 2 ounces per acre for red pine. Transplant the following planting season. Apply up to 2 ounces per acre for black, white and Norway spruce. Transplant the following spring.

West—Apply up to 2 ounces per acre prior to planting Douglas Fir, Sitka Spruce, Western Red Cedar, Western Hemlock, Ponderosa Pine, and Grand Fir in the Coast Rangeland and western slope of the Cascades in Oregon and Washington. These conifer species listed can be planted anytime after application. Other conifer species can be planted providing the user has prior experience indicating acceptable tolerance to ESCORT® XP soil residues.

Without prior experience, it is recommended that other species be planted on a small scale to determine selectivity before large-scale plantings are made as unacceptable injury may occur. DuPont will not assume responsibility for injury to any conifer species not listed on this label.

Tank Mix Combinations—

For broader spectrum control, the following products may be used in combination with DuPont™ ESCORT® XP.

Glyphosate (4 pound active per gallon)

Tank mix 1 to 2 ounces of ESCORT® XP with 2 to 10 quarts of glyphosate per acre. Refer to the product container for a list of species controlled.

Imazapyr (4 pound active per gallon)

Tank mix 1 to 2 ounces of ESCORT® XP with 10 to 24 fluid ounces of imazapyr per acre. Loblolly and slash pines may be transplanted the planting season following application. This combination controls ash, black gum, cherry, hawthorn, honeysuckle, hophornbeam, persimmon, oaks (red, white and water), sassafras, sweetgum, Vaccinium species, and suppresses blackberry, dogwood, elms, myrtle dahoon, hickories, and red maple.

Glyphosate (4 pound active per gallon) + Imazapyr (4 pound active per gallon)

Tank mix 1/2 to 1 ounce of ESCORT® XP with 16 to 64 fluid ounces of glyphosate and 10 to 12 fluid ounces of imazapyr per acre. Slash and loblolly pines may be transplanted the planting season following application. This combination controls cherry, dogwood, elms, oaks (red and water), persimmon, sassafras, sweetgum and suppresses hickory.

DuPont™ VELPAR® L or VELPAR® DF

Tank mix 1 to 2 ounces of ESCORT® XP per acre with VELPAR® L or VELPAR® DF at the rates specified on the container for various soil textures. Loblolly and slash pines may be transplanted the planting season following application. Refer to the product container for a list of species controlled.

DuPont™ OUST® EXTRA

Tank mix 1/2 to 1 1/2 ounces of ESCORT® XP with 2 to 3 ounces of OUST® EXTRA per acre for herbaceous weed control. Refer to the product container and the "Weeds Controlled" section of this label for a listing of the weeds controlled. Loblolly and slash pines may be transplanted the planting season following application. Tank mix 2 ounces of ESCORT® XP with 3 ounces of OUST® EXTRA per acre for herbaceous weed control and early spring suppression of bull thistle and Canada thistle in the Coast Rangeland and western slope of the Cascade Mountains. Douglas fir may be transplanted at least 90 days following application.

Release--Hardwood Control and Suppression

ESCORT® XP may be used for application over the top of established slash and loblolly pine to control the species listed in "Weeds Controlled" and "Brush Species Controlled" section of this label. Apply 1 to 4 ounces per acre to control the species indicated, including kudzu.

Tank Mix Combinations—

For broader spectrum control the following products may be used in combination with ESCORT® XP.

Imazapyr (4 pound active per gallon)

Tank mix 1 to 2 ounces of ESCORT® XP with 8 to 16 fluid ounces of imazapyr per acre for application to loblolly pine. Refer to the imazapyr label regarding the use of surfactants and the appropriate application timing with respect to the age and development stage of the pines. This combination controls ash, black gum, cherry, hawthorn, honeysuckle, hophornbeam, oaks (red, white and water), sassafras, sweetgum, Vaccinium species, and suppresses blackberry, dogwood, elms, myrtle dahoon, hickories, persimmon, and red maple.

VELPAR® L or VELPAR® DF

Tank mix 1 to 2 ounces of ESCORT® XP with VELPAR® L or VELPAR® DF at the rates specified on the container for various soil textures. This combination may be applied to loblolly and slash pines.

Release--Herbaceous Weed Control

ESCORT® XP may be applied to transplanted loblolly and slash pine for the control of herbaceous competition. Consult the "Weeds Controlled" for a listing of the susceptible species and application rates. Best results are obtained when ESCORT® XP is applied just before weed emergence until shortly after weed emergence.

Tank Mix Combinations—

For broader spectrum control the following products may be used in combination with ESCORT® XP.

Imazapyr (4 pound active per gallon)

Tank mix 1/2 to 1 ounce of ESCORT® XP with 4 fluid ounces of imazapyr per acre. The tank mix may be used on loblolly pine.

VELPAR® L or VELPAR® DF

Tank mix 1/2 to 1 ounce of ESCORT® XP with VELPAR® L or VELPAR® DF at the rates specified on the container for various soil textures. This combination may be applied to loblolly and slash pines.

Release - Directed Spray in Conifers

Western US

To release conifers from competing brush species, such as, blackberry, salmonberry, snowberry, thimbleberry and wild roses, mix 2 to 4 ounces of ESCORT® XP per 100 gallons of spray solution. Direct spray onto the foliage of competing brush species using a knapsack or backpack sprayer. For best results, apply any time after the brush species have reached full leaf stage but before autumn coloration. At application, the majority of the brush species should be less than six feet in height to help ensure adequate spray coverage. Thorough coverage of the target foliage is necessary to optimize results. Care should be taken to direct the ESCORT® XP spray solution away from the conifer foliage.

NOTE:
DuPont™ ESCORT® XP may cause temporary yellowing and or growth suppression when the spray solution contacts conifer foliage. The use of a surfactant with ESCORT® XP may improve brush control results. When using a surfactant with ESCORT® XP, extra precaution must be taken to avoid contact with conifer foliage. Excessive drift onto conifers may result in severe injury.

IMPORTANT PRECAUTIONS —CONIFER PLANTATIONS ONLY

- Applications of ESCORT® XP made to conifers that are suffering from loss of vigor caused by insects, diseases, drought, winter damage, animal damage, excessive soil moisture, planting shock, or other stresses may injure or kill the trees.
- Applications of ESCORT® XP made for herbaceous release should only be made after adequate rainfall has closed the planting slit and settled the soil around the roots following transplanting.
- Do not apply ESCORT® XP to conifers grown as ornamentals.
- ESCORT® XP applications may result in damage and mortality to other species of conifers when they are present on sites with those listed in the preceding specifications for conifer plantations.

HARDWOOD PLANTATIONS

Application Information
ESCORT® XP may be used at rates of up to 2 ounces per acre for the control of many weed species on sites where yellow poplar is growing or is to be planted, and on sites where red alder is to be planted. Apply by ground equipment or by air (helicopter only). Refer to the "Weeds Controlled" sections of this label for a listing of susceptible species.

Application Timing
ESCORT® XP may be applied as a site preparation treatment prior to planting red alder or yellow poplar. As a prior to planting site preparation treatment for red alder, ESCORT® XP may be tank mixed with other herbicides labeled for this use.
ESCORT® XP may also be applied over-the-top of planted yellow poplar seedlings after the soil has settled around the root system, but before the seedlings have broken dormancy (prior to bud break).

Release--Herbaceous Weed Control

ESCORT® XP may be applied to yellow poplar for the control of herbaceous competition. Consult the "Weeds Controlled" for a listing of the susceptible species and specified application rates. Best results are obtained when ESCORT® XP is applied just before weed emergence until shortly after weed emergence.

Tank Mix Combinations—
Tank mix 1/2 ounce of ESCORT® XP with 4 to 6 pints of DuPont™ VELPAR® L as directed on the package label for "RELEASE--HERBACEOUS WEED CONTROL" in pine plantations in the eastern U.S. Follow the VELPAR® L label directions regarding altering the application rate by soil texture.

IMPORTANT PRECAUTIONS —HARDWOOD PLANTATIONS ONLY

- Application of VELPAR® L and ESCORT® XP made to yellow poplar that are suffering from loss of vigor caused by insects, disease, drought, winter damage, animal damage, excessive soil moisture, planting shock or other stresses may injure or kill the seedlings.
- Applications of ESCORT® XP made for release should only be made after adequate rainfall has closed the planting slit and settled the soil around the roots following transplanting.
- The use of surfactant is not recommended for applications made over the tops of trees.
- Careful consideration must be given by an experienced and knowledgeable forester to match the requirements of yellow poplar and/or red alder to the conditions of the site. Treatment of yellow poplar and/or red alder planted on a site inadequate to meet its requirements may injure or kill the seedlings.

NON-AGRICULTURAL USES

NON-AGRICULTURAL USE REQUIREMENTS
The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.
Do not enter or allow others to enter the treated area until sprays have dried.
Non-crop industrial weed control and selective weed control in turf (industrial, unimproved only) are not within the scope of the Worker Protection Standard.

NON-CROP SITES

Application Information
ESCORT® XP is registered for general weed control on private, public and military lands as follows: Uncultivated nonagricultural areas (such as airports, highway, railroad and utility rights-of-way, sewage disposal areas, etc.); uncultivated agricultural areas - non-crop producing (such as farmyards, fuel storage areas, fence rows, soil bank land, barrier strips, etc.); industrial sites - outdoor (such as lumberyards, pipeline and tank farms, etc.) including grazed areas on these sites. It may also be used for the control of certain noxious and troublesome weeds.
Consult the "Weeds Controlled" and "Brush Species Controlled" tables to determine the appropriate application rate.
ESCORT® XP may be applied in tank mixture with other herbicides labeled for use on non-crop sites. Fully read the labels and follow all directions and restrictions on each label.
Applications may be made by ground or air. Use a sufficient volume of water to ensure thorough coverage of the target vegetation with the application equipment being used.

NATIVE GRASSES

ESCORT® XP is registered for weed control and suppression in the establishment and maintenance of native grasses. It may be used where blue grama, bluestems (big, little, plains, sand, ww spar) bromegrasses (meadow),

buffalograss, green sprangletop, indiangrass, kleingrass, lovegrasses (atherstone, sand, weeping, wilman), orchardgrass, sideoats grama, switchgrass (blackwell), wheatgrass (bluebunch, intermediate, pubescent Siberian, slender, streamband, tall, thickspike, western), and Russian wildrye are established. It may also be applied over these species in the seedling stage, except for orchardgrass and Russian wildrye.

Application Information

Apply DuPont™ ESCORT® XP at the rate of 1/10 ounce per acre for the control and suppression* of bur buttercup (testiculate), common purslane, common sunflower*, cutleaf eveningprimrose*, flixweed*, lambsquarters* (common and slimleaf), marestail*, pigweed (redroot and tumble), snow speedwell, tansymustard* and tumble mustard (Jim Hill mustard).

* Suppression is a visual reduction in weed competition (reduced population or vigor) as compared to untreated areas. Degree of suppression will vary with the size of weed and environmental conditions following treatment.

Application Timing

For established grasses, apply when weeds are in the seedling stage.

For grasses in the seedling stage, apply preplant or preemergence where the soil (seed bed) has been cultivated.

IMPORTANT PRECAUTIONS —NATIVE GRASSES

- Grass species or varieties may differ in their response to various herbicides. If no information is available, limit the initial use of ESCORT® XP to a small area. Components in a grass seed mixture will vary in tolerance to ESCORT® XP, so the final stand may not reflect the seed ratio.
- Under certain conditions such as heavy rainfall, high pH, prolonged cold weather, or wide fluctuations in day/night temperatures prior to or soon after ESCORT® XP application, temporary discoloration and/or grass injury may occur. ESCORT® XP should not be applied to grass that is stressed by severe weather conditions, drought, low fertility, water-saturated soils, disease, or insect damage as grass injury may result. Severe winter stress, drought, disease, or insect damage before or following application also may result in grass injury.

GRASS REPLANT INTERVALS

Following an application of ESCORT® XP to non-crop areas, the treated sites may be replanted with various species of grasses at the intervals listed below.

For soils with a pH of 7.5 or less, observe the following replant intervals:

Species	Rate (ounces per acre)	Replant Interval (months)
Brome, Meadow	1/2—1	2
	1—2	3
Brome, Smooth	1/2—1	2
	1—2	4
Fescue, Alta	1/2—1	2
	1—2	4
Fescue, Red	1/2—1	2
	1—2	4
Fescue, Sheep	1/2—1	1
	1—2	4
Foxtail, Meadow	1/2—1	2
	1—2	4
Green Needlegrass	1/2—2	1
Orchardgrass	1/2—1	2
	1—2	4
Russian wildrye	1/2—1	1
	1	2
	2	3
Switchgrass	1/2—1	1
	1—2	3
Timothy	1/2—1	2
	1—2	4
Wheatgrass, Western	1/2—1	2
	1—2	3

For soils with a pH of 7.5 or greater observe the following replant intervals:

Species	Rate (ounces per acre)	Replant Interval (months)
Alkali Sacaton	1/2—1	1
	1—2	3
Bluestem, Big	1/2—2	3
Brome, Mountain	1/2—1	1
	1—2	2
Grama, Blue	1/2—2	1
Grama, Sideoats	1/2	2
	>1/2	>3
Switchgrass	1/2	2
	>1/2	>3
Wheatgrass, Thickspike	1/2—2	1
Wheatgrass, Western	1—2	2
	1/2—1	3

The specified intervals are for applications made in the Spring to early Summer. Because ESCORT® XP degradation is slowed by cold or frozen soils, applications made in the late Summer or Fall should consider the intervals as beginning in the Spring following treatment. Testing has indicated that there is considerable variation in response among the species of grasses when seeded into areas treated with ESCORT® XP. If species other than those listed above are to be planted into areas treated with ESCORT® XP, a field bioassay should be performed, or previous experience may be used, to determine the feasibility of replanting treated sites.

ADDITIONAL GRASS INFORMATION
APPLICATION INFORMATION FOR GRASS ESTABLISHMENT

DuPont™ ESCORT® XP may be used for the control or suppression of broadleaf weeds to aid in the establishment of the following perennial native or improved grasses:

Blue Grama	Sideoats grama
Bluestems --	Switchgrass –
Big	Blackwell
Little	Wheatgrasses –
Plains	bluebunch
Sand	crested
W W spar	intermediate
Buffalograss	pubescent
Green sprangletop	Siberian
Kleingrass	slender
Lovegrasses --	steambank
Atherstone	tall
Sand	thickspike
Weeping	western
Wilman	Wildrye grass –
Orchardgrass	Russian

Maximize potential for grass establishment by consulting with the Natural Resource and Conservation Service of other government agencies or local experts concerning planting techniques and other cultural practices.

Performance from ESCORT® XP may not always be satisfactory due to the inability of newly planted grass stands to sufficiently compete with weeds, and the severity of weed pressure in new grass stands.

An additional herbicide application or mowing may be needed.

Use Rates and Application Timing for Grass Establishment Preplant (prior to planting) or Preemergence (after planting but before grass emergence)

Do not use more than 1/10 ounce per acre of ESCORT® XP for grass establishment.

Apply ESCORT® XP at 1/10 ounce per acre on all labeled grasses except orchardgrass and Russian wildrye grass. Do not apply ESCORT® XP preplant or preemergence to orchardgrass and Russian wildrye grass as severe crop injury may result.

Early postemergence to new plantings

Apply ESCORT® XP at 1/10 ounce per acre, plus a non-ionic surfactant at the rate of 2 to 4 pints per 100 gallons of spray solution on all labeled grasses anytime after grass emergence.

Do not use a spray adjuvant other than non-ionic surfactant.

Because grass species differ in time of emergence, apply only after the majority of grasses are in the 3 to 4 leaf stage.

Postemergence to stands with 1 – 5 leaf grasses planted the previous season

Apply ESCORT® XP at 1/10 ounce per acre plus a non-ionic surfactant at the rate of 2 to 4 pints per 100 gallons of spray solution, on all labeled grasses when the majority of the grasses have one or more leaves.

Do not use a spray adjuvant other than non-ionic surfactant.

APPLICATION INFORMATION FOR ESTABLISHED GRASSES

Use Rates for Established Grasses

Apply up to 1 ounce ESCORT® XP per acre as a broadcast application to established grasses. For spot applications, use 1 ounce per 100 gallons of water. Do not apply more than 1 2/3 ounces of ESCORT® XP per acre per year.

Refer to the Weeds Controlled section of this label for a listing of the weeds controlled by ESCORT® XP and the appropriate use rate to obtain control.

Application Timing – Established Grasses

ESCORT® XP may be applied to established native grasses such as bluestems and grama, and on other established grasses such as bermudagrass, bluegrass, orchardgrass, bromegrass, fescue and timothy that were planted the previous growing season (or earlier) and are fully tillered, unless otherwise directed on this label. Specific application timing information on several of these grass species follows:

Grass	Minimum time from Grass establishment ESCORT® XP application
Bermudagrass	2 months
Bluegrass, bromegrass, Orchardgrass	6 months
Timothy	12 months
Fescue	24 months

Fescue Precautions:

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

- Do not use more than 4/10 ounce per acre of ESCORT® XP
- Tank mix ESCORT® XP with 2,4-D
- Use the lowest specified rate for target weeds
- Use a non-ionic surfactant at 1/2 to 1 pint per 100 gallons of spray solution
- Make application later in the spring after the new growth is 5 to 6 inches tall, or in the fall
- Do not use surfactant when liquid nitrogen is used as a carrier
- Do not use a spray adjuvant other than non-ionic surfactant

The first cutting yields may be reduced due to seedhead suppression resulting from treatment with ESCORT® XP.

Timothy Precautions:

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

- Do not use more than 4/10 ounce per acre ESCORT® XP
- Tank mix ESCORT® XP with 2, 4-D
- Use the lowest specified rate for target weeds
- Use a non-ionic surfactant at 1/2 pint per 100 gallons of spray solution (1/16%)
- Make applications in the late summer or fall
- Do not use surfactant when liquid nitrogen is used as a carrier
- Do not use spray adjuvant other than non-ionic surfactant

Application of ESCORT® XP to Pensacola bahiagrass, ryegrass (Italian or perennial) and Garrison's creeping foxtail may cause severe injury to and/or loss of forage.

Other Grasses:

Varieties and species of forage grasses differ in their tolerance to herbicides. When using ESCORT® XP on a particular grass for the first time, limit use to a small area.

In no injury occurs throughout the season, larger acreage may be treated the following season.
Broadleaf forage species, such as alfalfa and clover, are highly sensitive to DuPont™ ESCORT® XP and will be severely stunted or injured by ESCORT® XP.

CROP ROTATION

Before using ESCORT® XP, carefully consider your crop rotation plans and options.

Minimum Rotational Intervals

Minimum rotation intervals* are determined by the rate of breakdown of ESCORT® XP applied. ESCORT® XP breakdown in the soil is affected by soil pH, presence of soil microorganisms, soil temperature, and soil moisture. Low soil pH, high soil temperature, and high soil moisture increase ESCORT® XP breakdown in soil, while high soil pH, low soil temperature, and low soil moisture slow ESCORT® XP breakdown.
Of these 3 factors, only soil pH remains relatively constant. Soil temperature, and to a greater extent, soil moisture, can vary significantly from year to year and from area to area. For this reason, soil temperatures and soil moisture should be monitored regularly when considering crop rotations.
* The minimum rotation interval represents the period of time from the last application to the anticipated date of the next planting.

Soil pH Limitations

ESCORT® XP should not be used on soils having a pH above 7.9, as extended soil residual activity could extend crop rotation intervals beyond normal. Under certain conditions, ESCORT® XP could remain in the soil for 34 months or more, injuring wheat and barley. In addition, other crops planted in high-pH soils can be extremely sensitive to low concentrations of ESCORT® XP.

Checking Soil pH

Before using ESCORT® XP, determine the soil pH of the areas of intended use. To obtain a representative pH value for the test area, take several 0" to 4" samples from different areas of the field and analyze them separately. Consult local extension publications for additional information on recommended soil sampling procedures.

BIOASSAY

A field bioassay must be completed before rotating to any crop or grass species/variety not listed in the Rotation Intervals Table, or if the soil pH is not in the specified range, or if the use rate applied is not specified in the table. To conduct a field bioassay, grow test strips of the crop(s) orgrass(es) you plan to grow the following year in fields previously treated with ESCORT® XP. Crop or grass response to the bioassay will indicate whether or not to rotate to the crop(s) or grass(es) grown in the test strips. If a field bioassay is planned, check with your local Agricultural dealer or DuPont representative for information detailing the field bioassay procedure.

When used as directed, there is no grazing or haying restriction for use rates of 1 2/3 ounce per acre or less. At use rates greater than 1 2/3 ounce per acre and up to 3 1/3 ounce per acre, forage grasses may be cut for hay, fodder or green forage and fed to livestock, including lactating animals, 3 days after treatment.

IMPORTANT PRECAUTIONS

- Grass species or varieties may differ in their response to various herbicides. If no information is available, limit the initial use of ESCORT® XP to a small area.
- Components in a grass seed mixture will vary in tolerance to ESCORT® XP so the final stand may not reflect the seed ratio.
- Under certain conditions such as heavy rainfall, high pH, prolonged cold weather, or wide fluctuations in day/night temperatures prior to or soon after ESCORT® XP application, temporary discoloration and/or grass injury may occur. ESCORT® XP should not be applied to grass that is stressed by severe weather conditions, drought, low fertility, water-saturated soils, disease, or insect damage as grass injury may result. Severe winter stress, drought, disease, or insect damage before or following application also may result in grass injury.
- Applications of ESCORT® XP to lands undersown with legumes may cause injury to the legumes. Legumes in a seeding mixture may be severely injured or killed following an application of ESCORT® XP.
- The control of weeds in wheel track areas may be reduced if ground applications are made when dry, dusty field conditions exist. The addition of 2,4-D or MCPA should improve weed control under these conditions.

WEEDS CONTROLLED

1/3 to 1/2 ounce per acre

Annual sowthistle
Aster
Bahiagrass
Beebalm
Bittercress
Bitter sneezeweed
Blackeyed-susan
Blue mustard
Bur buttercup
Chicory
Clover
Cocklebur
Common chickweed
Common groundsel
Common purslane
Common yarrow
Conical catchfly
Corn cockle
Cow cockle
Crown vetch
Dandelion
Dogfennel
False chamomile
Fiddleneck tarweed
Field pennycress
Flixweed
Goldenrod
Lambsquarters
Marestail/horseweed****
Maximillion sunflower
Miners lettuce
Pennsylvania smartweed
Plains coreopsis
Plantain
Redroot pigweed
Redstem filaree
Rough fleabane
Shepherd's purse
Silky crazyweed (locoweed)
Smallseed falseflax
Smooth pigweed
Sweet clover
Tansymustard
Treacle mustard
Tumble mustard
Wild carrot
Wild garlic
Wild lettuce
Wild mustard
Wooly croton
Wood sorrel
Yankeweed

1/2 to 1 ounce per acre

Blackberry
Black henbane
Broom snakeweed*
Buckhorn plantain
Bull thistle
Common crupina
Common sunflower
Curly dock
Dewberry
Dyer's woad
Garlic mustard
Gorse
Halogeton
Henbit
Honeysuckle
Multiflora rose and other wild roses
Musk thistle***
Oxeye daisy
Plumeless thistle
Prostrate knotweed
Rosering gaillardia
Seaside arrowgrass
Sericea lespedeza
Tansy ragwort
Teasel
Wild caraway

1 to 2 ounces per acre

Common mullein
Common tansy
Field bindweed**
Greasewood
Gumweed
Houndstongue
Lupine
Old world climbing fern (Lygodium)
Perennial pepperweed
Poison hemlock
Purple loosestrife
Purple scabious
Scotch thistle
Scouringrush
Salsify
Snowberry
St. Johnswort
Sulphur cinquefoil
Western salsify
Whitetop (hoary cress)
Wild Iris

1 1/2 to 2 ounces per acre

Canada thistle**
Dalmation toadflax**
Duncecap larkspur
Russian knapweed**
Tall larkspur
Wild parsnip
Yellow toadflax**

3 to 4 ounces per acre

Kudzu

* Apply fall through spring.
** Suppression, which is a visual reduction in weed competition (reduced population or vigor) as compared to untreated areas. Apply as a full coverage spray for best performance.
*** Certain biotypes of musk thistle are more sensitive to DuPont™ ESCORT® XP and may be controlled with rates of 1/4 to 1/2 ounce per acre. Treatments of ESCORT® XP may be applied from rosette through bloom stages of development.
****Certain biotypes of marestail/horsetail are less sensitive to ESCORT® XP and may be controlled by tank mixes with herbicides with a different mode of action.

Problem Weed Control

For broader spectrum control and for use on certain biotypes of broadleaf weeds which may be resistant to ESCORT® XP and herbicides with the same mode of action, the following tank mixes may be used.

Dicamba + 2,4-D

Weed	Rate of ESCORT® XP	Rate of dicamba (fluid ounces/acre)	Rate of 2,4-D (fluid ounces/acre)
Kochia control	1/2	8	16
Spotted knapweed control	1/2	8	16
Rush skeletonweed suppression	1	8	16

TURF, INDUSTRIAL (UNIMPROVED ONLY)

Application Information

ESCORT® XP is registered for selective weed control in unimproved industrial turf where certain grasses are well established and desired as ground cover. ESCORT® XP may also be used for the control of certain noxious and troublesome weeds in turf.

In addition to conventional spray equipment, ESCORT® XP may also be applied with invert emulsion equipment. When using an invert emulsion, mix the prescribed rate of ESCORT® XP in the water phase.

Consult the "Weeds Controlled" table to determine which weeds will be controlled by the following application rates:

Turf Type	Rate of DuPont™ ESCORT® XP (ounces/acre)
Fescue and Bluegrass	1/4 to 1/2
Crested Wheatgrass and Smooth Brome	1/4 to 1
Bermudagrass	1/4 to 2

Application Timing

Applications may be made at anytime of the year, except when the soil is frozen.

When a spring application is made on fescue or bluegrass, a second application may be made during the summer after full seedhead maturation.

Growth Suppression and Seedhead Inhibition (Chemical Mowing)

Application Information

ESCORT® XP may be used for growth suppression and seedhead inhibition in well established fescue and bluegrass turf at the use rate of 1/4 to 1/2 ounce per acre.

Tank Mix Combination

ESCORT® XP may be tank mixed with "Embark" for improved performance in the regulation of growth and seedhead suppression. Tank mix 1/4 to 1/2 ounce of ESCORT® XP with 1/8 to 1/4 pint of "Embark".

Application Timing

Application may be made after at least 2 to 3 inches of new growth has emerged until the appearance of the seed stalk.

Fescue Precautions:

ESCORT® XP may temporarily stunt tall fescue, cause it to turn yellow, or cause seedhead suppression. To minimize these symptoms, take the following precautions:

- Do not use more than 4/10 ounce per acre of ESCORT® XP.
- Tank mix ESCORT® XP with 2,4-D.
- Use the lowest specified rate for target weeds.
- Use a non-ionic surfactant at 1/2 to 1 pint per 100 gallons of spray solution.
- Make application later in the spring after the new growth is 5 to 6 inches tall, or in the fall.
- Do not use a surfactant when liquid nitrogen is used as a carrier.
- Do not use a spray adjuvant other than non-ionic surfactant.
- The yields from the first cutting may be reduced due to seedhead suppression resulting from treatment with ESCORT® XP.

IMPORTANT PRECAUTIONS —INDUSTRIAL TURF ONLY

- An application of ESCORT® XP may cause temporary discoloration (chlorosis) of the grasses. Use the lower specified rates for minimum discoloration.
- With fescue and bluegrass, sequential applications made during the same or consecutive growth periods (i.e. spring and fall) may result in excessive injury to turf.
- Excessive injury may result when ESCORT® XP is applied to turf that is under stress from drought, insects, disease, cold temperatures (winter injury) or poor fertility.
- ESCORT® XP is not recommended for use on bahiagrass.

BRUSH CONTROL

Application Information

ESCORT® XP is registered for the control of undesirable brush growing in non-crop areas including grazed areas on these sites. Applications may be made by air, high volume

ground application, low volume ground application and ultra-low volume ground application. Except as noted for multiflora rose, DuPont™ ESCORT® XP should be applied as a spray to the foliage.

The application volume required will vary with the height and density of the brush and the application equipment used. Generally, aerial applications will require 15 to 25 gallons of water per acre; high volume ground application will require 100 to 400 gallons of water per acre; low volume ground application will require 20 to 50 gallons of water per acre; and ultra-low volume ground application will require 10 to 20 gallons of water per acre.

Regardless of the application volume and equipment used, thorough coverage of the foliage, particularly the terminal growing points, is necessary to optimize results.

BRUSH SPECIES CONTROLLED

Species	High Volume Rate (ounces/100 gallon)	Broadcast Rate (ounces/acre)
Ash	1—2	1—3
Aspen	1—2	1—3
Black locust	1—2	1—3
Blackberry	1—2	1—3
Camelthorn	1—2	1—3
Cherry	1—2	1—3
Cottonwood	1—2	2—3
Eastern red cedar	1—2	2—3
Elder	1—2	2—3
Elm	1—2	1—3
Firs	3	1—2
Hawthorn	1—2	1—3
Honeysuckle	1—2	1/2—1
Mulberry	1—2	2—3
Multiflora rose	1—2	1—3
Muscadine (wild grape)	1—2	2—3
Oaks	1—2	1—3
Ocean spray (*Holodiscus*)	1—2	2—3
Osage orange	1—2	2—3
Red maple	1—2	2—3
Salmonberry	1/2—1	1—3
Snowberry	1/2—1	1—3
Spruce (black and white)	3	2—3
Thimbleberry	1/2—1	1—3
Tree of heaven (*Ailanthus*)	1—2	1—2
Wild roses	1/2—1	1—3
Willow	1/2—1	1—3
Yellow poplar	1/2—1	1—3

For low volume and ultra-low volume ground applications, mix 4 to 8 ounces of ESCORT® XP per 100 gallons of spray solution.

Application Timing

Make a foliar application of the specified rate of ESCORT® XP during the period from full leaf expansion in the spring until the development of full fall coloration on deciduous species to be controlled. Coniferous species may be treated at anytime during the growing season.

Spot Treatment

ESCORT® XP may be used for the control of many species of weeds including noxious/invasive weeds in certain established grasses growing on non-crop areas.

Refer to the "Weeds Controlled" section for a listing of susceptible weed species and the application rate per acre per the target weed.

Or, mix one gram of ESCORT® XP per one gallon of water along with a surfactant. Spray to the point of wetting the entire surface of the target weeds, approximately 40 gallons of solution per acre.

Tank Mix Combinations—

ESCORT® XP may be tank mixed with any product labeled for non-crop brush control at the application rates specified on the companion product's label for the pests specified on the product's companion label. Read and follow the label instructions of both products when tank mixing. Follow the most restrictive limitations of any of the product labels being tank mixed.

Low Rate Applications

Imazapyr (2 pound active per gallon)

Combine 1 to 2 ounces of ESCORT® XP with 1 to 4 pints of imazapyr herbicide per acre and apply as a broadcast spray. Aerial applications should use a minimum of 15 gallons per acre spray volume. In addition to species listed above controlled by ESCORT® XP, this combination controls black gum, hophornbeam, sassafras, sweetgum, Vaccinium species, dogwood, myrtle dahoon, hickories, and persimmon.

Picloram (2 pound active per gallon) + Imazapyr (2 pound active per gallon)

Combine 1 to 1 1/2 ounce of ESCORT® XP with 2 to 8 fluid ounces of imazapyr and 1 to 2 pints of picloram per 100 gallons of water. Apply as a high volume spray. This tank mix controls cherry, elms, box elder, maples, hackberry, redbud, ash, oaks (including shingle oak), black locust and sassafras.

*Picloram is a restricted use pesticide.

Spotgun Basal Soil Treatment

For control of multiflora rose, prepare a spray suspension of ESCORT® XP by mixing 1 ounce per gallon of water. Mix vigorously until the ESCORT® XP is dispersed and agitate periodically while applying the spray suspension.

Apply the spray preparation with an exact delivery handgun applicator. Apply at the rate of 4 milliliters for each 2 feet of rose canopy diameter. Direct the treatment to the soil within 2 feet of the stem union. When treating large plants and more than one delivery is required, make applications on opposite sides of the plant.

Applications should be made from early spring to summer.

IMPORTANT PRECAUTIONS —NON-CROP BRUSH ONLY

- When using tank mixtures of ESCORT® XP with companion herbicides, read and follow all use instructions, application rates, warnings and precautions appearing on the labels. Follow the most restrictive label instructions for each of the herbicides used.

SPRAY EQUIPMENT

Low rates of ESCORT® XP can kill or severely injure most crops. Following an ESCORT® XP application, the use of spray equipment to apply other pesticides to crops on which ESCORT® XP is not registered may result in their damage.

Rotation Intervals for Overseeding and Renovation

Location	Crop or Grass Species	Maximum DuPont™ ESCORT® XP Rate (oz per A)	Minimum Rotation Interval (months)
AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA, WV	Alfalfa, red clover, white clover, sweet clover, bermudagrass, bluegrass, ryegrass, tall fescue	1/10 to 3/10	4
	Wheat (except durum)	1/10 to 3/10	1
	Durum, barley, oat	1/10 to 3/10	10
ALL STATES NOT INCLUDED ABOVE	Red clover, white clover, and sweet clover	1/10 to 2/10	12
	Bermudagrass, bluegrass, ryegrass	1/10 to 2/10	6
	Tall Fescue	1/10 to 2/10	18
	Wheat (except durum)	1/10 to 2/10	1
	Durum, barley, oat	1/10 to 2/10	10
ALL AREAS WITH SOIL PH OF 7.5 OR LESS	Russian wildrye	1/10 to 1/2	1
	Green needlegrass, switchgrass, sheep fescue	1/10 to 1	1
	Meadow brome, smooth brome, alta fescue, red fescue, meadow foxtail, orchardgrass, Russian wildrye, timothy	1/10 to 1	2
ALL AREAS WITH SOIL PH OF 7.9 OR LESS	Alkali sacoton, mountain brome, blue grama thickspike wheatgrass	1/10 to 1	1
	Sideoats grama, switchgrass	1/10 to 1/2	2
	Western wheatgrass	1/10 to 1	2
	Sideoats grama, switchgrass, big bluestem	1/10 to 1	3

The most effective way to reduce this crop damage potential is to use dedicated mixing and application equipment.

The selected sprayer should be equipped with an agitation system to keep ESCORT® XP suspended in the spray tank. Use a sufficient volume of water to thoroughly cover the foliage of undesirable weeds, generally 10 to 40 gallons per acre. Select a spray volume and delivery system that will deliver a uniform spray pattern. Be sure the sprayer is calibrated before use. Avoid overlapping and shut off spray booms while starting, turning, slowing or stopping to avoid injury to desired plants.

Refer to the brush control section of this label for information unique to that particular use.

MIXING INSTRUCTIONS

1. Fill the tank 1/4 to 1/3 full of water.
2. While agitating, add the required amount of ESCORT® XP.
3. Continue agitation until the ESCORT® XP is fully dispersed, at least 5 minutes.
4. Once the ESCORT® XP is fully dispersed, maintain agitation and continue filling tank with water. ESCORT® XP should be thoroughly mixed with water before adding any other material.
5. As the tank is filling, add tank mix partners (if desired) then add the necessary volume of nonionic surfactant. Always add surfactant last.
6. If the mixture is not continuously agitated, settling will occur. If settling occurs, thoroughly re-agitate before using.
7. ESCORT® XP spray preparations are stable if they are pH neutral or alkaline and stored at or below 100° F.
8. If ESCORT® XP and a tank mix partner are to be applied in multiple loads, pre-slurry the ESCORT® XP in clean water prior to adding to the tank. This will prevent the tank mix partner from interfering with the dissolution of the ESCORT® XP.

USE PRECAUTIONS

- Do not drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the product may be washed or moved into contact with their roots, as injury or loss of desirable trees or other plants may result
- Treatment of powdery, dry soil or light, sandy soil when there is little likelihood of rainfall soon after treatment may result in off target movement and possible damage to susceptible crops when soil particles are moved by wind or water. Injury to crops may result if treated soil is washed, blown, or moved onto land used to produce crops. Exposure to ESCORT® XP may injure or kill most crops. Injury may be more severe when the crops are irrigated. Do not apply ESCORT® XP when these conditions are identified and powdery, dry soil or light or sandy soils are known to be prevalent in the area being treated.
- Applications made where runoff water flows onto agricultural land may injure crops. Applications made during periods of intense rainfall, to soils saturated with water, to surfaces paved with materials such as asphalt or concrete, or to soils through which rainfall will not readily penetrate may result in runoff and movement of ESCORT® XP. Do not treat frozen soil.

Treated soil should be left undisturbed to reduce the potential for DuPont™ ESCORT® XP movement by soil erosion due to wind or water.

- Do not use on lawns, walks, driveways, tennis courts or similar areas.
- Do not apply through any type of irrigation system.
- When used as directed, there is no grazing or haying restriction for use rates of 1 2/3 ounce per acre or less. At use rates greater than 1 2/3 ounce per acre and up to 3 1/3 ounce per acre, forage grasses may be cut for hay, fodder or green forage and fed to livestock, including lactating animals, 3 days after treatment.
- Do not use this product in the following counties of Colorado: Saguache, Rio Grande, Alamosa, Costilla and Conejos.
- Do not use this product in California.

SPRAYER CLEANUP

Spray equipment must be cleaned before ESCORT® XP is sprayed. Follow the cleanup procedures specified on the labels of previously applied products. If no directions are provided, follow the six steps outlined below.

At the End of the Day

When multiple loads of ESCORT® XP herbicide are applied, it is recommended that at the end of each day of spraying, the interior of the tank be rinsed with fresh water and then partially filled, and the boom and hoses flushed. This will prevent the buildup of dried pesticide deposits that can accumulate in the application equipment.

1. Drain tank; thoroughly rinse spray tanks, boom, and hoses with clean water. Loosen and physically remove any visible deposits.
2. Fill the tank with clean water and 1 gal of household ammonia* (contains 3% active) for every 100 gal of water. Flush the hoses, boom, and nozzles with the cleaning solution. Then add more water to completely fill the tank. Circulate the cleaning solution through the tank and hoses for at least 15 min. Flush the hoses, boom, and nozzles again with the cleaning solution, and then drain the tank.
3. Remove the nozzles and screens and clean separately in a bucket containing cleaning agent and water.
4. Repeat step 2.
5. Rinse the tank, boom, and hoses with clean water.
6. If only ammonia is used as a cleaner, the rinsate solution may be applied back to the crop(s) listed on this label. Do not exceed the maximum labeled use rate. If other cleaners are used, consult the cleaner label for rinsate disposal instructions. If no instructions are given, dispose of the rinsate on site or at an approved waste disposal facility.

* Equivalent amounts of an alternate-strength ammonia solution or a DuPont-approved cleaner can be used in the cleanout procedure. Carefully read and follow the individual cleaner instructions. Consult your agricultural dealer, applicator, or DuPont representative for a listing of approved cleaners.

Notes:

1. **Attention**: Do not use chlorine bleach with ammonia, as dangerous gases will form. Do not clean equipment in an enclosed area.
2. Steam-cleaning aerial spray tanks is recommended prior to performing the above cleanout procedure to facilitate the removal of any caked deposits.
3. When ESCORT® XP is tank mixed with other pesticides, all required cleanout procedures should be examined and the most rigorous procedure should be followed.
4. In addition to this cleanout procedure, all precleanout guidelines on subsequently applied products should be followed as per the individual labels.

SPRAY DRIFT MANAGEMENT

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

AVOIDING SPRAY DRIFT IS THE RESPONSIBILITY OF THE APPLICATOR.

IMPORTANCE OF DROPLET SIZE

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

Controlling Droplet Size - General Techniques

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. WHEN HIGHER FLOW RATES ARE NEEDED, USE A HIGHER-CAPACITY NOZZLE INSTEAD OF INCREASING PRESSURE.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles.

Controlling Droplet Size - Aircraft

- **Number of Nozzles** - Use the minimum number of nozzles with the highest flow rate that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is emitted backwards, parallel to the airstream will produce larger droplets than other orientations.

- **Nozzle Type** - Solid stream nozzles (such as disc and core with swirl plate removed) oriented straight back produce larger droplets than other nozzle types.
- **Boom Length** - The boom length should not exceed 3/4 of the wing or rotor length - longer booms increase drift potential.
- **Application Height** - Application more than 10 ft above the canopy increases the potential for spray drift.

BOOM HEIGHT

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

WIND

Drift potential increases at wind speeds of less than 3 mph (due to inversion potential) or more than 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given wind speed. AVOID GUSTY OR WINDLESS CONDITIONS. Note: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

TEMPERATURE AND HUMIDITY

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

TEMPERATURE INVERSIONS

Drift potential is high during a temperature inversion. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain close to the ground and move laterally in a concentrated cloud. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

SHIELDED SPRAYERS

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

STORAGE AND DISPOSAL

Pesticide Storage: Store product in original container only. Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Store in a cool, dry place.

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

Container Handling:

Refer to the Net Contents section of this product's labeling for the applicable "Nonrefillable Container" or "Refillable Container" designation.

Nonrefillable Plastic and Metal Containers (Capacity Equal to or Less Than 50 Pounds): Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. 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. Then, (a) for Plastic Containers, offer for recycling if available 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, or (b) for Metal Containers, offer for recycling if available or reconditioning if appropriate or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Nonrefillable Plastic and Metal Containers (Capacity Greater Than 50 Pounds): Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse 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. Then, (a) for Plastic Containers, offer for recycling if available 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, or (b) for Metal Containers, offer for recycling if available or reconditioning if appropriate or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Nonrefillable Plastic and Metal Containers, e.g., Intermediate Bulk Containers [IBC] (Size or Shape Too Large to be Tipped, Rolled or Turned Upside Down): Nonrefillable container. Do not reuse or refill this container. Pressure rinse as follows: Empty the remaining product contents into application equipment or a mix tank. Insert pressure rinsing nozzle in the container, and rinse at about 40 PSI for at least 30 seconds. Drain rinsate for 10 seconds after the flow begins to drip. Pour or pump rinsate into application equipment or rinsate collection system. Then, (a) for Plastic Containers, offer for recycling if available 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, or (b) for Metal Containers, offer for recycling if available or reconditioning if appropriate or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Nonrefillable Paper or Plastic Bags, Fiber Sacks including Flexible Intermediate Bulk Containers (FIBC) or Fiber Drums With Liners: Nonrefillable container. Do not reuse or refill this container. Completely empty paper or plastic bag, fiber sack or drum liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application or manufacturing equipment. Then offer for recycling if available or dispose of empty paper or plastic bag, fiber sack or fiber drum and liner in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Refillable Fiber Drums With Liners: Refillable container (fiber drum only). Refilling Fiber Drum: Refill this fiber drum with DuPont™ ESCORT® XP containing metsulfuron methyl only. Do not reuse this fiber drum for any other purpose. Cleaning before refilling is the responsibility of the refiller. Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application or manufacturing equipment. Disposing of Fiber Drum and/or Liner: Do not reuse this fiber drum for any other purpose other than refilling (see preceding). Cleaning the container (liner and/or fiber drum) before final disposal is the responsibility of the person disposing of the container. Offer the liner for recycling if available or dispose of liner in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. If drum is contaminated and cannot be reused, dispose of it in the manner required for its liner. To clean the fiber drum before final disposal, completely empty the fiber drum by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application or manufacturing equipment. Then offer the fiber drum for recycling if available or 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.

All Other Refillable Containers: Refillable container. Refilling Container: Refill this container with ESCORT® XP containing metsulfuron methyl only. Do not reuse this container for any other purpose. Cleaning before refilling is the responsibility of the refiller. 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 transporting. Disposing of Container: Do not reuse this container for any other purpose other than refilling (see preceding). Cleaning the container before final disposal is the responsibility of the person disposing of the container. 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 percent 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. Then, (a) for Plastic Containers, offer for recycling if available 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, or (b) for Metal Containers, offer for recycling if available or reconditioning if appropriate or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Outer Pouches of Water Soluble Packets (WSP): Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available or, dispose of the empty outer foil pouch in the trash as long as WSP is unbroken. If the outer pouch contacts the formulated product in any way, the pouch must be triple rinsed with clean water. Add the rinsate to the spray tank and dispose of the outer pouch as described previously.

Do not transport if this container is damaged or leaking. If the container is damaged, leaking or obsolete, or in the event of a major spill, fire or other emergency, contact DuPont at 1-800-441-3637, day or night.

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

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LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read This Limitation of Warranty and Liability Before Buying or Using This Product. If the Terms Are Not Acceptable, Return the Product at Once, Unopened, and the Purchase Price Will Be Refunded.

It is impossible to eliminate all risks associated with the use of this product. Such risks arise from weather conditions, soil factors, off target movement, unconventional farming techniques, presence of other materials, the manner of use or application, or other unknown factors, all of which are beyond the control of DuPont. These risks can cause: ineffectiveness of the product; crop injury, or; injury to non-target crops or plants.

DuPont does not agree to be an insurer of these risks. TO THE FULLEST EXTENT PERMITTED BY LAW, WHEN YOU BUY OR USE THIS PRODUCT, YOU AGREE TO ACCEPT THESE RISKS.

DuPont warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for the purpose stated in the Directions for Use, subject to the inherent risks described above, when used in accordance with the Directions for Use under normal conditions.

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This Limitation of Warranty and Liability may not be amended by any oral or written agreement.

For product information call: 1-888-6-DUPONT
Internet address: http://cropprotection.dupont.com/

Material Safety Data Sheet

DuPont™ Escort® XP Herbicide

Version 2.1

Revision Date 04/26/2012 Ref. 130000036195

This SDS adheres to the standards and regulatory requirements of the United States and may not meet the regulatory requirements in other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	DuPont™ Escort® XP Herbicide
Tradename/Synonym	:	DPX-T6376 60 XP Metsulfuron Methyl 60 XP Escort 60 XP B11495142 METSULFURON METHYL (Methyl 2-[[[[(4-methoxy-6-methyl-1,3,-triazin-2-yl)amino]carbonyl]amino]sulfonyl]benzoate)
MSDS Number	:	130000036195
Product Use	:	Herbicide
Manufacturer	:	DuPont 1007 Market Street Wilmington, DE 19898
Product Information	:	1-800-441-7515 (outside the U.S. 1-302-774-1000)
Medical Emergency	:	1-800-441-3637 (outside the U.S. 1-302-774-1139)
Transport Emergency	:	CHEMTREC: 1-800-424-9300 (outside the U.S. 1-703-527-3887)

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

CAUTION!

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

Potential Health Effects

This section includes potential acute adverse effects which could occur if this material is not used according to the label.

Eyes : May cause: Irritation with discomfort, pain, redness, or visual impairment.

Carcinogenicity

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Concentration
Metsulfuron methyl	74223-64-6	60 %
Other Ingredients		40 %

SECTION 4. FIRST AID MEASURES

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

Eye contact : 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 eye. Call a poison control center or doctor for treatment advice.

Inhalation : No specific intervention is indicated as the compound is not likely to be hazardous. Consult a physician if necessary.

Ingestion : No specific intervention is indicated as the compound is not likely to be hazardous. Consult a physician if necessary.

General advice : Have the product container or label with you when calling a poison control center or doctor, or going for treatment.
For medical emergencies involving this product, call toll free 1-800-441-3637.
See Label for Additional Precautions and Directions for Use.

Notes to physician : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Flammable Properties Flash point	:	not applicable
Suitable extinguishing media	:	Water spray, Dry chemical, Foam, Carbon dioxide (CO2)
Unsuitable extinguishing media	:	High volume water jet, (contamination risk)
Firefighting Instructions	:	In the event of fire, wear self-contained breathing apparatus. Wear full protective equipment. (on small fires) If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the area contaminated. Cool containers / tanks with water spray.

SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel)	:	Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus.
Spill Cleanup	:	Sweep up and shovel into suitable containers for disposal. If spill area is on ground near valuable plants or trees, remove 5 cm of top soil after initial clean-up.
Accidental Release Measures	:	Prevent material from entering sewers, waterways, or low areas. Never return spills in original containers for re-use. Dispose of in accordance with local regulations.

SECTION 7. HANDLING AND STORAGE

Handling (Personnel)	:	Wash hands thoroughly with soap and water after handling and before eating,

drinking, chewing gum, using tobacco, or using the toilet.

Storage : Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Store in original container. Store in a cool, dry place. Keep out of the reach of children.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment

Skin and body protection : Applicators and other handlers must wear:
Long sleeved shirt and long pants
Shoes plus socks
Personal protective equipment required for early entry:
Coveralls
Shoes plus socks

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

Exposure Guidelines

Exposure Limit Values

Metsulfuron methyl

AEL *	(DUPONT)	10 mg/m3	8 & 12 hr. TWA

* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which are lower than the AEL are in effect, such limits shall take precedence.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form	:	solid, granular
Color	:	light brown
Odor	:	odourless
pH	:	5.0
Specific gravity	:	1.47 at 25 °C (77 °F)
Bulk density	:	0.64 - 0.74 g/ml

Water solubility	:	Tapped dispersible

SECTION 10. STABILITY AND REACTIVITY

Stability	:	Stable at normal temperatures and storage conditions.
Conditions to avoid	:	None reasonably foreseeable.
Incompatibility	:	No materials to be especially mentioned.

SECTION 11. TOXICOLOGICAL INFORMATION

DuPont™ Escort® XP Herbicide

Dermal LD50	:	> 5,000 mg/kg , rat
Oral LD50	:	> 5,000 mg/kg , rat
Skin irritation	:	No skin irritation, rabbit
Eye irritation	:	slight irritation, rabbit
Sensitisation	:	Animal test did not cause sensitization by skin contact., guinea pig

Metsulfuron methyl

Inhalation 4 h LC50	:	> 5.0 mg/l , rat
Repeated dose toxicity	:	The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions. Oral rat Reduced body weight gain, Organ weight changes, Liver Dermal rabbit

Skin irritation

Carcinogenicity	:	Did not show carcinogenic effects in animal experiments.
Mutagenicity	:	Did not show mutagenic effects in animal experiments.
		Did not cause genetic damage in cultured bacterial cells.
		Genetic damage in cultured mammalian cells was observed in some laboratory tests but not in others.
Reproductive toxicity	:	Animal testing did not show any effects on fertility.
Teratogenicity	:	Animal testing showed no developmental toxicity.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity
Metsulfuron methyl

96 h LC50	:	Oncorhynchus mykiss (rainbow trout) > 150 mg/l
96 h LC50	:	Lepomis macrochirus (Bluegill sunfish) > 150 mg/l
72 h EC50	:	Anabaena flos-aquae (cyanobacteria) 0.066 mg/l
14 d EC50	:	Lemna minor 0.00036 mg/l
48 h EC50	:	Daphnia magna (Water flea) > 120 mg/l
Additional ecological information	:	Environmental Hazards: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal : Do not contaminate water, food or feed by disposal. Wastes resulting from the

use of this product must be disposed of on site or at an approved waste disposal facility.

Container Disposal : Refer to the product label for instructions.
Do not transport if this container is damaged or leaking.

In the event of a major spill, fire or other emergency, call 1-800-441-3637 day or night.

SECTION 14. TRANSPORT INFORMATION

IATA_C	UN number	: 3077
	Proper shipping name	: Environmentally hazardous substance, solid, n.o.s. (Metsulfuron methyl)
	Class	: 9
	Packing group	: III
	Labelling No.	: 9MI
IMDG	UN number	: 3077
	Proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Metsulfuron methyl)
	Class	: 9
	Packing group	: III
	Labelling No.	: 9
	Marine pollutant	: yes (Metsulfuron methyl)

Not regulated as a hazardous material by DOT.

SECTION 15. REGULATORY INFORMATION

SARA 313 Regulated Chemical(s) : SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Title III hazard : Acute Health Hazard: Yes

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classification		Chronic Health Hazard: No Fire: No Reactivity/Physical hazard: No Pressure: No
EPA Reg. No.	:	352-439 In the United States this product is regulated by the US Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.
PA Right to Know Regulated Chemical(s)	:	Substances on the Pennsylvania Hazardous Substances List present at a concentration of 1% or more (0.01% for Special Hazardous Substances): Sucrose , Trisodium orthophosphate

SECTION 16. OTHER INFORMATION

		NFPA	HMIS
Health	:	1	1
Flammability	:	1	1
Reactivity/Physical hazard	:	0	0

Contact person : DuPont Crop Protection, Wilmington, DE, 19898, Phone: 1-888-638-7668

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Significant change from previous version is denoted with a double bar.

DuPont™ Escort® XP Herbicide

Version 2.1

Revision Date 04/26/2012 Ref. 130000036195

Specimen Label

Dow AgroSciences

Garlon* 3A

Specialty Herbicide

*Trademark of Dow AgroSciences LLC

For the control of woody plants, broadleaf weeds and vines in forests and industrial non-crop areas, including manufacturing and storage sites, rights-of-way such as electrical power lines, communication lines, pipelines, roadsides, railroads, fence rows, non-irrigation ditch banks, and around farm buildings; including application to grazed areas, and establishment and maintenance of wildlife openings on these sites, and in Christmas tree plantations. Use within production forests and industrial non-crop sites may include applications to control target vegetation in and around standing water sites, such as marshes, wetlands, and the banks of ponds and lakes.

Active Ingredient:	
triclopyr: 3,5,6-trichloro-2-pyridinyloxyacetic acid, triethylamine salt	44.4%
Inert Ingredients	55.6%
Total	100.0%

Acid equivalent: triclopyr - 31.8% - 3 lb/gal

EPA Reg. No. 62719-37

Keep Out of Reach of Children

DANGER PELIGRO

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.)

Precautionary Statements

Hazard to Humans and Domestic Animals

Corrosive • Causes Irreversible Eye Damage • Harmful If Swallowed Or Absorbed Through Skin • Prolonged Or Frequently Repeated Skin Contact May Cause Allergic Reaction In Some Individuals

Do not get in eyes or on skin or clothing.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Protective eyewear
- Chemical resistant gloves (≥ 14 mils) such as butyl rubber, natural rubber, neoprene rubber or nitrile rubber

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

Engineering Controls

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the WPS (40 CFR 170.240(d)(4-6), the handler PPE requirements may be reduced or modified as specified in the WPS.

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.
- 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.

First Aid

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 eye. Call a poison control center or doctor for treatment advice.

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 swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person. Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

Note to Applicator: Allergic skin reaction is not expected from exposure to spray mixtures of Garlon 3A herbicide when used as directed.

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.

Environmental Hazards

Do not contaminate water when cleaning equipment or disposing of equipment washwaters. Under certain conditions, treatment of aquatic weeds can result in oxygen depletion or loss due to decomposition of dead plants, which may contribute to fish suffocation. This loss can cause fish suffocation. Therefore, to minimize this hazard, do not treat more than one-third to one-half of the water area in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outwards in bands to allow fish to move into untreated areas. Consult with the State agency for fish and game before applying to public water to determine if a permit is needed.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

Physical or Chemical Hazards

Combustible. Do not use or store the product near heat or open flame.

Notice: Read the entire label. Use only according to label directions. **Before using this product, read Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies elsewhere on this label. If terms are unacceptable, return at once unopened.**

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at www.dowagro.com.

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

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

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
- Protective eyewear
- Chemical-resistant gloves (≥ 14 mils) such as butyl rubber, natural rubber, neoprene rubber or nitrile rubber

Non-Agricultural Use Requirements

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for Agricultural Pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Entry Restrictions for Non-WPS Uses: For applications to non-cropland areas, do not allow entry into areas until sprays have dried, unless applicator and other handler PPE is worn.

Storage and Disposal

Do not contaminate water, food, or feed by storage and disposal.
Open dumping is prohibited.
Pesticide Storage: Store above 28°F or agitate before use.
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 for Refillable Containers: Seal all openings which have been opened during use. Return the empty container to a collection site designated by Dow AgroSciences. If the container has been damaged and cannot be returned according to the recommended procedures, contact Dow AgroSciences Customer Service Center at 1-800-258-1470 to obtain proper handling instructions.
Container Disposal (Metal): Do not reuse container. 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 (Plastic): Do not reuse container. 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.
General: Consult federal, state, or local disposal authorities for approved alternative procedures.

General Information for Production Forests and Industrial Non-Crop Areas

Garlon* 3A specialty herbicide is recommended for the control of woody plants, broadleaf weeds and vines in forests and industrial non-crop areas including manufacturing and storage sites, rights-of-way such as electrical power lines, communication lines, pipelines, roadsides, railroads, fence rows, non-irrigation ditch banks, and around farm buildings, including application to grazed areas, and establishment and maintenance of wildlife openings on these sites, and in Christmas tree plantations. Use within production forests and industrial non-crop sites may include applications to control target vegetation in and around standing water sites, such as marshes, wetlands, and the banks of ponds and lakes.

Obtain Required Permits: Consult with appropriate state or local water authorities before applying this product to public waters. State or local public agencies may require permits.

General Use Precautions and Restrictions

In Arizona: The state of Arizona has not approved Garlon 3A for use on plants grown for commercial production, specifically forests grown for commercial timber production, or on designated grazing areas.

When applying this product in tank mix combination, follow all applicable use directions, precautions and limitations on each manufacturer's label.

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

Do not apply Garlon 3A 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 into them.

It is permissible to treat non-irrigation ditch banks, seasonally dry wetlands (such as flood plains, deltas, marshes, swamps, or bogs) and transitional areas between upland and lowland sites.

- **Do not** apply to salt water bays or estuaries.
- **Do not** apply directly to un-impounded rivers or streams.
- **Do not** apply on ditches or canals used to transport irrigation water. It is permissible to treat non-irrigation ditch banks.
- **Do not** apply where runoff water may flow onto agricultural land as injury to crops may result.
- When making applications to control unwanted plants on banks or shorelines of moving water sites, minimize overspray to open water.
- The use of a mistblower is not recommended.
- Apply no more than 2 lb ae of triclopyr (2/3 gallon of Garlon 3A) per acre per growing season on range and pasture sites, including rights-of-way, fence rows or any area where grazing or harvesting is allowed.
- On forestry sites, Garlon 3A may be used at rates up to 6 lb ae of triclopyr (2 gallons of Garlon 3A) per acre per year.
- For all terrestrial use sites other than range, pasture, forestry sites, and grazed areas, the maximum application rate is 9 lb ae of triclopyr (3 gallons of Garlon 3A) per acre per year.

Precautions for Potable Water Intakes for Emerged Aquatic Weed Control

See chart below for specific setback distances near functioning potable water intakes. **Note:** Existing potable water intakes which are no longer in use, such as those replaced by potable water wells or connections to a municipal water system, are not considered to be functioning potable water intakes. These setback restrictions do not apply to terrestrial applications made adjacent to potable water intakes.

	Garlon 3A Application Rate, qt/acre			
Area Treated	2 qt/acre	4 qt/acre	6 qt/acre	8 qt/acre
(acres)	Setback Distance (ft)			
4	0	200	400	500
>4 - 8	0	200	700	900
>8 - 16	0	200	700	1000
>16	0	200	900	1300

To apply Garlon 3A around and within the distances noted above from a functioning potable water intake, the intake must be turned off until the triclopyr level in the intake water is determined to be 0.4 parts per million (ppm) or less by laboratory analysis or immunoassay.

- **Recreational Use of Water in Treatment Area:** There are no restrictions on use of water in the treatment area for recreational purposes, including swimming and fishing.
- **Livestock Use of Water from Treatment Area:** There are no restrictions on livestock consumption of water from the treatment area.

Grazing and Haying Restrictions

Except for lactating dairy animals, there are no grazing restrictions following application of this product.

- **Grazing Lactating Dairy Animals:** Do not allow lactating dairy animals to graze treated areas until the next growing season following application of this product.
- Do not harvest hay for 14 days after application.
- Grazed areas of non-cropland and forestry sites may be spot treated if they comprise no more than 10% of the total grazable area.

Slaughter Restrictions: During the season of application, withdraw livestock from grazing treated grass at least 3 days before slaughter.

Avoiding 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: For aerial application on rights-of-way or other areas near susceptible crops, apply through a Microfoil† or Thru-Valve boom†, or use an agriculturally labeled drift control additive. Other drift reducing systems or thickened sprays prepared by using high viscosity inverting systems may be used if they are made as drift-free as mixtures containing agriculturally labeled thickening agents or applications made with the Microfoil or Thru-Valve boom. Keep spray pressures low enough to provide coarse spray droplets. Spray boom should be no longer than 3/4 of the rotor length. Do not use a thickening agent with the Microfoil or Thru-Valve booms, or other systems that cannot accommodate thick sprays. Spray only when the wind velocity is low (follow state regulations). Avoid application during air inversions. If a spray thickening agent is used, follow all use recommendations and precautions on the product label.

† 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 Dow AgroSciences 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 Dow AgroSciences, in selecting and determining how to use its equipment.

Spray Drift Management

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications:

1. The distance of the outer most operating nozzles on the boom must not exceed 3/4 the length of the rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.

Where states have more stringent regulations, they should be observed.

The applicator should be familiar with and take into account the information covered in the following Aerial Drift Reduction Advisory. [This information is advisory in nature and does not supersede mandatory label requirements.]

Aerial Drift Reduction Advisory

Information on Droplet Size: The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

Controlling Droplet Size:

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Length: For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

Application Height: Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment: When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

Wind: Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. **Note:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions: Applications should not occur during a local, low level temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of the smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas: The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

Ground Equipment: To aid in reducing spray drift, Garlon 3A should be used in thickened (high viscosity) spray mixtures using an agriculturally labeled drift control additive, high viscosity invert system, or equivalent as directed by the manufacturer. 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; by keeping the 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); and by spraying when wind velocity is low (follow state regulations). In hand-gun applications, select the minimum spray pressure that will provide adequate plant coverage (without forming a mist). Do not apply with nozzles that produce a fine-droplet spray.

High Volume Leaf-Stem Treatment: To minimize spray drift, do not use pressure exceeding 50 psi at the spray nozzle and keep sprays no higher than brush tops. An agriculturally labeled thickening agent may be used to reduce drift.

Plants Controlled by Garlon 3A

Woody Plant Species

alder	Douglas-fir	poplar
arrowwood	dogwood	salt-bush *(Baccharis* spp.)
ash	elderberry	sassafras
aspen	elm	scotch broom
bear clover (bearmat)	gallberry	sumac
beech	hazel	sweetbay magnolia
birch	hornbean	sweetgum
blackberry	kudzu†	sycamore
blackgum	locust	tanoak
Brazilian pepper	madrone	thimbleberry
cascara	maples	tulip poplar
ceanothus	mulberry	waxmyrtle
cherry	oaks	western hemlock
chinquapin	persimmon	wild rose
choke cherry	pine	willow
cottonwood	poison ivy	winged elm
crataegus (hawthorn)	poison oak	salmonberry

†For complete control, retreatment may be necessary.

Annual and Perennial Broadleaf Weeds

bindweed	dandelion	ragweed
burdock	field bindweed	smartweed
Canada thistle	lambsquarter	tansy ragwort
chicory	plantain	vetch
curly dock	Purple loosestrife	wild lettuce

Application Methods

Use Garlon 3A at rates of 3/4 to 9 lb ae of triclopyr (1/4 to 3 gallons of Garlon 3A) 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. Use only water suitable for spraying. Use of an agriculturally labeled non-ionic surfactant is recommended for all foliar applications. When using surfactants, follow the use directions and precautions listed on the surfactant manufacturer's label. Use the higher recommended concentrations of surfactant in the spray mixture when applying lower spray volumes per acre. The recommended order of addition to the spray tank is water, spray thickening agent (if used), additional herbicide (if used), and Garlon 3A. Surfactant should be added to the spray tank last or as recommended on the product label. If combined with emulsifiable concentrate herbicides, moderate continuous adequate agitation is required.

Before using any recommended tank mixtures, read the directions and all use 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, oaks, pines, or winged elm are prevalent and during applications made in late summer when the plants are mature and during drought conditions, use the higher rates of Garlon 3A alone or in combinations with Tordon® 101 Mixture herbicide. (Tordon 101 Mixture is a restricted use pesticide. See product label.)

When using Garlon 3A in combination with 2,4-D 3.8 lb amine, like DMA 4 IVM, or low volatile ester herbicides, 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.

Foliage Treatment With Ground Equipment

High Volume Foliage Treatment

For control of woody plants, use Garlon 3A at the rate of 3 to 9 lb ae of triclopyr (1 to 3 gallons of Garlon 3A) per 100 gallons of spray solution, or Garlon 3A at 3/4 to 3 lb ae of triclopyr (1 to 4 quarts of Garlon 3A) may be tank mixed with 1/4 to 1/2 gallons of 2,4-D 3.8 lb amine, like DMA 4 IVM, or low volatile ester or Tordon 101 Mixture and diluted to make 100 gallons of spray solution. 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. (See General Use Precautions and Restrictions.) Do not exceed maximum allowable use rates per acre (see table below).

Maximum Labeled Rate versus Spray Volume per Acre

Total Spray Volume (gal/acre)	Maximum Rate of Garlon 3A		
	Rangeland and Pasture Sites† (gal/100 gal of spray)	Forestry Sites†† (gal/100 gal of spray)	Other Non-Cropland Sites††† (gal/100 gal of spray)
400	Do not use	0.5	0.75
300	Do not use	0.67	1
200	Do not use	1	1.5
100	0.67	2	3
50	1.33	4	6
40	1.67	5	7.5
30	2.33	6.65	10
20	3.33	10	15
10	6.67	20	30

† Do not exceed the maximum use rate of 2 lb ae of triclopyr (2/3 gal of Garlon 3A)/acre/year.

†† Do not exceed the maximum use rate of 6 lb ae of triclopyr (2 gal of Garlon 3A)/acre/year.

††† Do not exceed the maximum use rate of 9 lb ae of triclopyr (3 gal of Garlon 3A)/acre/year on non-cropland use sites other than rangeland, pasture, forestry, and grazed areas.

Low Volume Foliage Treatment

To control susceptible woody plants, apply up to 15 lb ae of triclopyr (5 gallons of Garlon 3A) in 10 to 100 gallons of finished spray. The spray concentration of Garlon 3A and total spray volume per acre may be adjusted according to the size and density of target woody plants and kind of spray equipment used. With low volume sprays, use sufficient spray volume to obtain uniform coverage of target plants including the surfaces of all foliage, stems, and root collars (see General Use Precautions and Restrictions). For best results, a surfactant should be added to all spray mixtures. Match equipment and delivery rate of spray nozzles to height and density of woody plants. When treating tall, dense brush, a truck mounted spray gun with spray tips that deliver up to 2 gallons per minute at 40 to 60 psi may be required. Backpack or other types of specialized spray equipment with spray tips that deliver less than 1 gallon of spray per minute may be appropriate for short, low to moderate density brush.

Tank Mixing: As a low volume foliar spray, up to 9 lb ae of triclopyr (3 gallons of Garlon 3A) may be applied in tank mix combination with 1/2 to 1 gallon of Tordon K or 1 to 2 gallons of Tordon 101 Mixture in 10 to 100 gallons of finished spray.

Broadcast Applications With Ground Equipment

Make application using equipment that will assure uniform coverage of the spray volumes applied. To improve spray coverage, add an agriculturally labeled non-ionic surfactant as described later under Directions for Use. See Maximum Labeled Rate versus Spray Volume per Acre table above for relationship between mixing rate, spray volume and maximum application rate.

Woody Plant Control

Foliage Treatment: Use 6 to 9 lb ae of triclopyr (2 to 3 gallons of Garlon 3A) in enough water to make 20 to 100 gallons of total spray per acre or 1 1/2 to 3 lb ae of triclopyr (1/2 to 1 gallon of Garlon 3A) may be combined with 1 to 2 gallons of 2,4-D 3.8 lb amine, like DMA 4 IVM, or low volatile esters or Tordon 101 Mixture in sufficient water to make 20 to 100 gallons of total spray per acre.

Broadleaf Weed Control

Use Garlon 3A at rates of 1 to 4 1/2 lb ae of triclopyr (1/3 to 1 1/2 gallons of Garlon 3A) in a total volume of 20 to 100 gallons of water per acre. Apply any time during the growing season. Garlon 3A at 1 to 3 lb ae of triclopyr (1/3 to 1 gallon of Garlon 3A) may be tank mixed with 1/2 to 1 gallon of Tordon K, Tordon 101 Mixture or 2,4-D 3.8 lb amine, like DMA 4 IVM, or low volatile herbicides to improve the spectrum of activity.

Aerial Application (Helicopter Only)

Aerial sprays should be applied using suitable drift control. (See General Use Precautions and Restrictions.) Add an agriculturally labeled non-ionic surfactant as described under Directions for Use. See Maximum Labeled Rate versus Spray Volume per Acre table above for relationship between mixing rate, spray volume and maximum application rate.

Foliage Treatment (Non-Grazed Rights-of-Way)

Non-grazed areas: Use 6 to 9 lb ae of triclopyr (2 to 3 gallons of Garlon 3A) or 3 to 4 1/2 lb ae of triclopyr (1 to 1 1/2 gallons of Garlon 3A) in a tank mix combination with 1 to 2 gallons of 2,4-D 3.8 lb amine, like DMA 4 IVM, or low volatile esters 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.

Interspersed areas in non-grazed rights-of-ways that may be subject to grazing may be spot treated if the treated area comprises no more than 10% of the total grazable area.

Forest Management Applications

For best control from broadcast applications of Garlon 3A, use a spray volume which will provide thorough plant coverage. Recommended spray volumes are usually 10 to 25 gallons per acre by air or 10 to 100 gallons per acre by ground. To improve spray coverage of spray volumes less than 50 gallons per acre, add an agriculturally labeled non-ionic surfactant as described under Directions for Use. Application systems should be used to prevent hazardous drift to off-target sites. Nozzles or additives that produce larger droplets of spray may require higher spray volumes to maintain brush control.

Forest Site Preparation (Not for Conifer Release)

Use up to 6 lb ae of triclopyr (2 gallons of Garlon 3A) and apply in a total spray volume of 10 to 30 gallons per acre or Garlon 3A at 3 to 4 1/2 lb ae of triclopyr (1 to 1 1/2 gallons of Garlon 3A) may be used with 1 to 2 gallons of Tordon 101 Mixture or 2,4-D 3.8 lb low volatile ester in a tank mix combination in a total spray volume of 10 to 30 gallons per acre. Use of a non-ionic agricultural surfactant is recommended for all foliar applications as described under Directions for Use.

Note: Conifers planted sooner than one month after treatment with Garlon 3A at less than 4 lb ae of triclopyr (1 1/3 gallons of Garlon 3A) per acre or sooner than two months after treatment at 4 to 9 lb ae of triclopyr (1 1/3 to 3 gallons of Garlon 3A) 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 before planting 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 3 to 6 lb ae triclopyr (1 to 2 gallons of Garlon 3A) in enough water to make 100 gallons of spray mixture. To improve spray coverage, add an agriculturally labeled non-ionic surfactant as described under Directions for Use. The spray mixture should be directed onto foliage of competitive hardwoods using knapsack or backpack sprayers with flat fan nozzles or equivalent any time after 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 away from contact with conifer foliage, particularly foliage of desirable pines.

Note: Spray 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 Application for Conifer Release in the Northeastern 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 or gray), aspen, ash, pin cherry and *Rubus* spp. and perennial and annual broadleaf weeds, use Garlon 3A at rates of 1 1/2 to 3 lb ae triclopyr (2 to 4 quarts of Garlon 3A) per acre alone or plus 2,4-D amine, like DMA 4 IVM, or 2,4-D ester 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 over wintering buds and hardwoods are in full leaf and prior to autumn coloration.

Broadcast Applications for Douglas Fir Release in the Pacific Northwest and California

To release Douglas fir from susceptible competing vegetation such as broadleaf weeds, alder, blackberry or Scotch broom, apply Garlon 3A at 1 to 1 1/2 lb ae triclopyr (1 1/3 to 2 quarts of Garlon 3A) per acre alone or in combination with 4 lb per acre of atrazine. Mix all sprays in a water carrier with a non-ionic surfactant. Applications should be made in early spring after hardwoods begin growth and before Douglas fir bud break ("early foliar" hardwood stage) or after Douglas fir seasonal growth has "hardened off" (set winter buds) in late summer, but while hardwoods are still actively growing. When treating after Douglas fir bud set, apply prior to onset of autumn coloration in hardwood foliage. **Note:** Treatments applied during active Douglas fir shoot growth (after spring bud break and prior to bud set) may cause injury to Douglas fir trees.

Cut Surface Treatments

To control unwanted trees of hardwood species such as elm, maple, oak and conifers in rights-of-way and other non-crop areas, apply Garlon 3A, either undiluted or diluted in a 1 to 1 ratio with water, as directed below.

With Tree Injector Method

Applications should be made by injecting 1/2 milliliter of undiluted Garlon 3A or 1 milliliter of the diluted solution through the bark at intervals of 3 to 4 inches between centers of the injector wound. The injections should completely surround the tree at any convenient height. **Note: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is injected directly into plants.**

With Hack and Squirt Method

Make cuts with a hatchet or similar equipment at intervals of 3 to 4 inches between centers at a convenient height around the tree trunk. Spray 1/2 milliliter of undiluted Garlon 3A or 1 milliliter of the diluted solution into each cut.

With Frill or Girdle Method

Make a single girdle through the bark completely around the tree at a convenient height. Wet the cut surface with undiluted or diluted solution.

Both of the above methods may be used successfully at any season except during periods of heavy sap flow of certain species - for example, maples.

Stump Treatment

Spray or paint the cut surfaces of freshly cut stumps and stubs with undiluted Garlon 3A. The cambium area next to the bark is the most vital area to wet.

Christmas Tree Plantations

Garlon 3A is recommended for the control of woody plants and annual and perennial broadleaf weeds in established Christmas tree plantations. For best results, applications should be made when woody plants and weeds are actively growing. Garlon 3A does not control weeds which have not emerged at the time of application. If lower rates are used on hard to control woody species, resprouting may occur the year following treatment. Brush over 8 feet tall is difficult to treat efficiently using hand equipment such as backpack or knapsack sprayers. When treating large brush or trees or hard to control species such as ash, blackgum, choke cherry, elm, hazel, madrone, maples, oaks or sweetgum, and for applications made during drought conditions or in late summer when the leaves are mature, use the higher rates of Garlon 3A or use cut surface application methods. For foliar applications, apply in enough water to give uniform and complete coverage of the plants to be controlled. Applications made under drought conditions may provide less than desirable results.

Use Precautions

- Do not use on newly seeded grass until well established as indicated by vigorous growth and development of secondary root system and tillering
- Newly seeded turf (alleyways, etc.) should be mowed two or three times before any treatment with Garlon 3A.
- Do not reseed Christmas tree areas treated with Garlon 3A for a minimum of three weeks after application.
- Do not use Garlon 3A if legumes, such as clover, are present and injury cannot be tolerated.

Spray Preparation

The recommended order of addition to the spray tank is water, drift control agent (if used), non-ionic agricultural surfactant and Garlon 3A. Continue moderate agitation while mixing and spraying. Use of a non-ionic agricultural surfactant is recommended for all applications. When using surfactants, follow use directions and precautions listed on the manufacturer's label. Use the higher recommended concentrations of surfactant in the spray mixture when applying lower spray volumes per acre.

Application

Make applications in late summer or early autumn after terminal growth of Christmas trees has hardened of, but before leaf drop of, target weeds. Apply at a rate of 3/4 to 1 3/4 lb ae triclopyr (2 to 5 pints of Garlon 3A) per acre as a foliar spray directed toward the base of Christmas trees. Use sufficient spray volume to provide uniform coverage of target plants (20 to 100 gallons per acre). **Do not apply with 2,4-D.** Application rates of Garlon 3A recommended for Christmas trees will only suppress some well established woody plants that are greater than 2 to 3 years old (see table below). Broadcast sprays may also be applied in bands between the rows of planted trees. Use spray equipment that will assure uniform coverage of the desired spray volume.

Spray solution from Garlon 3A can cause needle and branch injury to Christmas trees. To minimize injury to Christmas trees, it is recommended that sprays be directed so as to minimize contact with foliage. Blue spruce, white spruce, balsam fir and Frasier fir are less susceptible to injury than white pine and Douglas fir.

Restriction: Apply Garlon 3A only to established Christmas trees that were planted at least one full year prior to application.

Application Rates and Species Controlled:

Garlon 3A		
2 pints/acre (3/4 lb ae triclopyr)	3 to 4 pints/acre (1 1/2 lb ae triclopyr)	5 pints/acre (1 3/4 lb ae triclopyr)
clover dandelion dock, curly lambsquarters lespedeza plantain, broadleaf plantain, buckhorn ragweed, common vetch	bindweed, field (TG) blackberry† chicory (s) fireweed ivy, ground lettuce, wild oxalis poison ivy smartweed (TG) thistle, Canada (TG) violet, wild Virginia creeper†	arrowwood (SDL) aspen beech (SDL) birch (SDL) chinquapin cottonwood (SDL) elderberry grape, wild mulberry (SDL) poplar (SDL) sassafras (SDL) sumac (SDL) sycamore (SDL)

(TG) Top growth control, retreatment may be necessary
(S) Suppression
(SDL) Seedlings less than 2-3 years old
†Use 4 pint per acre rate

Directed Applications

To control hardwoods such as red maple, sugar maple, striped maple, sweetgum, red and white oaks, ash, alder, birch, aspen, and pin cherry mix 4 to 20 fluid ounces of Garlon 3A in enough water to make 3 gallons of spray mixture. For directed applications, do not exceed 6 lb ae triclopyr (2 gallons of Garlon 3A) per acre per year. To improve coverage, add a non-ionic agricultural surfactant to the spray. This spray mixture should be directed onto foliage of competitive hardwoods using knapsack or backpack sprayers with flat fan nozzles or equivalent any time after hardwoods have reached full leaf size, but before autumn coloration (when plants are actively growing). The majority of treated hardwoods should be less than 8 feet in height to ensure adequate spray coverage. **Note:** To prevent Christmas tree injury, care should be taken to direct spray away from contact with Christmas tree foliage.

Cut Surface Treatments

When treating large brush or trees or hard to control species such as ash, blackgum, choke cherry, elm, hazel, madrone, maples, oaks or sweetgum, and for applications made during drought conditions or in late summer when the leaves are mature, use cut surface treatments. (See directions for Cut Surface Treatments in preceding section of this label.)

Wetland Sites in Production Forests and Industrial Non-Crop Areas

Garlon 3A may be used within production forests and industrial non-crop sites to control target vegetation in and around standing water sites, such as marshes, wetlands, and the banks of ponds and lakes and transition areas between upland and lowland sites.

For control of woody plants and broadleaf weeds in these sites, follow use directions and application methods on this label for forestry and terrestrial non-cropland sites.

Use Precautions

Minimize overspray to open water when treating target vegetation in and around non-flowing, quiescent or transient water. When making applications to control unwanted plants on banks or shorelines of flowing water, minimize overspray to open water. **Note:** Consult local public water control authorities before applying this product in and around public water. Permits may be required to treat such areas.

Terms and Conditions of Use

If terms of the following Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. Otherwise, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitations of Remedies.

Warranty Disclaimer

Dow AgroSciences 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. Dow AgroSciences MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use

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 Dow AgroSciences or the seller. All such risks shall be assumed by buyer.

Limitation of Remedies

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 Dow AgroSciences' 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.

Dow AgroSciences shall not be liable for losses or damages resulting from handling or use of this product unless Dow AgroSciences is promptly notified of such loss or damage in writing. In no case shall Dow AgroSciences be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer, Inherent Risks of Use, and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or this Limitation of Remedies in any manner.

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Dow AgroSciences LLC • Indianapolis, IN 46268 U.S.A.

Label Code: D02-101-037
Replaces Label: D02-101-036
LOES Number: 010-00084

EPA-Accepted 12/03/02

Revisions:

1. Corrected Example Calculation 2 on page 10: = (800 x 3.912) – 160/3.33.

MATERIAL SAFETY DATA SHEET

Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

Dow AgroSciences

GARLON* 3A HERBICIDE

Effective Date: 17-Nov-06
Product Code: 38321
MSDS: 004422

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Garlon* 3A Herbicide

COMPANY IDENTIFICATION:
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Light purple-pink liquid, ammonia-like odor. May cause eye irritation with corneal injury. May cause skin irritation. Toxic to aquatic organisms.

EMERGENCY PHONE NUMBER: 800-992-5994

3. COMPOSITION/INFORMATION ON INGREDIENTS:

COMPONENT	CAS NUMBER	W/W%
Triclopyr TEA Salt	057213-69-1	44.4
Triethylamine	000121-44-8	3.0
Ethanol	000064-17-5	2.1
Balance		50.5

4. FIRST AID:

EYES: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist.

SKIN: Wash skin with plenty of water.

INGESTION: Do not induce vomiting. Give one cup (8 ounces or 240 ml) of water or milk if available and transport to a medical facility. Do not give anything by mouth to an unconscious person.

INHALATION: No emergency medical treatment necessary.

NOTE TO PHYSICIAN: Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach & lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. If burn is present, treat as any thermal burn, after decontamination. Exposure to amine vapors may cause minor transient edema of the corneal epithelium (glaucopsia) with blurred vision, blue haze & halos around bright objects. Effects disappear in a few hours and temporarily reduce ability to drive vehicles. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: 110°F (43°C)
METHOD USED: TCC
FLAMMABLE LIMITS
LFL: Not determined
UFL: Not determined

EXTINGUISHING MEDIA: Alcohol foam and CO_2.

FIRE & EXPLOSION HAZARDS: Toxic, irritating vapors may be formed or given off if product is involved in fire. Although product is water-based, it has a flash point due to the presence of small amounts of ethanol and triethylamine.

FIRE-FIGHTING EQUIPMENT: Use positive-pressure, self-contained breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS/LEAKS: Contain small spills and absorb with an inert material such as clay or dry sand. Report large spills to Dow AgroSciences at 800-992-5994.

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: HANDLING: Keep out of reach of children. Causes irreversible eye damage. Harmful if inhaled or absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic skin reaction in some individuals. Avoid contact with eyes, skin, clothing, breathing vapor, or spray mist. Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

STORAGE: Store above 28°F or agitate before use. Store in original container. See product label for handling/storage precautions relative to the end use of this product.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINE(S):
Ethanol (ethyl alcohol): ACGIH TLV and OSHA PEL are 1000 ppm. ACGIH classification is A4.
Triclopyr TEA Salt: Dow AgroSciences Industrial Hygiene Guideline is 2 mg/M^3 as acid equivalent; Skin.
Triethylamine: ACGIH TLV is 1 ppm TWA, 3 ppm STEL, Skin. OSHA PEL is 10 ppm TWA, 15 ppm STEL.

A "skin" notation following the exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact. It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

EYE PROTECTION: Use chemical goggles. Eye wash fountain should be located in immediate work area. If exposure causes eye discomfort, use a full-face respirator.

SKIN PROTECTION: When prolonged or frequently repeated contact could occur, use chemically protective clothing resistant to this material. Selection of specific items such as face shield, gloves, boots, and apron or full-body suit will depend on operation.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use a NIOSH approved air-purifying respirator.

APPLICATORS AND ALL OTHER HANDLERS: Refer to the product label for personal protective clothing and equipment.

9. PHYSICAL AND CHEMICAL PROPERTIES:

BOILING POINT: Not determined
VAPOR PRESSURE: Not determined
VAPOR DENSITY: Not applicable
SOLUBILITY IN WATER: Miscible
SPECIFIC GRAVITY: 1.135 (68/68°F)
APPEARANCE: Light purple/pink liquid
ODOR: Ammonia-like odor

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Avoid sources of ignition if temperature is near or above flash point.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Any oxidizing agent. Consult manufacturer for specific cases.

HAZARDOUS DECOMPOSITION PRODUCTS: Nitrogen oxides and hydrogen chloride may be formed under fire conditions.

HAZARDOUS POLYMERIZATION: Not known to occur.

11. TOXICOLOGICAL INFORMATION:

POTENTIAL HEALTH EFFECTS: This section includes possible adverse effects, which could occur if this material is not handled in the recommended manner.

EYE: May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur. Vapor of amines may cause swelling of the cornea resulting in visual disturbances such as blurred or hazy vision. Bright lights may appear to be surrounded by halos. Effects may be delayed and typically disappear spontaneously.

SKIN: Prolonged contact may cause skin irritation with local redness. Repeated contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. Prolonged or frequently repeated skin contact may cause allergic skin reactions in some individuals. With the dilute mix, no allergic skin reaction is expected. Prolonged skin contact is unlikely to result in absorption of harmful amounts. The LD_{50} for skin absorption in rabbits is >5,000 mg/kg.

INGESTION: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Swallowing may result in gastrointestinal irritation or ulceration. The oral LD_{50} for rats is 2,574 mg/kg (male) and 1,847 mg/kg (female).

INHALATION: Brief exposure (minutes) is not likely to cause adverse effects.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Effects have been reported on the following organs: liver and kidney.

CANCER INFORMATION: Triclopyr did not cause cancer in laboratory animal studies.

TERATOLOGY (BIRTH DEFECTS): Triclopyr did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother. Ethanol has been shown to cause birth defects and toxicity to the fetus in laboratory animal tests. It has also been shown to cause human fetotoxicity and/or birth defects when ingested during pregnancy.

REPRODUCTIVE EFFECTS: For triclopyr, in laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

MUTAGENICITY: For triclopyr and ethanol: in-vitro genetic toxicity studies were negative. For triclopyr: animal genetic toxicity studies were negative. For ethanol: animal genetic toxicity studies were negative in some cases and positive in other cases.

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL FATE:

MOVEMENT & PARTITIONING:
Based largely or completely on information for triclopyr.
Bioconcentration potential is low (BCF <100 or Log Pow <3).

DEGRADATION & PERSISTENCE:
Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD >40%).
The 20-Day biochemical oxygen demand (BOD20) is 0.30 p/p.
Theoretical oxygen demand (ThOD) is calculated to be 0.75 p/p.

ECOTOXICOLOGY:
Material is slightly toxic to aquatic organisms on an acute basis (LC_{50} or EC_{50} is between 10 and 100 mg/L in most sensitive species).

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION:

U.S. DEPARTMENT OF TRANSPORTATION (DOT) INFORMATION:

For non-bulk shipments by land:
This material is not regulated for transport.

For bulk shipments by land:
COMBUSTIBLE LIQUID, N.O.S. (TRIETHYLAMINE, ETHANOL)/COMBUSTIBLE LIQUID/NA1993/PGIII

For shipments by air or vessel:
FLAMMABLE LIQUIDS, N.O.S. (TRIETHYLAMINE, ETHANOL)/3/UN1993/PGIII

15. REGULATORY INFORMATION:

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
Triethylamine	000121-44-8	3.0%

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A delayed health hazard
A fire hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
Ethanol	000064-17-5	NJ1 NJ3 PA1
Triethylamine	000121-44-8	NJ1 NJ3 PA1 PA3

NJ1=New Jersey Special Health Hazard Substance (present at > or = to 0.1%).
NJ3=New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%).
PA1=Pennsylvania Hazardous Substance (present at > or = to 1.0%).
PA3=Pennsylvania Environmental Hazardous Substance (present at > or = to 1.0%).

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

CATEGORY	RATING
Health	3
Flammability	2
Reactivity	0

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND): This product contains the following substance(s) listed as "Hazardous Substances" under CERCLA which may require reporting of releases:

Chemical Name	CAS Number	RQ	% in Product
Triethylamine	000121-44-8	5000	3.0%

Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

Dow AgroSciences

GARLON* 3A HERBICIDE

Effective Date: 17-Nov-06
Product Code: 38321
MSDS: 004422

RCRA Categorization Hazardous Code:
Triethylamine = U404

16. OTHER INFORMATION:

MSDS STATUS: Revised Section: 2, 3, 11, 12, 13, 15
Reference: DR-0121-6064
Replaces MSDS dated: 11/24/03
Document Code: D03-101-004
Replaces Document Code: D03-101-003

Material Safety Data Sheet

Quat 256

1. Product and company identification

Product name	Quat 256	**In case of emergency**	1-800-843-6174
Code	256DN	**Validation date**	1/12/2012.
Material uses	Concentrated quaternary disinfectant/cleaner	**Print date**	1/12/2012.
Manufacturer	Essential Industries, Inc. P.O. Box 12 Merton, WI 53056-0012 Phone: 262-538-1122	**Responsible name**	**Regulatory Affairs Department**

Hazardous Material Information System (U.S.A.)

Health	3
Flammability	0
Physical hazards	0
Personal protection	B

HAZARD RATING
4 = Extreme
3 = High
2 = Moderate
1 = Slight
0 = Insignificant

A = Goggles B = Goggles & Gloves C = Goggles, Gloves & Apron

2. Hazards identification

Emergency overview May cause irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system.

Potential acute health effects due to overexposure

Inhalation Mists and vapors can irritate the throat and respiratory tract. High vapor concentrations may cause central nervous system effects. Symptoms may include headaches, dizziness, drowsiness and death.

Ingestion Although of moderate to low toxicity, ingestion can cause gastrointestinal irritation, nausea, vomiting and diarrhea, and death.

Skin Causes irritation and/or corrosive burns. Brief exposures may cause irritation and defatting of the skin.

Eyes Causes irritation and/or burns and may result in permanent injury to eyes including blindness.

Potential chronic health effects due to overexposure

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

See toxicological information (section 8)

3. Composition/information on ingredients

Name	CAS number	%
Alcohols, C12-15, ethoxylated	68131-39-5	5 - 10
tetrasodium ethylenediaminetetraacetate	64-02-8	1 - 5

4. First aid measures

Eye contact Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Remove contact lenses after first 5 minutes, then continue rinsing eyes. Seek medical attention.

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

Inhalation If symptoms are experienced, move victim 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.

Ingestion Call a poison center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Notes to physician In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. Probable mucosal damage may contraindicate the use of gastric lavage.

5 . Fire-fighting measures

Flammability of the product In a fire or if heated, a pressure increase will occur and the container may burst.

Extinguishing media

Suitable In case of fire, use water spray (fog), foam, dry chemical or CO_2. Solid water streams may spread burning liquid.

Special exposure hazards Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Hazardous thermal decomposition products Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
metal oxide/oxides

Special protective equipment for fire-fighters Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Cool closed containers exposed to fire with water.

Flash point Closed cup: >93.3°C (>199.9°F)

6. Control and preventive measures

Storage Keep container tightly closed in a cool, well-ventilated place. Keep from freezing. Do not handle or store near an open flame, heat or other sources of ignition. Prevent electrostatic charge buildup by using common bonding and grounding techniques.

Personal protection

Respiratory If exposure limits are exceeded or if irritation is experienced, a NIOSH/MSHA approved respirator with an organic-vapor removing cartridge should be worn. Ventilation and other forms of engineering controls are often the preferred means for controlling chemical exposure.

Hands Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Skin Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Eyes Wear chemical goggles. Use a face shield if splashing is possible.

Methods for cleaning up

Small spill Ventilate closed spaces before entering. All equipment used when handling the product must be grounded. Floor will be slippery. Do not touch or walk through spilled material. Stop leak if you can do it without risk. A vapor suppressing foam may be used to reduce vapors. Prevent entry into waterways, sewers, basements or confined areas. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material.

Waste disposal Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

7. Physical and chemical properties

Physical state	Liquid	**Boiling/condensation point**	100°C (212°F)
Color	Colorless	**Melting/freezing point**	0°C (32°F)
Odor	Bland	**Vapor pressure**	4 kPa (30 mm Hg)
VOC	0.5%	**Vapor density**	<1 [Air = 1]
pH	11.3 to 12.3	**Weight per Gallon:**	8.72 lbs./gal.
1% pH:	8.8 to 9.8	**Specific Gravity:**	1.04 gm/ml

8. Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Alcohols, C12-15, ethoxylated	LD50 Oral	Rat	2 g/kg	-
tetrasodium ethylenediaminetetraacetate	LD50 Oral	Rat	10 g/kg	-

Conclusion/Summary Not available

Chronic toxicity

Conclusion/Summary Not available

9. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	Not regulated	-	-	-		-

PG* : Packing group

Specimen Label

Dow AgroSciences™

Rodeo®

Herbicide

For aquatic weed and brush control. For control of annual and perennial weeds and woody plants in and around aquatic and other noncrop sites; also for use in wildlife habitat areas, for perennial grass release, and grass growth suppression.

Avoid contact of herbicide with foliage, green stems, exposed non-woody roots or fruit of crops, desirable plants and trees, because severe injury or destruction may result.

Active Ingredient(s):	
glyphosate†: N-(phosphonomethyl)glycine, isopropylamine salt	53.8%
Inert Ingredients	46.2%
Total Ingredients	100.0%

†Contains 5.4 pounds per gallon glyphosate, isopropylamine salt (4 pounds per gallon glyphosate acid).

EPA Reg. No. 62719-324

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.)

Precautionary Statements

Hazards to Humans and Domestic Animals

Harmful if inhaled

Avoid breathing spray mist. Remove contaminated clothing and wash before reuse. Wash thoroughly with soap and water after handling.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

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

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

Engineering Controls

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

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 inhaled: Remove individual to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

Environmental Hazards

Do not contaminate water when disposing of equipment washwaters. Treatment of aquatic weeds can result in oxygen depletion or loss due to decomposition of dead plants. This oxygen loss can cause fish suffocation.

In case of leak or spill, soak up and remove to a landfill.

Physical or Chemical Hazards

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

Do not mix, store or apply this product or spray solutions of this product in galvanized steel or unlined steel (except stainless steel) containers or spray tanks. This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas, which may form a highly combustible gas mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.

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

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at www.dowagro.com.

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

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.

This is an end-use product. Dow AgroSciences does not intend and has not registered it for reformulation. See individual container label for repackaging limitations.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 hours.

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

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

Storage and Disposal

Do not contaminate water, food, feed or seed by storage or disposal.
Storage: Store above 10°F (-12°C) to keep product from crystallizing. Crystals will settle to the bottom. If allowed to crystallize, place in a warm room 68°F (20°C) for several days to redissolve and roll or shake container or recirculate in mini-bulk containers to mix well before using.
Pesticide Disposal: Wastes resulting from use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures.
Container Disposal: Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. Do not reuse this container. Triple rinse (or equivalent). Then 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.

General Information

(How this product works)

This product herbicide is a water-soluble liquid which mixes readily with water and nonionic surfactant to be applied as a foliar spray for the control or destruction of many herbaceous and woody plants. Rodeo is intended for control of annual and perennial weeds and woody plants in and around aquatic and other noncrop sites; also for use in wildlife habitat areas, for perennial grass release, and grass growth suppression.

The active ingredient in Rodeo moves through the plant from the point of foliage contact to and into the root system. Visible effects on most annual weeds occur within 2 to 4 days, 7 days or more on most perennial weeds, and 30 days or more on most woody plants. Extremely cool or cloudy weather following treatment may slow the activity of this product and delay visual effects of control. Visible effects include gradual wilting and yellowing of the plant which advances to complete browning of above-ground growth and deterioration of underground plant parts.

Unless otherwise directed on this label, delay application until vegetation has emerged and reached the stages described for control of such vegetation under the "Weeds Controlled" section of this label.

Unemerged plants arising from unattached underground rhizomes or root stocks of perennials or brush will not be affected by the spray and will continue to grow. For this reason best control of most perennial weeds or brush is obtained when treatment is made at late growth stages approaching maturity.

Always use the higher rate of Rodeo and surfactant within the recommended range when vegetation is heavy or dense.

Do not treat weeds, brush or trees under poor growing conditions such as drought stress, disease or insect damage, as reduced control may result. Reduced control of target vegetation may also occur if foliage is heavily covered with dust at the time of treatment.

Reduced control may result when applications are made to woody plants or weeds following site disturbance or plant top growth removal from grazing, mowing, logging or mechanical brush control. For best results, delay treatment of such areas until resprouting and foliar growth has restored the target vegetation to the recommended stage of growth for optimum herbicidal exposure and control.

Rainfall or irrigation occurring within 6 hours after application may reduce effectiveness. Heavy rainfall or irrigation within 2 hours after application may wash the product off the foliage and a repeat treatment may be required.

Rodeo does not provide residual weed control. For subsequent residual weed control, follow a label-approved herbicide program. Read and carefully observe the cautionary statements and all other information appearing on the labels of all herbicides used.

NOTE: Use of this product in any manner not consistent with this label may result in injury to persons, animals or crops, or other unintended consequences. When not in use, keep container closed to prevent spills and contamination.

Buyer and all users are responsible for all loss or damage in connection with the use or handling of mixtures of this product or other materials that are not expressly recommended in this label. Mixing this product with herbicides or other materials not recommended in this label may result in reduced performance.

ATTENTION: Avoid drift. Extreme care must be used when applying this product to prevent injury to desirable plants and crops.

Do not allow the herbicide solution to mist, drip, drift or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to the crop, plants or other areas on which treatment was not intended. The likelihood of plant or crop injury occurring from the use of this product is greatest when winds are gusty or in excess of 5 miles per hour or when other conditions, including lesser wind velocities, will allow spray drift to occur. When spraying, avoid combinations of pressure and nozzle type that will result in splatter or fine particles (mist) which are likely to drift. **Avoid applying at excessive speed or pressure.**

Mixing and Application Instructions

Clean sprayer and parts immediately after using this product by thoroughly flushing with water and dispose of rinsate according to labeled use or disposal instructions.

Apply these spray solutions in properly maintained and calibrated equipment capable of delivering desired volumes. Hand-gun applications should be properly directed to avoid spraying desirable plants. Note: reduced results may occur if water containing soil is used, such as water from ponds and unlined ditches.

Mixing

Rodeo mixes readily with water. Mix spray solutions of this product as follows:

1. Fill the mixing or spray tank with the required amount of water while adding the required amount of this product (see "Directions for Use" and "Weeds Controlled" sections of this label).
2. Near the end of the filling process, add the required surfactant and mix well. Remove hose from tank immediately after filling to avoid siphoning back into the water source.

Note: If tank mixing with Garlon* 3A herbicide, ensure that Garlon 3A is well mixed with at least 75 percent of the total spray volume before adding Rodeo to the spray tank to avoid incompatibility.

During mixing and application, foaming of the spray solution may occur. To prevent or minimize foam, avoid the use of mechanical agitators, place the filling hose below the surface of the spray solution (only during filling), terminate by-pass and return lines at the bottom of the tank, and, if needed, use an approved anti-foam or defoaming agent.

Keep by-pass line on or near bottom of tank to minimize foaming. Screen size in nozzle or line strainers should be no finer than 50 mesh. Carefully select correct nozzle to avoid spraying a fine mist. For best results with conventional ground application equipment, use flat fan nozzles. Check for even distribution of spray droplets.

IMPORTANT: When using this product, unless otherwise specified, mix 2 or more quarts of a nonionic surfactant per 100 gallons of spray solution. Use a nonionic surfactant labeled for use with herbicides.
The surfactant must contain 50 percent or more active ingredient.

Always read and follow the manufacturer's surfactant label recommendations for best results.

These surfactants should not be used in excess of 1 quart per acre when making **broadcast** applications.

Carefully observe all cautionary statements and other information appearing in the surfactant label.

Colorants or marking dyes approved for use with herbicides may be added to spray mixtures of this product. Colorants or dyes used in spray solutions of this product may reduce performance, especially at lower rates or dilutions. Use colorants or dyes according to the manufacturer's label recommendations.

Application Equipment and Techniques

ATTENTION: AVOID DRIFT. EXTREME CARE MUST BE EXERCISED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS.

Do not allow the herbicide solution to mist, drip, drift, or splash onto desirable vegetation since minute quantities of this product can cause severe damage or destruction to crops, plants, or other areas on which the treatment was not intended. The likelihood of plant or crop injury occurring from the use of this product is greatest when winds are gusty or in excess of 5 miles per hour or when other conditions, including lesser wind velocities, will allow spray drift to occur. When spraying, avoid combinations of pressure and nozzle type that will result in splatter or fine particles (mist) which are likely to drift. AVOID APPLYING AT EXCESSIVE SPEED OR PRESSURE.

Note: Use of this product in a manner not consistent with this label may result in injury to persons, animals, or crops, or other unintended consequences. When not in use, keep container closed to prevent spills and contamination.

Spray Drift Management

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions. The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

1. The distance of the outer most nozzles on the boom must not exceed 3/4 the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees. Where states have more stringent regulations, they should be observed.

The applicator should be familiar with and take into account the information covered in the following **Aerial Drift Reduction Advisory Information:**

Importance of Droplet Size: The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversion section of this label).

Controlling Droplet Size: Volume-Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows product larger droplets.

Pressure-Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.

Number of nozzles-Use the minimum number of nozzles that provide uniform coverage.

Nozzle Orientation-Orienting nozzles so that the spray is released backwards, parallel to the airstream will produce larger droplets than other orientations. Significant deflection from the horizontal will reduce droplet size and increase drift potential.

Nozzle Type-Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce larger droplets than other nozzle types.

Boom Length-For some use patterns, reducing the effective boom length to less than ¾ of the wingspan or rotor length may further reduce drift without reducing swath width.

Application-Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment: When applications are made with a cross-wind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

Wind: Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. Note: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect drift.

Temperature and Humidity: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions: Applications should not occur during a temperature inversion, because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a connected cloud (under low wind conditions) indicates an inversion, while smoke that moves upwards and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas: The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

Aerial Equipment

For aerial application of this product in California, refer to Federal supplemental label for Rodeo herbicide entitled "For Aerial Application in California Only". In California, aerial application may be made in aquatic sites and noncrop areas, including aquatic sites present in noncrop areas that are part of the intended treatment.

For control of weed or brush species listed in this label using aerial application equipment: For aerial broadcast application, unless otherwise specified, apply the rates of Rodeo and surfactant recommended for broadcast application in a spray volume of 3 to 20 gallons of water per acre. See the "Weeds Controlled" section of this label for labeled annual and herbaceous weeds and woody plants and broadcast rate recommendations. Aerial applications of this product may only be made as specifically recommended in this label.

AVOID DRIFT. Do not apply during inversion conditions, when winds are gusty or under any other condition which will allow drift. Drift may cause damage to any vegetation contacted to which treatment is not intended. To prevent injury to adjacent desirable vegetation, appropriate buffer zones must be maintained.

Coarse sprays are less likely to drift; therefore, do not use nozzles or nozzle configurations which dispense spray as fine spray droplets. Do not angle nozzles forward into the airstream and do not increase spray volume by increasing nozzle pressure.

Drift control additives may be used. When a drift control additive is used, read and carefully observe the cautionary statements and all other information appearing in the additive label. The use of a drift control agent for conifer and herbaceous release applications may result in conifer injury and is not recommended.

Ensure uniform application. To avoid streaked, uneven or overlapped application, use appropriate marking devices.

Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove residues of this product accumulated during spraying or from spills. **Prolonged exposure of this product to uncoated steel surfaces may result in corrosion and possible failure of the part. Landing gear are most susceptible.** The maintenance of an organic coating (paint) which meets aerospace specification MIL-C-38413 may prevent corrosion.

Ground Broadcast Equipment

For control of weed or brush species listed in this label using conventional boom equipment: For ground broadcast application, unless otherwise specified, apply the rates of Rodeo and surfactant recommended for broadcast application in a spray volume of 3 to 30 gallons of water per acre. See the "Weeds Controlled" section of this label for labeled annual and herbaceous weeds and woody plants and broadcast rate recommendations. As density of vegetation increases, spray volume should be increased within the recommended range to ensure complete coverage. Carefully select correct nozzle to avoid spraying a fine mist. For best results with ground application equipment, use flat fan nozzles. Check for even distribution of spray droplets.

Hand-Held and High-Volume Equipment
(Use Coarse Sprays Only)

For control of weeds listed in this label using knapsack sprayers or high-volume spraying equipment utilizing handguns or other suitable nozzle arrangements:

High volume sprays: Prepare a **3/4 to 2 percent solution** of this product in water, add a nonionic surfactant and apply to foliage of vegetation to be controlled. For specific rates of application and instructions for control of various annual and perennial weeds, see the "Weeds Controlled" section in this label.

Applications should be made on a spray-to-wet basis. Spray coverage should be uniform and complete. Do not spray to point of runoff.

Low volume directed sprays: Rodeo may be used as a **5 to 8 percent solution** in low-volume directed sprays for spot treatment of trees and brush. This treatment method is most effective in areas where there is a low density of undesirable trees or brush. If a straight stream nozzle is used, start the application at the top of the targeted vegetation and spray from top to bottom in a lateral zig-zag motion. Ensure that at least 50 percent of the leaves are contacted by the spray solution. For flat fan and cone nozzles and with hand-directed mist blowers, mist the application over the foliage of the targeted vegetation. Small, open-branched trees need only be treated from one side. If the foliage is thick or there are multiple root sprouts, applications must be made from several sides to ensure adequate spray coverage.

Prepare the desired volume of spray solution by mixing the amount of this product in water, shown in the following table:

Spray Solution

Desired Volume	Amount of Rodeo						
	3/4%	1%	1 1/4%	1 1/2%	2%	5%	8%
1 gal	1 fl oz	1 1/3 fl oz	1 2/3 fl oz	2 fl oz	2 2/3 fl oz	6 1/2 fl oz	10 1/4 fl oz
25 gal	1 1/2 pt	1 qt	1 1/4 qt	1 1/2 qt	2 qt	5 qt	2 gal
100 gal	3 qt	1 gal	1 1/4 gal	1 1/2 gal	2 gal	5 gal	8 gal

2 tablespoons = 1 fluid ounce

For use in knapsack sprayers, it is suggested that the recommended amount of this product be mixed with water in a larger container. Fill the knapsack sprayer with the mixed solution and add the correct amount of surfactant.

Wiper Applications

For wick or wiper applications, mix 1 gallon of this product with 2 gallons of clean water to make a 33 percent solution. Addition of a nonionic surfactant at a rate of 10 percent by volume of total herbicide solution is recommended.

Wiper applications can be used to control or suppress annual and perennial weeds listed on this label. In heavy weed stands, a double application in opposite directions may improve results. See the "Weed Controlled" section in this label for recommended timing, growth stage and other instructions for achieving optimum results

Aquatic and Other Noncrop Sites

Apply Rodeo as directed and under conditions described to control or partially control weeds and woody plants listed in the "Weeds Controlled" section in industrial, recreational and public areas or other similar aquatic or terrestrial sites on this label.

Aquatic Sites

Rodeo may be applied to emerged weeds in all bodies of fresh and brackish water which may be flowing, nonflowing or transient. This includes lakes, rivers, streams, ponds, estuaries, rice levees, seeps, irrigation and drainage ditches, canals, reservoirs, wastewater treatment facilities, wildlife habitat restoration and management areas, and similar sites.

If aquatic sites are present in the noncrop area and are part of the intended treatment, read and observe the following directions:

- **Rodeo does not control plants which are completely submerged or have a majority of their foliage under water.**
- There is no restriction on the use of treated water for irrigation, recreation or domestic purposes.
- Consult local state fish and game agency and water control authorities before applying this product to public water. Permits may be required to treat such water.

- **NOTE:** Do not apply this product directly to water within 1/2 mile upstream of an active potable water intake in flowing water (i.e., river, stream, etc.) or within 1/2 mile of an active potable water intake in a standing body of water such as lake, pond or reservoir. To make aquatic applications around and within 1/2 mile of active potable water intakes, the water intake must be turned off for a minimum period of 48 hours after the application. The water intake may be turned on prior to 48 hours if the glyphosate level in the intake water is below 0.7 parts per million as determined by laboratory analysis. These aquatic applications may be made **only** in those cases where there are alternative water sources or holding ponds which would permit the turning off of an active potable water intake for a minimum period of 48 hours after the applications. This restriction does not apply to intermittent inadvertent overspray of water in terrestrial use sites.
- For treatments after drawdown of water or in dry ditches, allow 7 or more days after treatment before reintroduction of water to achieve maximum weed control. Apply this product within 1 day after drawdown to ensure application to actively growing weeds.
- Floating mats of vegetation may require retreatment. Avoid wash-off of sprayed foliage by spray boat or recreational boat backwash or by rainfall within 6 hours of application. Do not re-treat within 24 hours following the initial treatment.
- Applications made to moving bodies of water must be made while traveling upstream to prevent concentration of this herbicide in water. When making any bankside applications, do not overlap more than 1 foot into open water. Do not spray in bodies of water where weeds do not exist. The maximum application rate of 7 1/2 pints per acre must not be exceeded in any single broadcast application that is being made over water.
- When emerged infestations require treatment of the total surface area of impounded water, treating the area in strips may avoid oxygen depletion due to decaying vegetation. Oxygen depletion may result in fish kill.

Other Noncrop Sites

Rodeo may be used to control the listed weeds in the following terrestrial noncrop sites and/or in aquatic sites within these areas:

Habitat Restoration & Management Areas
Highways & Roadsides
Industrial Plant Sites
Petroleum Tank Farms
Pipeline, Power, Telephone & Utility Rights-of-Way
Pumping Installations
Railroads
Similar Sites

Cut Stump Application

Woody vegetation may be controlled by treating freshly cut stumps of trees and resprouts with this product. Apply this product using suitable equipment to ensure coverage of the entire cambium. Cut vegetation close to the soil surface. **Apply a 50 to 100 percent solution of this product to freshly cut surface immediately after cutting.** Delay in applying this product may result in reduced performance. For best results, trees should be cut during periods of active growth and full leaf expansion.

When used according to directions for cut stump application, this product will **control, partially control or suppress** most woody brush and tree species, some of which are listed below:

Common Name	Scientific Name
Alder	*Alnus spp.*
Coyote brush †	*Baccharis consanguinea*
Dogwood †	*Cornus spp.*
Eucalyptus	*Eucalyptus spp.*
Hickory †	*Carya spp.*
Madrone	*Arbutus menziesii*
Maple †	*Acer spp.*
Oak	*Quercus spp.*
Poplar †	*Populus spp.*
Reed, giant	*Arundo donax*
Salt cedar	*Tamarix spp.*
Sweet gum †	*Liquidambar styraciflua*
Sycamore †	*Platanus occidentalis*
Tan oak	*Lithocarpus densiflorus*
Willow	*Salix spp.*

† Rodeo is not approved for this use on these species in the state of California.

Wildlife Habitat Restoration and Management Areas

Rodeo is recommended for the restoration and/or maintenance of native habitat and in wildlife management areas.

Habitat Restoration and Maintenance: When applied as directed, exotic and other undesirable vegetation may be controlled in habitat management areas. Applications may be made to allow recovery of native plant species, to open up water to attract waterfowl, and for similar broad-spectrum vegetation control requirements in habitat management areas. Spot treatments may be made to selectively remove unwanted plants for habitat enhancement. For spot treatments, care should be exercised to keep spray off of desirable plants.

Wildlife Food Plots: Rodeo may be used as a site preparation treatment prior to planting wildlife food plots. Apply as directed to control vegetation in the plot area. Any wildlife food species may be planted after applying this product, or native species may be allowed to reinfest the area. If tillage is needed to prepare a seedbed, wait 7 days after applying this product before tilling to allow for maximum effectiveness.

Injection and Frill Applications

Woody vegetation may be controlled by injection or frill application of this product. Apply this product using suitable equipment which must penetrate into living tissue. Apply the equivalent of 1 ml of this product per 2 to 3 inches of trunk diameter. This is best achieved by applying 25 to 100 percent concentration of this product either to a continuous frill around the tree or as cuts evenly spaced around the tree below all branches. As tree diameter increases in size, better results are achieved by applying dilute material to a continuous frill or more closely spaced cuttings. Avoid application techniques that allow runoff to occur from frill or cut areas in species that exude sap freely after frills or cutting. In species such as these, make frill or cut at an oblique angle so as to produce a cupping effect and use undiluted material. For best results, applications should be made during periods of active growth and full leaf expansion.

This treatment will control the following woody species:

Common Name	Scientific Name
Oak	*Quercus spp.*
Poplar	*Populus spp.*
Sweet gum	*Liquidambar styraciflua*
Sycamore	*Platanus occidentalis*

This treatment will suppress the following woody species:

Common Name	Scientific Name
Black gum †	*Nyssa sylvatica*
Dogwood	*Cornus spp.*
Hickory	*Carya spp.*
Maple, red	*Acer rubrum*

† Rodeo is not approved for this use on this species in the state of California.

Release of Bermudagrass or Bahiagrass on Noncrop Sites

Release Of Dormant Bermudagrass and Bahiagrass

When applied as directed, this product will provide control or suppression of many winter annual weeds and tall fescue for effective release of dormant bermudagrass or bahiagrass. Make applications to dormant bermudagrass or bahiagrass.

For best results on winter annuals, treat when weeds are in an early growth stage (below 6 inches in height) after most have germinated. For best results on tall fescue, treat when fescue is in or beyond the 4 to 6-leaf stage.

Weeds Controlled

Rate recommendations for control or suppression of winter annuals and tall fescue are listed below.

Apply the recommended rates of this product in 10 to 25 gallons of water per acre plus 2 quarts nonionic surfactant per 100 gallons of total spray volume.

Weeds Controlled or Suppressed †

Note: C = Controlled; S = Suppressed

	Rate of Rodeo (Fluid Ounces Per Acre)					
Weed Species	**6**	**9**	**12**	**18**	**24**	**48**
Barley, little *Hordeum pusillum*	S	C	C	C	C	C
Bedstraw, catchweed *Galium aparine*	S	C	C	C	C	C
Bluegrass, annual *Poa annua*	S	C	C	C	C	C
Chervil *Chaerophyllum tainturieri*	S	C	C	C	C	C
Chickweed, common *Stellaria media*	S	C	C	C	C	
Clover, crimson *Trifolium incarnatum*	•	S	S	C	C	C
Clover, large hop *Trifolium campestre*	•	S	S	C	C	C
Speedwell, corn *Veronica arvensis*	S	C	C	C	C	C
Fescue, tall *Festuca arundinacea*	•	•	•	•	S	S
Geranium, Carolina *Geranium carolinianum*	•	•	S	S	C	C
Henbit *Lamium amplexicaule*	•	S	C	C	C	C
Ryegrass, Italian *Lolium multiflorum*	•	•	S	C	C	C
Vetch, common *Vicia sativa*	•	•	S	C	C	C

† These rates apply only to sites where an established competitive turf is present.

Release of Actively Growing Bermudagrass

NOTE: Use only on sites where bahiagrass or bermudagrass are desired for ground cover and some temporary injury or yellowing of the grasses can be tolerated.

When applied as directed, this product will aid in the release of bermudagrass by providing control of annual species listed in the "Weeds Controlled" section in this label, and suppression or partial control of certain perennial weeds.

For control or suppression of those annual species listed in this label, use 3/4 to 2 1/4 pints of this product as a broadcast spray in 10 to 25 gallons of spray solution per acre, plus 2 quarts of a nonionic surfactant per 100 gallons of total spray volume. Use the lower rate when treating annual weeds below 6 inches in height (or length of runner in annual vines). Use the higher rate as size of plants increases or as they approach flower or seedhead formation.

Use the higher rate for partial control or longer-term suppression of the following perennial species. Use lower rates for shorter-term suppression of growth.

Bahiagrass	Johnsongrass †
Dallisgrass	Trumpetcreeper ††
Fescue (tall)	Vaseygrass

† Johnsongrass is controlled at the higher rate.
†† Suppression at the higher rate only.

Use only on well-established bermudagrass. Bermudagrass injury may result from the treatment but regrowth will occur under moist conditions. Repeat applications in the same season are not recommended, since severe injury may result.

Bahiagrass Seedhead and Vegetative Suppression

When applied as directed in the "Noncrop Sites" section in this label, this product will provide significant inhibition of seedhead emergence and will suppress vegetative growth for a period of approximately 45 days with single applications and approximately 120 days with sequential applications.

Apply this product 1 to 2 weeks after full green-up of bahiagrass or after the bahiagrass has been mowed to a uniform height of 3 to 4 inches. Applications must be made prior to seedhead emergence. Apply 5 fluid ounces per acre of this product, plus 2 quarts of an approved nonionic surfactant per 100 gallons of total spray volume in 10 to 25 gallons of water per acre.

Sequential applications of this product plus nonionic surfactant may be made at approximately 45-day intervals to extend the period of seedhead and vegetative growth suppression. For continued vegetative growth suppression, sequential applications must be made prior to seedhead emergence.

Apply no more than 2 sequential applications per year. As a first sequential application, apply 3 fluid ounces of this product per acre plus nonionic surfactant. A second sequential application of 2 to 3 fluid ounces per acre plus nonionic surfactant may be made approximately 45 days after the last application.

Annual Grass Growth Suppression

For growth suppression of some annual grasses, such as annual ryegrass, wild barley and wild oats growing in coarse turf on roadsides or other industrial areas, apply 3 to 4 ounces of this product in 10 to 40 gallons of spray solution per acre. Mix 2 quarts of a nonionic surfactant per 100 gallons of spray solution. Applications should be made when annual grasses are actively growing and before the seedheads are in the boot stage of development. Treatments made after seedhead emergence may cause injury to the desired grasses.

Weeds Controlled

Annual Weeds

Apply to actively growing annual grasses and broadleaf weeds.

Allow at least 3 days after application before disturbing treated vegetation. After this period the weeds may be mowed, tilled or burned. See "Directions for Use," "General Information" and "Mixing and Application Instructions" for labeled uses and specific application instructions.

Broadcast Application Rates: Use 1 1/2 pints of this product per acre plus 2 or more quarts of a nonionic surfactant per 100 gallons of spray solution if weeds are less than 6 inches tall. If weeds are greater than 6 inches tall, use 2 1/2 pints of this product per acre plus 2 or more quarts of an approved nonionic surfactant per 100 gallons of spray solution.

Hand-Held, High-Volume Application Rates: Use a 3/4 percent solution of this product in water plus 2 or more quarts of a nonionic surfactant per 100 gallons of spray solution and apply to foliage of vegetation to be controlled.

When applied as directed, Rodeo plus nonionic surfactant will control the following annual weeds:

Common Name	Scientific Name
Balsamapple †	*Momordica charantia*
Barley	*Hordeum vulgare*
Barnyardgrass	*Echinochloa crus-galli*
Bassia, fivehook	*Bassia hyssopifolia*
Bluegrass, annual	*Poa annua*
Bluegrass, bulbous	*Poa bulbosa*
Brome	*Bromus spp.*
Buttercup	*Ranunculus spp.*
Cheat	*Bromus secalinus*
Chickweed, mouseear	*Cerastium vulgatum*
Cocklebur	*Xanthium strumarium*
Corn, volunteer	*Zea mays*
Crabgrass	*Digitaria spp.*
Dwarfdandelion	*Krigia cespitosa*
Falseflax, smallseed	*Camelina microcarpa*
Fiddleneck	*Amsinckia spp.*
Flaxleaf fleabane	*Conyza bonariensis*
Fleabane	*Erigeron spp.*
Foxtail	*Setaria spp.*
Foxtail, Carolina	*Alopecurus carolinianus*
Groundsel, common	*Senecio vulgaris*
Horseweed/Marestail	*Conyza canadensis*
Kochia	*Kochia scoparia*
Lambsquarters, common	*Chenopodium album*
Lettuce, prickly	*Lactuca serriola*
Morningglory	*Ipomoea spp.*
Mustard, blue	*Chorispora tenella*
Mustard, tansy	*Descurainia pinnata*
Mustard, tumble	*Sisymbrium altissimum*
Mustard, wild	*Sinapis arvensis*
Oats, wild	*Avena fatua*
Panicum	*Panicum spp.*
Pennycress, field	*Thlaspi arvense*
Pigweed, redroot	*Amaranthus retroflexus*
Pigweed, smooth	*Amaranthus hybridus*
Ragweed, common	*Ambrosia artemisiifolia*
Ragweed, giant	*Ambrosia trifida*
Rocket, London	*Sisymbrium irio*
Rye	*Secale cereale*
Ryegrass, Italian ††	*Lolium multiflorum*
Sandbur, field	*Cenchrus spp.*
Shattercane	*Sorghum bicolor*
Shepherd's-purse	*Capsella bursa-pastoris*
Signalgrass, broadleaf	*Brachiaria platyphylla*
Smartweed, Pennsylvania	*Polygonum pensylvanicum*
Sowthistle, annual	*Sonchus oleraceus*

Spanishneedles ‡‡	*Bidens bipinnata*
Stinkgrass	*Eragrostis cilianensis*
Sunflower	*Helianthus annuus*
Thistle, Russian	*Salsola kali*
Spurry, umbrella	*Holosteum umbellatum*
Velvetleaf	*Abutilon theophrasti*
Wheat	*Triticum aestivum*
Witchgrass	*Panicum capillare*

†Apply with hand-held equipment only.
‡‡Apply 3 pints of this product per acre.

Annual weeds will generally continue to germinate from seed throughout the growing season. Repeat treatments will be necessary to control later germinating weeds.

Perennial Weeds

Apply Rodeo to control most vigorously growing perennial weeds. Unless otherwise directed, apply when target plants are actively growing and most have reached early head or early bud stage of growth. Unless otherwise directed, allow at least 7 days after application before disturbing vegetation.

NOTE: If weeds have been mowed or tilled, do not treat until regrowth has reached the recommended stages. Fall treatments must be applied before a killing frost.

Repeat treatments may be necessary to control weeds regenerating from underground parts or seed.

Specific Weed Control Recommendations: For perennial weeds, apply the recommended rate plus 2 or more quarts of a nonionic surfactant per 100 gallons of spray solution. See the "General Information", "Directions for Use" and "Mixing and Application" sections in this label for specific uses and application instructions.

When applied as directed, Rodeo plus nonionic surfactant will control the following perennial weeds: (Numbers in parentheses "(-)" following common name of a listed weed species refer to "Specific Perennial Weed Control Recommendations" for that weed which follow the species listing.)

Common Name	**Scientific Name**
Alfalfa (31)	*Medicago sativa*
Alligatorweed † (1)	*Alternanthera philoxeroides*
Anise/Fennel (31)	*Foeniculum vulgare*
Artichoke, Jerusalem (31)	*Helianthus tuberosus*
Bahiagrass (31)	*Paspalum notatum*
Bermudagrass (2)	*Cynodon dactylon*
Bindweed, field (3)	*Convolvulus arvensis*
Bluegrass, Kentucky (12)	*Poa pratensis*
Blueweed, Texas (3)	*Helianthus ciliaris*
Brackenfern (4)	*Pteridium spp.*
Bromegrass, smooth (12)	*Bromus inermis*
Canarygrass, reed (12)	*Phalaris arundinacea*
Cattail (5)	*Typha spp.*
Clover, red (31)	*Trifolium pratense*
Clover, white (31)	*Trifolium repens*
Cogongrass (6)	*Imperata clylindrica*
Cordgrass (7)	*Spartina spp.*
Cutgrass, giant † (8)	*Zizaniopsis miliacea*
Dallisgrass (31)	*Paspalum dilatatum*
Dandelion (31)	*Taraxacum officinale*
Dock, curly (31)	*Rumex crispus*
Dogbane, hemp (9)	*Apocynum cannabinum*
Fescue (31)	*Festuca spp.*
Fescue, tall (10)	*Festuca arundinacea*
Guineagrass (11)	*Panicum maximum*
Hemlock, poison (31)	*Conium maculatum*
Horsenettle (31)	*Solanum carolinense*
Horseradish (9)	*Armoracia rusticana*
Ice Plant (22)	*Mesembryanthemum crystallinum*
Johnsongrass (12)	*Sorghum halepense*
Kikuyugrass (21)	*Pennisetum clandestinum*
Knapweed (9)	*Centaurea repens*
Lantana (13)	*Lantana camara*
Lespedeza, common (31)	*Lespedeza striata*
Lespedeza, sericea (31)	*Lespedeza cuneata*
Loosestrife, purple (14)	*Lythrum salicaria*
Lotus, American (15)	*Nelumbo lutea*
Maidencane (16)	*Panicum hematomon*
Milkweed (17)	*Asclepias spp.*
Muhly, wirestem (21)	*Muhlenbergia frondosa*
Mullein, common (31)	*Verbascum thapsus*
Napiergrass (31)	*Pennisetum purpureum*
Nightshade, silverleaf (3)	*Solanum elaeagnifolium*
Nutsedge, purple (18)	*Cyperus rotundus*
Nutsedge, yellow (18)	*Cyperus esculentus*
Orchardgrass (12)	*Dactylis glomerata*
Pampasgrass (19)	*Cortaderia jubata*
Paragrass (16)	*Brachiaria mutica*
Phragmites‡‡ (20)	*Phragmites spp.*
Quackgrass (21)	*Agropyron repens*
Reed, giant (22)	*Arundo donax*
Ryegrass, perennial (12)	*Lolium perenne*
Smartweed, swamp (31)	*Polygonum coccineum*
Spatterdock (23)	*Nuphar luteum*
Starthistle, yellow (31)	*Centaurea solstitialis*
Sweet potato, wild † (24)	*Ipomoea pandurata*
Thistle, artichoke (25)	*Cynara cardunculus*
Thistle, Canada (25)	*Cirsium arvense*
Timothy (12)	*Phleum pratense*
Torpedograss † (26)	*Panicum repens*
Tules, common (27)	*Scirpus acutus*
Vaseygrass (31)	*Paspalum urvillei*
Velvetgrass (31)	*Holcus spp.*
Waterhyacinth (28)	*Eichornia crassipes*
Waterlettuce (29)	*Pistia stratiotes*
Waterprimrose (30)	*Ludwigia spp.*
Wheatgrass, western (12)	*Agropyron smithii*

†Partial control.
‡‡Partial control in southeastern states. See "Specific Weed Control Recommendations" below.

Specific Perennial Weed Control Recommendations:

1. **Alligatorweed:** Apply 6 pints of this product per acre as a broadcast spray or as a 1 1/4 percent solution with hand-held equipment to provide partial control of alligatorweed. Apply when most of the target plants are in bloom. Repeat applications will be required to maintain such control.
2. **Bermudagrass:** Apply 7 1/2 pints of this product per acre as a broadcast spray or as a 1 1/2 percent solution with hand-held equipment. Apply when target plants are actively growing and when seedheads appear.
3. **Bindweed, field / Silverleaf Nightshade / Texas Blueweed:** Apply 6 to 7 1/2 pints of this product per acre as a broadcast spray west of the Mississippi River and 4 1/2 to 6 pints of this product per acre east of the Mississippi River. With hand-held equipment, use a 1 1/2 percent solution. Apply when target plants are actively growing and are at or beyond full bloom. For silverleaf nightshade, best results can be obtained when application is made after berries are formed. Do not treat when weeds are under drought stress. New leaf development indicates active growth. For best results apply in late summer or fall.
4. **Brackenfern:** Apply 4 1/2 to 6 pints of this product per acre as a broadcast spray or as a 3/4 to 1 percent solution with hand-held equipment. Apply to fully expanded fronds which are at least 18 inches long.
5. **Cattail:** Apply 4 1/2 to 6 pints of this product per acre as a broadcast spray or as a 3/4 percent solution with hand-held equipment. Apply when target plants are actively growing and are at or beyond the early-to-full bloom stage of growth. Best results are achieved when application is made during the summer or fall months.
6. **Cogongrass:** Apply 4 1/2 to 7 1/2 pints of this product per acre as a broadcast spray. Apply when cogongrass is at least 18 inches tall and actively growing in late summer or fall. Allow 7 or more days after application before tillage or mowing. Due to uneven stages of growth and the dense nature of vegetation preventing good spray coverage, repeat treatments may be necessary to maintain control.
7. **Cordgrass:** Apply 4 1/2 to 7 1/2 pints of this product per acre as a broadcast spray or as a 1 to 2 percent solution with hand-held equipment. Schedule applications in order to allow 6 hours before treated plants are covered by tidewater. The presence of debris and silt on the cordgrass plants will reduce performance. It may be necessary to wash targeted plants prior to application to improve uptake of this product into the plant.
8. **Cutgrass, giant:** Apply 6 pints of this product per acre as a broadcast spray or as a 1 percent solution with hand-held equipment to provide partial control of giant cutgrass. Repeat applications will be required to maintain such control, especially where vegetation is partially submerged in water. Allow for substantial regrowth to the 7 to 10-leaf stage prior to retreatment.
9. **Dogbane, hemp / Knapweed / Horseradish:** Apply 6 pints of this product per acre as a broadcast spray or as a 1 1/2 percent solution with hand-held equipment. Apply when target plants are actively growing and most have reached the late bud-to-flower stage of growth. For best results, apply in late summer or fall.
10. **Fescue, tall:** Apply 4 1/2 pints of this product per acre as a broadcast spray or as a 1 percent solution with hand-held equipment. Apply when target plants are actively growing and most have reached the boot-to-head stage of growth. When applied prior to the boot stage, less desirable control may be obtained.
11. **Guineagrass:** Apply 4 1/2 pints of this product per acre as a broadcast spray or as a 3/4 percent solution with hand-held equipment. Apply when target plants are actively growing and when most have reached at least the 7-leaf stage of growth.
12. **Johnsongrass / Bluegrass, Kentucky / Bromegrass, smooth / Canarygrass, reed / Orchardgrass / Ryegrass, perennial / Timothy / Wheatgrass, western:** Apply 3 to 4 1/2 pints of this product per acre as a broadcast spray or as a 3/4 percent solution with hand-held equipment. Apply when target plants are actively growing and most have reached the boot-to-head stage of growth. When applied prior to the boot stage, less desirable control may be obtained. In the fall, apply before plants have turned brown.
13. **Lantana:** Apply this product as a 3/4 to 1 percent solution with hand-held equipment. Apply to actively growing lantana at or beyond the bloom stage of growth. Use the higher application rate for plants that have reached the woody stage of growth.
14. **Loosestrife, purple:** Apply 4 pints of this product per acre as a broadcast spray or as a 1 to 1 1/2 percent solution using hand-held equipment. Treat when plants are actively growing at or beyond the bloom stage of growth. Best results are achieved when application is made during summer or fall months. Fall treatments must be applied before a killing frost.
15. **Lotus, American:** Apply 4 pints of this product per acre as a broadcast spray or as a 3/4 percent solution with hand-held equipment. Treat when plants are actively growing at or beyond the bloom stage of growth. Best results are achieved when application is made during summer or fall months. Fall treatments must be applied before a killing frost. Repeat treatment may be necessary to control regrowth from underground parts and seeds.
16. **Maidencane / Paragrass:** Apply 6 pints of this product per acre as a broadcast spray or as a 3/4 percent solution with hand-held equipment. Repeat treatments will be required, especially to vegetation partially submerged in water. Under these conditions, allow for regrowth to the 7 to 10-leaf stage prior to retreatment.
17. **Milkweed, common:** Apply 4 1/2 pints of this product per acre as a broadcast spray or as a 1 1/2 percent solution with hand-held equipment. Apply when target plants are actively growing and most have reached the late bud-to-flower stage of growth.
18. **Nutsedge: purple, yellow:** Apply 4 1/2 pints of this product per acre as a broadcast spray, or as a 3/4 percent solution with hand-held equipment to control existing nutsedge plants and immature nutlets attached to treated plants. Apply when target plants are in flower or when new nutlets can be found at rhizome tips. Nutlets which have not germinated will not be controlled and may germinate following treatment. Repeat treatments will be required for long-term control.
19. **Pampasgrass:** Apply a 1 1/2 percent solution of this product with hand-held equipment when plants are actively growing.
20. **Phragmites:** For partial control of phragmites in Florida and the counties of other states bordering the Gulf of Mexico, apply 7 1/2 pints per acre as a broadcast spray or apply a 1 1/2 percent solution with hand-held equipment. In other areas of the U.S., apply 4 to 6 pints per acre as a broadcast spray or apply a 3/4 percent solution with hand-held equipment for partial control. For best results, treat during late summer of fall months when plants are actively growing and in full bloom. Due to the dense nature of the vegetation, which may prevent good spray coverage and uneven stages of growth, repeat treatments may be necessary to maintain control. Visual control symptoms will be slow to develop.
21. **Quackgrass / Kikuyugrass / Muhly, wirestern:** Apply 3 to 4 1/2 pints of this product per acre as a broadcast spray or as a 3/4 percent solution with hand-held equipment when most quackgrass or wirestem muhly is at least 8 inches in height (3 to 4-leaf stage of growth) and actively growing. Allow 3 or more days after application before tillage.
22. **Reed, giant / ice plant:** For control of giant reed and ice plant, apply a 1 1/2 percent solution of this product with hand-held equipment when plants are actively growing. For giant reed, best results are obtained when applications are made in late summer to fall.

23. **Spatterdock:** Apply 6 pints of this product per acre as a broadcast spray or as a 3/4 percent solution with hand-held equipment. Apply when most plants are in full bloom. For best results, apply during the summer or fall months.
24. **Sweet potato, wild:** Apply this product as a 1 1/2 percent solution using hand-held equipment. Apply to actively growing weeds that are at or beyond the bloom stage of growth. Repeat applications will be required. Allow the plant to reach the recommended stage of growth before retreatment.
25. **Thistle, Canada / artichoke:** Apply 3 to 4 1/2 pints of this product per acre as a broadcast spray or as a 1 1/2 percent solution with hand-held equipment for Canada thistle. To control artichoke thistle, apply a 2 percent solution as a spray-to-wet application. Apply when target plants are actively growing and are at or beyond the bud stage of growth.
26. **Torpedograss:** Apply 6 to 7 1/2 pints of this product per acre as a broadcast spray or as a 3/4 to 1 1/2 percent solution with hand-held equipment to provide partial control of torpedograss. Use the lower rates under terrestrial conditions, and the higher rates under partially submerged or a floating mat condition. Repeat treatments will be required to maintain such control.
27. **Tules, common:** Apply this product as a 1 1/2 percent solution with hand-held equipment. Apply to actively growing plants at or beyond the seedhead stage of growth. After application, visual symptoms will be slow to appear and may not occur for 3 or more weeks.
28. **Waterhyacinth:** Apply 5 to 6 pints of this product per acre as a broadcast spray or apply a 3/4 to 1 percent solution with hand-held equipment. Apply when target plants are actively growing and at or beyond the early bloom stage of growth. After application, visual symptoms may require 3 or more weeks to appear with complete necrosis and decomposition usually occurring within 60 to 90 days. Use the higher rates when more rapid visual effects are desired.
29. **Waterlettuce:** For control, apply a 3/4 to 1 percent solution of this product with hand-held equipment to actively growing plants. Use higher rates where infestations are heavy. Best results are obtained from mid-summer through winter applications. Spring applications may require retreatment.
30. **Waterprimrose:** Apply this product as a 3/4 percent solution using hand-held equipment. Apply to plants that are actively growing at or beyond the bloom stage of growth, but before fall color changes occur. Thorough coverage is necessary for best control.
31. **Other perennial weeds listed above:** Apply 4 1/2 to 7 1/2 pints of Rodeo per acre as a broadcast spray or apply as a 3/4 to 1 1/2 percent solution with hand-held equipment.

Woody Brush and Trees

NOTE: If brush has been mowed or tilled or trees have been cut, do not treat until regrowth has reached the recommended stage of growth.

Application Rates and Timing
When applied as a 5 to 8 percent solution as a directed application as described in the "Hand-Held and High-Volume Equipment" section, this product will control or partially control all wood brush and tree species listed in this section of this label. Use the higher rate of application for dense stands and larger woody brush and trees.

Specific Brush or Tree Control Recommendations: Numbers in parentheses "(-)" following the common name of a listed brush or tree species refer to "Specific Brush or Tree Control Recommendations" which follow the species listing. See this section for specific application rates and timing for listed species.

For woody brush and trees, apply the recommended rate plus 2 or more quarts of a nonionic surfactant per 100 gallons of spray solution when plants are actively growing and, unless otherwise directed, after full-leaf expansion. Use the higher rate for larger plants and/or dense areas of growth. On vines, use the higher rate for plants that have reached the woody stage of growth. Best results are obtained when application is made in late summer or fall after fruit formation.

In arid areas, best results are obtained when application is made in the spring or early summer when brush species are at high moisture content and are flowering. Ensure thorough coverage when using hand-held equipment. Symptoms may not appear prior to frost or senescence with fall treatments.

Allow 7 or more days after application before tillage, mowing or removal. Repeat treatments may be necessary to control plants regenerating from underground parts or seed. Some autumn colors on undesirable deciduous species are acceptable provided no major leaf drop has occurred. Reduced performance may result if fall treatments are made following a frost.

See the "Directions for Use" and "Mixing and Application Instructions" sections in this label for labeled use and specific application instructions. **When applied as directed, Rodeo plus nonionic surfactant will control the following woody brush plants and trees:** (Numbers in parentheses "(-)" following common name of a listed brush or tree species refer to "Specific Brush or Tree Control Recommendations" for that species which follow the species listing.)

Common Name	Scientific Name
Alder (1)	*Alnus spp.*
Ash † (20)	*Fraxinus spp.*
Aspen, quaking (2)	*Populus tremuloides*
Bearclover, Bearmat (20)	*Chamaebatia foliolosa*
Birch (3)	*Betula spp.*
Blackberry (1)	*Rubus spp.*
Broom, French (4)	*Cytisus monspessulanus*
Broom, Scotch (4)	*Cytisus scoparius*
Buckwheat, California † (5)	*Eriogonum fasciculatum*
Cascara † (20)	*Rhamnus purshiana*
Catsclaw † (6)	*Acacia greggi*
Ceanothus (20)	*Ceanothus spp.*
Chamise (17)	*Adenostoma fasciculatum*
Cherry, bitter (7)	*Prunus emarginata*
Cherry, black (7)	*Prunus serotina*
Cherry, pin (7)	*Prunus pensylvanica*
Coyote brush (8)	*Baccharis consanguinea*
Creeper, Virginia † (20)	*Parthenocissus quinquefolia*
Dewberry (1)	*Rubus trivialis*
Dogwood (9)	*Cornus spp.*
Elderberry (3)	*Sambucus spp.*
Elm † (20)	*Ulmus spp.*
Eucalyptus, bluegum (10)	*Eucalyptus globulus*
Hasardia † (5)	*Haplopappus squamosus*
Hawthorn (2)	*Crataegus spp.*
Hazel (3)	*Corylus spp.*
Hickory (9)	*Carya spp.*
Holly, Florida (11) (Brazilian peppertree)	*Schinus terebinthifolius*
Honeysuckle (1)	*Lonicera spp.*
Hornbeam, American (20)	*Carpinus caroliniana*
Kudzu (12)	*Pueraria lobata*
Locust, black † (20)	*Robinia pseudoacacia*
Manzanita (20)	*Arctostaphylos spp.*

Maple, red †(13)	*Acer rubrum*
Maple, sugar (14)	*Acer saccharum*
Maple, vine †(20)	*Acer circinatum*
Monkey flower †(5)	*Mimulus guttatus*
Oak, black †(20)	*Quercus velutina*
Oak, northern pin (14)	*Quercus palustris*
Oak, post (1)	*Quercus stellata*
Oak, red (14)	*Quercus rubra*
Oak, southern red (7)	*Quercus falcata*
Oak, white †(20)	*Quercus alba*
Persimmon †(20)	*Diospyros spp.*
Poison-ivy (15)	*Rhus radicans*
Poison-oak (15)	*Rhus toxicodendron*
Poplar, yellow †(20)	*Liriodendron tulipifera*
Prunus (7)	*Prunus spp.*
Raspberry (1)	*Rubus spp.*
Redbud, eastern (20)	*Cercis canadensis*
Rose, multiflora (16)	*Rosa multiflora*
Russian-olive (20)	*Elaeagnus angustifolia*
Sage: black (17), white	*Salvia spp.*
Sagebrush, California (17)	*Artemisia californica*
Salmonberry (3)	*Rubus spectabilis*
Salt cedar †(9)	*Tamarix spp.*
Saltbush, sea myrtle (18)	*Baccharis halimifolia*
Sassafras (20)	*Sassafras aibidum*
Sourwood †(20)	*Oxydendrum arboreum*
Sumac, poison †(20)	*Rhus vernix*
Sumac, smooth †(20)	*Rhus glabra*
Sumac, winged †(20)	*Rhus copallina*
Sweetgum (7)	*Liquidambar styraciflua*
Swordfern †(20)	*Polystichum munitum*
Tallowtree, Chinese (17)	*Sapium sebiferum*
Thimbleberry (3)	*Rubus parviflorus*
Tobacco, tree †(5)	*Nicotiana glauca*
Trumpetcreeper (2)	*Campsis radicans*
Waxmyrtle, southern †(11)	*Myrica cerifera*
Willow (19)	*Salix spp.*

†Partial control (See below for control or partial control instructions.)

Specific Brush or Tree Control Recommendations:

1. **Alder / Blackberry / Dewberry / Honeysuckle / Oak, Post / Raspberry:** For control, apply 4 1/2 to 6 pints per acre as a broadcast spray or as a 3/4 to 1 1/4 percent solution with hand-held equipment.
2. **Aspen, Quaking / Hawthorn / Trumpetcreeper:** For control, apply 3 to 4 1/4 pints of this product per acre as a broadcast spray or as a 3/4 to 1 1/4 percent solution with hand-held equipment.
3. **Birch / Elderberry / Hazel / Salmonberry / Thimbleberry:** For control, apply 3 pints per acre of this product as a broadcast spray or as a 3/4 percent solution with hand-held equipment.
4. **Broom, French / Broom, Scotch:** For control, apply a 1 1/4 to 1 1/2 percent solution with hand-held equipment.
5. **Buckwheat, California / Hasardia / Monkey flower / Tobacco, tree:** For partial control of these species, apply a 3/4 to 1 1/2 percent solution of this product as a foliar spray with hand-held equipment. Thorough coverage of foliage is necessary for best results.
6. **Catsclaw:** For partial control, apply a 1 1/4 to 1 1/2 percent solution with hand-held equipment when at least 50 percent of the new leaves are fully developed.
7. **Cherry, bitter / Cherry, black / Cherry, pin / Oak, southern red / Sweetgum / Prunus:** For control, apply 3 to 7 1/2 pints of this product per acre as a broadcast spray or as a 1 to 1 1/2 percent solution with hand-held equipment.
8. **Coyote brush:** For control, apply a 1 1/4 to 1 1/2 percent solution with hand-held equipment when at least 50 percent of the new leaves are fully developed.
9. **Dogwood / Hickory / Salt cedar:** For partial control, apply a 1 to 2 percent solution of this product with hand-held equipment or 6 to 7 1/2 pints per acre as a broadcast spray.
10. **Eucalyptus, bluegum:** For control of eucalyptus resprouts, apply a 1 1/2 percent solution of this product with hand-held equipment when resprouts are 6 to 12-feet tall. Ensure complete coverage. Apply when plants are actively growing. Avoid application to drought-stressed plants.
11. **Holly, Florida / Waxmyrtle, southern:** For partial control, apply this product as a 1 1/2 percent solution with hand-held equipment.
12. **Kudzu:** For control, apply 6 pints of this product per acre as a broadcast spray or as a 1 1/2 percent solution with hand-held equipment. Repeat applications will be required to maintain control.
13. **Maple, red:** For control, apply as a 3/4 to 1 1/4 percent solution with hand-held equipment when leaves are fully developed. For partial control, apply 2 to 7 1/2 pints of this product per acre as a broadcast spray.
14. **Maple, sugar / Oak: northern pin / Oak, red:** For control, apply as a 3/4 to 1 1/4 percent solution with hand-held equipment when at least 50 percent of the new leaves are fully developed.
15. **Poison-ivy / Poison-oak:** For control, apply 6 to 7 1/2 pints of this product per acre as a broadcast spray or as a 1 1/2 percent solution with hand-held equipment. Repeat applications may be required to maintain control. Fall treatments must be applied before leaves lose green color.
16. **Rose, multiflora:** For control, apply 3 pints of this product per acre as a broadcast spray or as a 3/4 percent solution with hand-held equipment. Treatments should be made prior to leaf deterioration by leaf-feeding insects.
17. **Sage, black / Sagebrush, California / Chamise / Tallowtree, Chinese:** For control of these species, apply a 3/4 percent solution of this product as a foliar spray with hand-held equipment. Thorough coverage of foliage is necessary for best results.
18. **Saltbush, sea myrtle:** For control, apply this product as a 1 percent solution with hand-held equipment.
19. **Willow:** For control, apply 4 1/2 pints of this product per acre as a broadcast spray or as a 3/4 percent solution with hand-held equipment.
20. **Other woody brush and trees listed above:** For partial control, apply 3 to 7 1/2 pints of this product per acre as a broadcast spray or as a 3/4 to 1 1/2 percent solution with hand-held equipment.

Warranty Disclaimer

Dow AgroSciences 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. Dow AgroSciences MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Crop 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 temperatures, 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 Dow AgroSciences or the seller. All such risks shall be assumed by buyer.

Limitation of Remedies

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 Dow AgroSciences' 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.

Dow AgroSciences shall not be liable for losses or damages resulting from handling or use of this product unless Dow AgroSciences is promptly notified of such loss or damage in writing. In no case shall Dow AgroSciences be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer above and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or this Limitation of Remedies in any manner.

*Trademark of Dow AgroSciences LLC
Dow AgroSciences LLC • Indianapolis, IN 46268 U.S.A.

Label Code: D02-148-002
Replaces Label: D02-148-001

EPA-accepted 05/15/2002

Revisions:

1. Update of specific uses allowed in the state of California.

MATERIAL SAFETY DATA SHEET

Dow AgroSciences

Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

RODEO* HERBICIDE

Effective Date: 3/23/04
Product Code 84825
MSDS 006694

1. PRODUCT AND COMPANY IDENTIFICATION:

PRODUCT: Rodeo* Herbicide

COMPANY IDENTIFICATION:
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268-1189

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Glyphosate IPA. N-(phosphono-methyl) glycine, Isopropylamine Salt	CAS # 038641-94-0	53 8%
Balance, Total		46 2%

3. HAZARDOUS IDENTIFICATIONS:

EMERGENCY OVERVIEW

Clear, pale yellow liquid. May cause eye irritation. Slightly toxic to aquatic organisms.

EMERGENCY PHONE NUMBER: 800-992-5994

4. FIRST AID:

EYE. Flush eyes thoroughly with water for several minutes. Remove contact lenses after initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist

SKIN: Wash skin with plenty of water.

INGESTION: No emergency medical treatment necessary.

INHALATION: Remove person to fresh air; if effects occur, consult a physician.

NOTE TO PHYSICIAN: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE FIGHTING MEASURES:

FLASH POINT: >214°F (>101°C)
METHOD USED: Setaflash

FLAMMABLE LIMITS:
LFL: Not applicable
UFL: Not applicable

EXTINGUISHING MEDIA: Foam, CO_2, Dry Chemical

FIRE AND EXPLOSION HAZARDS: Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination Toxic irritating gases may be formed under fire conditions

FIRE-FIGHTING EQUIPMENT: Use positive-pressure self contained breathing apparatus and full protective equipment

6. ACCIDENTAL RELEASE MEASURES:

ACTION TO TAKE FOR SPILLS: Absorb small spills with an inert absorbent material such as Hazorb Zorball, sand, or dirt Report large spills to Dow AgroSciences on 800-992-5994

7. HANDLING AND STORAGE:

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep out of reach of children Do not swallow Avoid contact with eyes, skin, and clothing Avoid breathing vapors and spray mist. Handle concentrate in ventilated area Wash thoroughly with soap and water after handling and before eating, chewing gum, using tobacco using the toilet or smoking. Keep away from food, feedstuffs, and water supplies Store in original container with the lid tightly closed Store above 10°F (12°C) to keep from crystallizing

8. EXPOSURE CONTROLS/PERSONAL PROTECTION:

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

EXPOSURE GUIDELINES: None established

ENGINEERING CONTROLS: Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

EYE/FACE PROTECTION: Use safety glasses.

SKIN PROTECTION: No precautions other than clean body-covering clothing should be needed.

MATERIAL SAFETY DATA SHEET

Dow AgroSciences

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Dow AgroSciences LLC
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RODEO* HERBICIDE

Effective Date: 3/23/04
Product Code: 84825
MSDS: 006694

RESPIRATORY PROTECTION: For most conditions, no respiratory protection should be needed; however, if discomfort is experienced, use a NIOSH approved air-purifying respirator.

APPLICATIONS AND ALL OTHER HANDLERS Please refer to the product label for personal protective clothing and equipment

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Clear pale yellow liquid
DENSITY: 10.0 - 10 5 lbs/gal
pH: 4.8 – 5.0
ODOR: None
SOLUBILITY IN WATER: Miscible
SPECIFIC GRAVITY: 1.21 gm/L
FREEZING POINT: -7°F - -10°F (21°C - -25°C)

10. STABILITY AND REACTIVITY:

STABILITY: (CONDITIONS TO AVOID) Stable under normal storage conditions

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Galvanized or unlined steel (except stainless steel) containers or spray tanks may produce hydrogen gas which may form a highly combustible gas mixture

HAZARDOUS DECOMPOSITION PRODUCTS None known

HAZARDOUS POLYMERIZATION: Not known to occur

11. TOXICOLOGICAL INFORMATION:

EYE: May cause slight temporary eye irritation Corneal injury is unlikely.

SKIN: Essentially non-irritating to skin Prolonged skin contact s unlikely to result in absorption of harmful amounts. The LD_{50} for skin absorption in rabbits is >5000 mg/kg. Did not cause allergic skin reactions when tested in guinea pigs.

INGESTION: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts The oral LD_{50} for rats is >5000 mg/kg

INHALATION: Brief exposure (minutes) is not likely to cause adverse effects The aerosol LC_{50} for rats is >6 37 mg/L for 4 hours

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: For a similar material, glyphosate, in animals, effects have been reported on the following organ: liver.

CANCER INFORMATION: A similar material, glyphosate, did not cause cancer in laboratory animals.

TERATOLOGY (BIRTH DEFECTS): For glyphosate IPA, available data are inadequate for evaluation of potential to cause birth defects

REPRODUCTIVE EFFECTS: For glyphosate IPA, available data are inadequate to determine effects on reproduction

MUTAGENICITY: For a similar material, glyphosate, in-vitro and animal genetic toxicity studies were negative

12. ECOLOGICAL INFORMATION:

ENVIRONMENTAL DATA:

ECOTOXICOLOGY:
Material is practically non-toxic to aquatic organisms on an acute basis (LC_{50} or EC_{50} is >100 mg/L in most sensitive species tested)
Acute LC_{50} for rainbow trout *(Oncorhynchus mykiss)* is >2500 mg/L
Acute immobilization EC_{50} in water flea *(Daphnia magna)* is 918 mg/L.
Material is practically non-toxic to birds on an acute basis (LD_{50} is >2000 mg/kg)
Acute oral LD_{50} in bobwhite *(Colinus virginianus)* is >2000 mg/kg
The LC_{50} in earthworm Eisenia foetida is >1000 mg/kg
Acute contact LD_{50} in honey bee *(Apis mellifera)* is >100 µg/bee
Acute oral LD_{50} in honey bee *(Apis mellifera)* is >100 µg/bee
Growth inhibition EC_{50} in green alga *(Selenastrum capricornutum)* is 127 mg/L
Growth inhibition EC_{50} in duckweed *(Lemna sp.)* is 24 4 mg/L.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHOD: If wastes and/or containers cannot be disposed of according to the product label directions disposal of this material must be in accordance with your local or area regulatory authorities

MATERIAL SAFETY DATA SHEET

Dow AgroSciences

Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

RODEO* HERBICIDE

Effective Date: 3/23/04
Product Code: 84825
MSDS: 006694

This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

If the material as supplied becomes a waste, follow all applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION:

U.S. DEPARTMENT OF TRANSPORTATION (DOT) INFORMATION:

For all package sizes and modes of transportation:
This material is not regulated for transport.

15. REGULATORY INFORMATION:

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

U.S. REGULATIONS

SARA 313 INFORMATION. To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Not to have met any hazard category

TOXIC SUBSTANCES CONTROL ACT (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

STATE RIGHT-TO-KNOW: This product is not known to contain any substances subject to the disclosure requirements of

New Jersey
Pennsylvania

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT (CERCLA, or SUPERFUND): To the best of our knowledge, this product contains no chemical subject to reporting under CERCLA.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

CATEGORY	RATING
Health	1
Flammability	1
Reactivity	0

16. OTHER INFORMATION:

MSDS STATUS: Revised Sections: 3,4,11,12,13,14 & 15
Reference: DR-0361-8028
Replaces MSDS Dated: 1/12/00
Document Code: D03-148-002
Replaces Document Code: D03-148-001

The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult Dow AgroSciences For Further Information.

ATENCIÓN:

Esta etiqueta de muestra se entrega únicamente para información general.

- Este producto pesticida puede no estar todavía disponible o aprobado para la venta o utilización en su localidad.
- Usted tiene la responsabilidad de cumplir todas las leyes federales, estatales y locales, así como todas las reglamentaciones relativas a la utilización de pesticidas.
- Antes de utilizar un pesticida, asegúrese de que esté aprobado en su estado o localidad.
- Su estado o localidad puede exigir precauciones adicionales e instrucciones para la utilización de este producto que no están incluidas aquí.
- Monsanto no garantiza el lo completo ni la certeza de esta etiqueta de la espécimen. La información encontró en esta etiqueta puede diferir de la información encontró en la etiqueta del producto. Usted debe tener consigo la etiqueta aprobada por la agencia EPA cuando utilice el producto y debe leer y respetar todas las instrucciones en la etiqueta.
- No debe basarse sobre las precauciones, las instrucciones de utilización y cualquier otra información en esta etiqueta para utilizar algún otro producto similar.
- Siempre siga las precauciones y las instrucciones para el uso en la etiqueta del pesticida que usted utiliza.

Roundup CUSTOM™

FOR AQUATIC & TERRESTRIAL USE

TRUEBLUE ADVANTAGE

Instrucciones de Uso Completas

Roundup Custom™ para aplicaciones acuáticas y terrestres es un herbicida profesional completo de post emergencia y de amplia efectividad, para el control de malezas en zonas acuáticas, cultivos, lugares no cultivados, zonas industriales, céspedes, ornamentales, bosques, bordes de carretera y servidumbres de servicios públicos.

EPA Reg. No. 524-343 2012-2

GROUP	9	HERBICIDE

EVITE EL CONTACTO DEL HERBICIDA CON EL FOLLAJE, TALLOS VERDES, RAÍCES NO LEÑOSAS EXPUESTAS O FRUTOS EXPUESTOS DE LOS CULTIVOS, PLANTAS Y ÁRBOLES DESEABLES. EN CASO CONTRARIO ES PROBABLE QUE SUFRAN GRAVES DAÑOS O SEAN DESTRUIDOS TOTALMENTE.

Lea toda la etiqueta antes de utilizar este producto.

Use solo según las instrucciones de la etiqueta.

No todos los productos indicados en esta etiqueta han sido registrados para su uso en California. Verifique la situación de registro de cada producto en California antes de utilizarlo.

Antes de comprar o usar el producto, lea "LÍMITES EN LA GARANTÍA Y EN LA RESPONSABILIDAD" en la última sección de la etiqueta. Si las condiciones son inaceptables, devuelva el producto inmediatamente sin abrir el envase.

ESTE ES UN PRODUCTO PARA USARSE TAL Y COMO ESTÁ PREPARADO. MONSANTO NO LO HA DISEÑADO NI LO HA REGISTRADO PARA QUE SEA REFORMULADO. VEA LA ETIQUETA DEL ENVASE INDIVIDUAL PARA ENTERARSE DE LAS LIMITACIONES DE REEMPAQUE.

INFORMACIÓN SOBRE EL PRODUCTO

1.0 INGREDIENTES

INGREDIENTE ACTIVO:

*Glifosato, n-(fosfonometil) glicina, en la forma de su sal de isopropilamina	53.8%
OTROS INGREDIENTES:	46.2%
	100.0%

*Contiene 648 gramos por litro o 5.4 libras por galón americano del ingrediente activo glifosato, en forma de su sal de isopropilamina. Equivalente a 480 gramos por litro o 4.0 libras por galón americano del ácido, glifosato.

No se han otorgado licencias de uso bajo ninguna patente que no sea de los Estados Unidos de América.

2.0 NÚMEROS DE TELÉFONO IMPORTANTES

PARA INFORMACIÓN SOBRE EL PRODUCTO O AYUDA PARA UTILIZAR ESTE PRODUCTO, LLAME GRATIS AL, **1-800-332-3111.**
EN CASO DE **EMERGENCIA** CON RESPECTO A ESTE PRODUCTO O PARA SOLICITAR ASISTENCIA MÉDICA, LLAME CON CARGO REVERTIDO, LAS 24 HORAS, AL, **(314)-694-4000.**

3.0 DECLARACIONES PREVENTIVAS

3.1 Riesgos para seres humanos y animales domésticos

Manténgase Fuera del Alcance de los Niños.

¡PRECAUCIÓN!

ANIMALES DOMÉSTICOS: Se considera que este producto es relativamente no tóxico para perros y otros animales domésticos, sin embargo, la ingestión de este producto o de abundantes cantidades de vegetación rociada recientemente puede causar irritación gastrointestinal temporal (vómitos, diarrea, cólicos, etc.). Si observa estos síntomas, dé de beber al animal abundante cantidad de líquido para evitar su deshidratación. Llame a un veterinario si los síntomas persisten más de 24 horas.

Equipo de protección personal (PPE)

Los usuarios y personas que manipulan este producto deben usar: camisas de mangas largas y pantalones largos, además de zapatos y calcetines. Respete las instrucciones del fabricante para limpiar y mantener el equipo de protección personal (PPE). En caso de que no haya instrucciones, lave el equipo protector con detergente y agua caliente. Mantenga el PPE apartado del resto de la ropa, y lávelo por separado.

Declaraciones de control de ingeniería: Cuando las personas que manipulan el producto emplean sistemas cerrados, cabinas encerradas o avionetas de acuerdo con los requisitos de las Normas de Protección para Trabajadores (WPS) para pesticidas agrícolas [40 CFR 170.240 (d) (4-6)], los requisitos con respecto a los equipos de protección personal de esas personas pueden reducirse o modificarse como se especifica en esas normas.

Recomendaciones de seguridad para el usuario:
Los usuarios deben:
- Lavarse las manos antes de comer, beber, masticar cicle, usar tabaco o usar el baño.
- Quitarse la ropa contaminada y lavarla antes de volver a usarla.

3.2 Riesgos para el medio ambiente

No contamine el agua al lavar el equipo o al tirar el agua de lavado. El tratamiento de la maleza acuática puede causar disminución o pérdida de oxígeno debido a la descomposición de las plantas muertas. Esta pérdida de oxígeno puede sofocar a los peces.

En caso de DERRAME o PÉRDIDA, seque el producto y deseche en un relleno.

3.3 Riesgos Físicos o Químicos

Para mezclar, almacenar y aplicar la solución de rocío de este producto, se deben usar solamente envases de acero inoxidable, fibra de vidrio, plástico o envases de acero recubiertos internamente con plástico.

NO MEZCLE, ALMACENE O APLIQUE ESTE PRODUCTO O LAS SOLUCIONES DE ROCÍO DE ESTE PRODUCTO EN ENVASES DE ACERO GALVANIZADO O SIN REVESTIMIENTO (EXCEPTO ACERO INOXIDABLE) O EN TANQUES DE ROCÍO. Si se utiliza en estos envases o tanques, este producto o las soluciones de rocío de este producto reaccionan y producen gas hidrógeno que puede formar una mezcla de gases altamente inflamable. Esta mezcla de gases podría resultar inflamable o explotar y causar lesiones graves si está en contacto con fuego, chispas, sopletes para soldar, cigarrillos encendidos o cualquier otra fuente de ignición.

MODO DE EMPLEO

Se considera una violación a la ley federal usar este producto de una manera que no sea la indicada en la etiqueta. Este producto solo puede utilizarse de acuerdo con las instrucciones de modo de empleo que figuran en esta etiqueta, en etiquetas

complementarias separadas o fichas técnicas publicadas por Monsanto. Puede consultar las etiquetas adicionales en Internet en www.cdms.net, www.agrian.com o www.greenbook.net, pero puede que su uso no esté aprobado en todos los estados. También puede solicitarlas a su vendedor minorista autorizado de Monsanto o a su representante de Monsanto Company.

No aplique este producto de alguna manera que entre en contacto con los trabajadores u otras personas, ya sea directamente o por arrastre. Solamente las personas que manipulan este producto y usan protección personal podrán estar en el área durante su aplicación. Para verificar requisitos específicos de su tribu o estado, consulte con la agencia responsable de la regulación del uso de pesticidas.

Requisitos para uso agrícola

Utilice este producto solo de acuerdo con la etiqueta y con las Normas de Protección para Trabajadores, 40 CFR Parte 170. Estas normas contienen los requisitos para la protección de trabajadores agrícolas en granjas, bosques, viveros e invernaderos y para las personas que manipulan pesticidas agrícolas. Contienen los requisitos para capacitar, descontaminar, notificar y ofrecer asistencia de emergencia. También contienen instrucciones específicas y excepciones relativas a las afirmaciones en esta etiqueta sobre equipos de protección personal (PPE) y los intervalos de acceso restringido. Los requisitos en esta caja se refieren solo a las aplicaciones de este producto cubiertas por las Normas de Protección para Trabajadores.

No entre ni permita la entrada de personal a las áreas tratadas durante el intervalo de entrada restringida (REI) de 4 horas.

Los equipos de protección personal (PPE) requeridos para el acceso anticipado a zonas tratadas que se permite en las Normas de Protección para Trabajadores y que significan contacto con material tratado, como plantas, tierra o agua, son: overoles, zapatos, calcetines y guantes resistentes a sustancias químicas confeccionados con cualquier tipo de material impermeable.

Requisitos para uso no agrícola

Los requisitos en esta caja se refieren a las aplicaciones de este producto que NO cubren las Normas de Protección para Trabajadores para pesticidas agrícolas (40 CFR, Parte 170). Las regulaciones del WPS se aplican cuando el producto se usa para obtener productos agrícolas en granjas, bosques, viveros e invernaderos.

Mantenga a las personas y a los animales domésticos fuera del área tratada hasta que la solución rociada se haya secado.

4.0 ALMACENAMIENTO Y ELIMINACIÓN

El almacenamiento y la eliminación adecuados de los pesticidas son fundamentales para evitar la exposición de las personas y el medio ambiente como consecuencia de pérdidas y derrames del producto, excedentes o desechos y actos de vandalismo. No permita que este producto contamine el agua, ni los alimentos para personas ni animales, ni las semillas, por medio del almacenamiento o la eliminación.

ALMACENAMIENTO DEL PESTICIDA: GUARDE A UNA TEMPERATURA SUPERIOR A LOS 5°F (-15°C) PARA EVITAR LA CRISTALIZACIÓN. Los cristales se depositarán en el fondo. Si se cristaliza, colóquelo en una habitación cálida a 68°F (20°C) por varios días para volver a disolver y haga rodar o agite el envase, o bien haga recircular en envases tipo mini-bulk para mezclar bien antes de usarlo. Guarde los pesticidas lejos de los alimentos para personas, los alimentos para mascotas, los alimentos para animales, las semillas, los fertilizantes y los materiales de uso veterinario. Mantenga el envase bien cerrado para evitar derrames y contaminación.

ELIMINACIÓN DEL PESTICIDA: Para evitar desechos, utilice todo el material contenido en este envase, incluido los residuos del enjuague, aplicándolo según las indicaciones de la etiqueta. Si no se pueden evitar los desechos, ofrezca el producto restante a un centro de eliminación de desechos o a un programa de desecho de pesticidas. Estos programas suelen ser manejados por los gobiernos estatales o locales o por la industria. Toda eliminación debe seguir los reglamentos y procedimientos federales, estatales y locales que apliquen.

MANEJO Y ELIMINACIÓN DEL ENVASE: Consulte la etiqueta del envase para las instrucciones de manejo y eliminación del envase, así como las limitaciones para rellenarlo.

5.0 INFORMACIÓN SOBRE EL PRODUCTO

Descripción del producto: Este producto es un herbicida sistémico de aplicación post emergencia foliar, sin actividad residual en el suelo. Controla un amplio espectro de malezas anuales, malezas perennes, matorrales leñosos y árboles. Está formulado como un líquido soluble en agua y se puede aplicar utilizando equipos convencionales después de su dilución y mezclado con agua o con otros medios de transporte según las instrucciones de la etiqueta.

Aparición de los síntomas: Este producto se mueve dentro de la planta desde el punto de aplicación sobre el follaje hasta las raíces. Los efectos visibles incluyen que la planta se marchite y se vuelva amarilla gradualmente, hasta que su parte exterior se pone completamente marrón; mientras tanto, las partes de la planta que están bajo tierra se deterioran completamente. Los efectos visibles en la mayoría de las malezas anuales se pueden apreciar de 2 a 4 días después de la aplicación, pero en la mayoría de las malezas perennes es posible que no se observen hasta después de 7 días o más. El frío extremo o el cielo muy nublado después de la aplicación pueden retardar la actividad del producto y hacer que el efecto visual se demore.

Etapas de malezas: Resulta más fácil controlar las malezas anuales cuando son pequeñas. La mayoría de las malezas perennes se controla mejor cuando el tratamiento se realiza en las últimas etapas de crecimiento antes de la madurez. Vea en las secciones TIPOS DE MALEZAS CONTROLADAS de esta etiqueta las proporciones específicas para cada tipo de maleza.

Aplique siempre la mayor proporción de producto dentro del rango indicado cuando las malezas son muy densas o cuando crecen en áreas no tocadas (no cultivadas). Puede haber una disminución de los resultados cuando se traten malezas afectadas por enfermedades o dañadas por los insectos, malezas cubiertas con mucho polvo o malezas en malas condiciones de crecimiento.

Modo de acción en las plantas: El ingrediente activo de este producto inhibe una enzima en las plantas y microorganismos que es esencial para la formación de aminoácidos específicos.

Prácticas culturales: Se podrá observar una reducción en el efecto si se aplica el producto a malezas anuales o perennes que hayan sido segadas, que hayan servido de alimento para animales o hayan sido cortadas, y que no hubiesen crecido nuevamente hasta el nivel recomendado para el tratamiento.

Resistencia a la lluvia: Una lluvia intensa poco tiempo después de su aplicación puede lavar este producto del follaje y puede requerirse una nueva aplicación para el control adecuado de las malezas.

Cobertura del rocío: Para obtener mejores resultados, la cobertura del rocío debe ser completa y uniforme. No rocíe el follaje hasta el punto de escurrimiento.

No actividad en el suelo: Las malezas deben haber emergido en el momento de la aplicación para poder ser controladas por este producto. Las malezas que germinen de semillas después de la aplicación no serán controladas. Las plantas no emergidas con rizomas o raíces subterráneas de malezas perennes no conectadas no se verán afectadas por el herbicida y continuarán creciendo.

Proporciones de aplicación máximas: Las proporciones de aplicación o uso máximas recomendadas en toda esta etiqueta se indican en unidades de volumen (onzas líquidas o cuartos de galón) de este producto por acre. Sin embargo, las proporciones máximas permitidas se aplican a este producto combinado con todos y cada uno de los otros herbicidas que contienen el ingrediente activo glifosato, ya sea que se apliquen por separado o como mezclas de tanque, sobre la base de un total de gramos o libras de glifosato (equivalentes ácidos) por acre. Si se aplica más de un producto que contiene glifosato en el mismo terreno el mismo año, debe asegurarse de que el total de glifosato empleado (equivalentes de gramos o libras de ácido) no exceda el máximo permitido. El total combinado de todos los tratamientos no debe exceder 8 cuartos de galón de este producto (8 libras de ácido glifosato) por acre por año. Consulte en la sección **INGREDIENTES** de esta etiqueta la información necesaria sobre el producto.

ATENCIÓN

EVITE EL CONTACTO DEL HERBICIDA CON EL FOLLAJE, TALLOS VERDES, RAÍCES NO LEÑOSAS EXPUESTAS O FRUTOS EXPUESTOS DE LOS CULTIVOS, PLANTAS Y ÁRBOLES DESEABLES. EN CASO CONTRARIO ES PROBABLE QUE SUFRAN GRAVES DAÑOS O SEAN DESTRUIDOS TOTALMENTE.

EVITE EL ARRASTRE. TENGA MUCHO CUIDADO CUANDO APLIQUE ESTE PRODUCTO PARA EVITAR DAÑOS A PLANTAS Y CULTIVOS DESEABLES.

No permita que la solución herbicida se vaporice, gotee, arrastre o salpique sobre la vegetación deseable ya que incluso cantidades ínfimas de este producto pueden causar daños graves o destruir el cultivo, plantas u otras áreas que no se desean tratar. Las probabilidades de daño causado por el uso de este producto aumentan cuando hay viento con ráfagas, cuando la velocidad del viento aumenta, cuando la dirección del viento cambia constantemente o cuando hay otras condiciones meteorológicas que favorecen el arrastre por rocío. Al rociar, evite las combinaciones de presión y tipo de boquillas que resulten en salpicaduras o partículas finas (niebla) que es probable que se dispersen. EVITE APLICAR A UNA VELOCIDAD O PRESIÓN EXCESIVA.

NOTA: El uso de este producto de cualquier manera contraria a las indicaciones contenidas en esta etiqueta, puede resultar en lesiones a personas, animales o cultivos o pueden ocurrir otras consecuencias no deseadas.

5.1 Manejo de resistencia de malezas

GROUP	9	HERBICIDE

El glifosato, ingrediente activo en este producto, es un herbicida del Grupo 9 basado en el sistema de clasificación de efecto de Weed Science Society (La Asociación de la Ciencia de la Maleza) de los Estados Unidos. Todas las poblaciones de malezas pueden contener plantas naturalmente resistentes a los herbicidas del Grupo 9. Las especies de malezas resistentes a los herbicidas del Grupo 9 pueden tratarse con buenos resultados utilizando otro herbicida de un Grupo diferente o adoptando otras prácticas de cultivo o mecánicas.

Para reducir al mínimo la incidencia de biotipos resistentes al glifosato, respete las siguientes recomendaciones generales con respecto al manejo de malezas:

- Haga un reconocimiento del sitio de la aplicación antes y después de haber aplicado herbicidas.
- Controle las malezas cuanto antes, cuando sean todavía relativamente pequeñas.
- Incorpore otros herbicidas y prácticas de cultivo o mecánicas como parte de su sistema de control de malezas cuando sea adecuado.
- Utilice la proporción indicada en la etiqueta para las malezas más difíciles de controlar en el sitio. Evite las mezclas de tanque con otros herbicidas que reducen la eficacia de este producto (por antagonismo) o las recomendaciones de mezclas de tanque que alientan la utilización de cantidades de este producto inferiores a las recomendaciones de esta etiqueta.
- Controle las malezas omitidas e impida que echen semilla.
- Limpie los equipos antes de trasladarse de un sitio a otro para reducir al mínimo la propagación de semillas de malezas.
- Utilice semillas comerciales nuevas con la menor cantidad posible de semillas de malezas.
- Informe todo incidente por falta de rendimiento reiterado de este producto en una maleza determinada al representante de Monsanto, vendedor minorista de su localidad o agente de extensión del condado.

5.2 Manejo para biotipos resistentes al glifosato

NOTA: Es fundamental realizar las pruebas adecuadas para confirmar la resistencia de la maleza al glifosato. Póngase en contacto con su representante de Monsanto para determinar si se confirmó la resistencia de algún biotipo de maleza en particular en su región. Las recomendaciones de control para biotipos confirmados como resistentes al glifosato se dan a conocer con la publicación de etiquetas o fichas técnicas complementarias para este producto y puede solicitarlas al vendedor minorista o a su representante de Monsanto.

Debido a que no es posible determinar la existencia de nuevas malezas resistentes al glifosato hasta que se haya utilizado el producto y se cuente con la confirmación científica correspondiente, Monsanto Company no será responsable de ninguna pérdida que pudiera tener lugar en el caso de que este producto no lograra controlar de forma eficaz los biotipos de malezas resistentes al glifosato.

Siga las siguientes prácticas correctas de manejo de malezas para reducir la propagación de biotipos resistentes al glifosato confirmados:

- Si en su zona existe naturalmente un biotipo resistente, para lograr su control puede mezclar este producto en un tanque o aplicarlo secuencialmente con un herbicida debidamente aprobado con efecto diferente.
- También se pueden utilizar prácticas de control culturales y mecánicas según corresponda.
- Haga un reconocimiento de los lugares tratados después de las aplicaciones de herbicida y controle las omisiones de biotipos resistentes antes de que echen semilla.
- Limpie minuciosamente los equipos antes de abandonar los lugares que se saben que contienen biotipos resistentes.

6.0 MEZCLA

Para mezclar, almacenar y aplicar la solución de rocío de este producto, se deben usar solamente envases de acero inoxidable, fibra de vidrio, plástico o envases de acero recubiertos internamente con plástico.

NO MEZCLE, ALMACENE O APLIQUE ESTE PRODUCTO O LAS SOLUCIONES DE ROCÍO DE ESTE PRODUCTO EN ENVASES DE ACERO GALVANIZADO O SIN REVESTIMIENTO (EXCEPTO ACERO INOXIDABLE) O EN TANQUES DE ROCÍO.

Proceda con precaución para evitar el retorno del líquido a la fuente de transporte. Utilice aparatos aprobados contra el retorno en lugares donde lo exijan las normas locales o estatales.

Limpie las piezas del rociador inmediatamente después de usar este producto lavándolas bien con agua.

NOTA: EL RENDIMIENTO DEL PRODUCTO PODRÍA REDUCIRSE SI SE UTILIZA AGUA CON SEDIMENTOS DE TIERRA COMO SUSTANCIA PORTADORA O AGUA CON BARRO VISIBLE O AGUA DE ESTANQUES O ACEQUIAS QUE NO ESTÉ CLARA.

6.1 Mezcla con agua

Este producto se mezcla fácilmente con agua. Mezcle las soluciones de rocío de este producto de la siguiente manera: Ponga la cantidad correcta de agua limpia en el tanque en el cual se va a preparar la mezcla. Agregue la cantidad recomendada de este producto cuando ya está cerca de completarse el llenado con agua y mezcle con cuidado (bien). Durante la mezcla y aplicación, se puede formar espuma en la solución de rocío. Para prevenir o minimizar la formación de espuma, evite el uso de agitadores mecánicos, cierre las tuberías de retorno y de paso en la parte posterior del tanque y, en caso de que sea necesario, utilice un agente aprobado anti espuma o que elimine la espuma.

6.2 Mezclas de tanque

Este producto no proporciona control de malezas residuales. Este producto puede mezclarse en tanques con otros herbicidas para proporcionar control residual contra malezas, un espectro más amplio de control de malezas o un modo de acción alternativo. Siempre lea y siga las instrucciones de la etiqueta para todos los productos en la mezcla de tanque.

Cuando utilice este producto mezclado en tanque con otros, consulte las etiquetas de cada producto para los sitios y proporciones de aplicación aprobados. Lea y siga cuidadosamente las indicaciones y toda la información en las etiquetas de todos los herbicidas utilizados. Use conforme a las declaraciones preventivas más restrictivas de cada producto en la mezcla. Para la mezcla en tanque, puede utilizarse cualquier proporción de este producto que se encuentre dentro del rango indicado en la etiqueta.

Cuando esta etiqueta indique una mezcla de tanque con un ingrediente activo genérico como diurón, 2,4-D o dicamba, el usuario será responsable de asegurarse de que la etiqueta del producto de mezcla permita la aplicación específica.

El comprador y todos los usuarios son responsables por todas las pérdidas o daños en relación con el uso o el manejo de mezclas de este producto con herbicidas u otros materiales que no se recomiendan expresamente en esta etiqueta. La mezcla de este producto con herbicidas u otros materiales no recomendados en esta etiqueta puede dar como resultado una reducción en su rendimiento.

Este producto brinda control de las malezas emergidas indicadas en esta etiqueta. Cuando se aplican como mezcla de tanque, los herbicidas siguientes proporcionan control pre emergencia y/o post emergencia de las malezas indicadas en las etiquetas de los productos individuales.

Este producto puede ser mezclado en el tanque con los productos siguientes. Cualquier proporción de este producto que se encuentre dentro del rango recomendado en la etiqueta se puede utilizar en una mezcla de tanque con estos productos. El usuario será responsable de asegurarse de que el producto específico esté aprobado para el área de uso deseada. Consulte las etiquetas de estos productos para informarse sobre las áreas de uso y las proporciones de aplicación aprobadas. Lea y siga cuidadosamente las indicaciones y toda la información en las etiquetas de todos los herbicidas utilizados. Use conforme a las declaraciones preventivas más restrictivas de cada producto en la mezcla.

Productos de mezcla de tanque

Arsenal	Krovar I DF + 2,4-D
Banvel	Krovar I DF + Garlon 3A
2,4-D	Krovar I DF + Garlon 4
Garlon 3A	Oust XP
Garlon 4	Oust XP + 2,4-D
diuron	Oust XP + Garlon 3A
diuron + 2,4-D	Oust XP + Garlon 4
diuron + Garlon 3A	Ronstar
diuron + Garlon 4	Spike 80W
Hyvar X	Spike 80W + 2,4-D
Hyvar X + 2,4-D	Spike 80W + Garlon 3A
Hyvar X + Garlon 3A	Spike 80W + Garlon 4
Hyvar X + Garlon 4	Surflan
Krovar I DF	

Cuando se usa en combinación según las recomendaciones de Monsanto Company, de ninguna manera la responsabilidad de Monsanto abarcará cualquier daño, pérdida o lesión que no sea causado directa y exclusivamente por la inclusión del producto de Monsanto en dicha aplicación combinada.

6.3 Procedimiento de mezcla de tanque

Cuando prepare mezclas de tanque, lea y siga cuidadosamente las instrucciones de la etiqueta, las declaraciones preventivas y toda la información contenida en las etiquetas de todos los productos utilizados. Agregue el producto al tanque de mezcla según las instrucciones de la etiqueta. Agite continuamente y agregue la cantidad recomendada de este producto.

Continúe agitando bien todo el tiempo durante el proceso de mezclado. Asegúrese de que los productos de la mezcla de tanque estén bien mezclados con la solución de rocío antes de agregar este producto.

Mezcle solo la cantidad de solución de rocío que puede usar el mismo día. El control de malezas puede ser inferior si las mezclas de tanque se dejan reposar toda la noche.

Continúe agitando bien todo el tiempo hasta que termine de rociar todo el contenido del tanque. Si se deja asentar la mezcla para rociar, agite bien para que la mezcla vuelva a estar en suspensión antes de continuar con el rocío.

A fin de minimizar la formación de espuma, mantenga las tuberías de retorno lo más cerca del fondo del tanque. La malla de la rejilla en la boquilla o en los coladores de las mangueras no debe ser de menos de 50 hilos.

Siempre determine con anticipación la compatibilidad de todos los productos de la mezcla de tanque indicados con el agua como sustancia portadora, mezclando antes pequeñas cantidades proporcionales. Asegúrese de que la mezcla de tanque específica esté aprobada para su aplicación en el área deseada.

6.4 Mezcla de soluciones en porcentaje

Prepare el volumen deseado de solución de rocío mezclando en agua la cantidad indicada de este producto, como se indica en la siguiente tabla:

Solución de rocío

Volumen	Cantidad de Roundup Custom para uso acuático y terrestre					
Deseado	0.5%	0.75%	1%	1.5%	4%	8%
1 gal	2/3 oz	1 oz	1.3 oz	2 oz	5 oz	10 oz
25 gal	1 pt	1.5 pt	1 qt	1.5 qt	4 qt	2 gal
100 gal	2 qt	3 qt	1 gal	1.5 gal	4 gal	8 gal

2 cucharadas soperas = 1 onza líquida

Cuando se usen rociadores tipo mochila, o para bombeo, se recomienda que la cantidad indicada en la etiqueta de este producto se mezcle con agua en un envase grande. Llene el rociador con la solución de la mezcla.

6.5 Surfactante

Este producto requiere el uso de un surfactante no iónico a menos que se especifique lo contrario. Al usar este producto, a menos que se especifique lo contrario, mezcle 2 o más cuartos de galón de un surfactante no iónico por cada 100 galones de solución de rocío. Aumentar la proporción de surfactante puede mejorar el rendimiento. Algunos ejemplos de cuándo usar una proporción mayor de surfactante incluyen, pero no se limitan a: matorrales leñosos difíciles de controlar, árboles y enredaderas, volúmenes de mareas altas, condiciones ambientales adversas, malezas difíciles de controlar, malezas bajo estrés, surfactantes con menos de un 70 por ciento de ingrediente activo, mezclas de tanque, etc.

Siempre lea y siga las instrucciones de la etiqueta del fabricante del surfactante para obtener los mejores resultados. Cumpla cuidadosamente con todas las declaraciones preventivas y toda la información adicional que aparezca en la etiqueta del surfactante.

6.6 Colorantes o tinturas

A este producto se le pueden agregar colorantes o tinturas para marcar, que sean aprobados para uso agrícola. A bajas concentraciones o diluciones, los colorantes o tinturas usados en las soluciones de rocío de este producto pueden reducir su rendimiento. Utilice los colorantes o las tinturas según las instrucciones del fabricante.

6.7 Aditivos de reducción de arrastre

Se pueden utilizar aditivos para el control del arrastre en todos los tipos de equipo, a excepción de aplicadores con enjugador y barras de esponja. Cuando se use un aditivo para el control del arrastre, lea y cumpla cuidadosamente con las declaraciones preventivas y toda la información adicional que aparezca en la etiqueta del aditivo. El uso de aditivos para el control del arrastre puede afectar la cobertura del rocío, lo que puede dar como resultado una reducción en el rendimiento.

7.0 EQUIPOS Y TÉCNICAS PARA LA APLICACIÓN

No use ningún sistema de irrigación para aplicar este producto.

APLIQUE ESTAS SOLUCIONES DE ROCÍO UTILIZANDO EQUIPOS DEBIDAMENTE MANTENIDOS Y CALIBRADOS QUE SEAN CAPACES DE ROCIAR EL VOLUMEN DESEADO.

MANEJO DEL ARRASTRE DEL ROCÍO

EVITE EL ARRASTRE. TENGA MUCHO CUIDADO CUANDO APLIQUE ESTE PRODUCTO PARA EVITAR DAÑOS A PLANTAS Y CULTIVOS DESEABLES.
No permita que la solución herbicida se vaporice, gotee, arrastre o salpique sobre la vegetación deseable ya que incluso cantidades ínfimas de este producto pueden causar daños graves o destruir el cultivo, plantas u otras áreas que no se desean tratar.
Es responsabilidad del aplicador evitar el arrastre por rocío en el lugar de aplicación. La interacción de varios factores relacionados con el clima y el equipo determina la posibilidad de arrastre por rocío. El aplicador y/o el cultivador son responsables de considerar todos estos factores al tomar decisiones.

7.1 Equipos aéreos

NO APLIQUE ESTE PRODUCTO CON EQUIPOS AÉREOS EXCEPTO BAJO LAS CONDICIONES QUE SE ESPECIFICAN EN ESTA ETIQUETA.
EN CASO DE APLICACIÓN AÉREA EN ARKANSAS Y CALIFORNIA, O EN CONDADOS ESPECÍFICOS DE ESOS ESTADOS, CONSULTE EN LA ETIQUETA COMPLEMENTARIA FEDERAL LAS INSTRUCCIONES, RESTRICCIONES Y REQUISITOS ESPECÍFICOS PARA APLICACIONES AÉREAS EN ESE ESTADO O CONDADO.
Este producto, al ser mezclado en tanques con dicamba, no se puede aplicar por aire en el estado de California. Solo se pueden utilizar formulaciones de 2,4-D amina para la aplicación aérea en California.
Use las proporciones recomendadas de este producto en 3 a 25 galones de agua por acre.
PARA EVITAR DAÑAR LA VEGETACIÓN DESEABLE ADYACENTE, SE DEBEN MANTENER ZONAS DE TRANSICIÓN ADECUADAS.
Evite la aplicación directa en masas de agua. Pueden usarse aditivos para el control del arrastre. Al utilizar un aditivo para controlar el arrastre, lea y cumpla meticulosamente con las declaraciones preventivas y toda la demás información que aparece en la etiqueta del aditivo.
Asegúrese de que la aplicación sea uniforme. A fin de evitar que queden áreas sin tratar, que la aplicación no sea uniforme o que las aplicaciones se traslapen, se deben usar marcadores adecuados.

Mantenimiento de aviones

EL CONTACTO PROLONGADO DE ESTE PRODUCTO CON PARTES DE ACERO QUE NO ESTE RECUBIERTO CON ALGUN TIPO DE PROTECCIÓN, PUEDE CAUSAR CORROSIÓN Y POSIBLEMENTE QUE LAS PARTES FALLEN. Es posible prevenir la corrosión recubriendo las partes con pintura orgánica, que cumpla con las especificaciones aeroespaciales MIL-C-38413. Al final de cada día de trabajo, para evitar la corrosión de las partes expuestas, lave muy bien el avión a fin de remover los residuos de este producto que se acumulan durante el rocío o por derramamientos. El tren de aterrizaje es extremadamente susceptible.

MANEJO DEL ARRASTRE DEL ROCÍO AEREO

Deben seguirse los siguientes requisitos de manejo del arrastre para evitar el movimiento de éste fuera del objetivo en aplicaciones aéreas a campos de cultivo agrícola. Estos requisitos no incluyen las aplicaciones forestales ni los usos en salud pública.

1. La distancia de la boquilla más externa en el brazo no debe exceder 3/4 del largo de la envergadura o rotor.
2. Las boquillas deben siempre apuntar hacia atrás, paralelas a la corriente de aire, nunca hacia abajo más de 45 grados. En los estados con reglamentos más estrictos, éstos deben observarse.

Importancia del tamaño de las gotas

La forma más eficaz de reducir la posibilidad de arrastre es la aplicación de gotitas grandes. La mejor estrategia de manejo del arrastre es la aplicación de las gotitas más grandes que provean suficiente cobertura y control. La aplicación de gotitas más grandes reduce la posibilidad de arrastre, pero no la evitará si las aplicaciones se realizan inadecuadamente o bajo condiciones ambientales desfavorables (vea las secciones de Viento, Temperatura y humedad, e Inversiones de temperatura en esta etiqueta).

Control del tamaño de las gotas

Volumen: Use boquillas de velocidad de flujo alta para aplicar el mayor volumen de rocío práctico. Las boquillas con mayores velocidades de flujo producen gotitas más grandes.

Presión: Use las presiones de rocío más bajas recomendadas para la boquilla. La presión más alta reduce el tamaño de la gotita y no mejora la penetración de la superficie. Cuando sean necesarias velocidades de flujo mayores, use boquillas con velocidad de flujo mayor en lugar de aumentar la presión.

Cantidad de boquillas: Utilice la cantidad mínima de boquillas que brinden una cobertura uniforme.

Orientación de las boquillas: Si orienta las boquillas de modo que liberen el rocío hacia atrás, en sentido paralelo a la circulación del aire, producirán gotas más grandes que si las orienta de otro modo. Cuanto más desviadas estén del plano horizontal, tanto más pequeñas serán las gotas y tanto mayor el potencial de arrastre.

Tipo de boquilla: Utilice un tipo de boquilla diseñado para la aplicación deseada. Con la mayoría de los tipos de boquillas, cuanto menor sea el ángulo de rocío tanto mayor serán las gotas. Considere el uso de boquillas de poco arrastre. Las boquillas de caudal directo orientadas directamente hacia atrás producen gotas más grandes que otros tipos de boquillas.

Longitud del brazo: En algunos esquemas de uso, la reducción de la longitud efectiva del brazo a menos de 3/4 de la envergadura o de la longitud del rotor puede reducir el arrastre aún más sin reducir el ancho de la franja.

Altura de la aplicación: Las aplicaciones no deben realizarse a una altura mayor que 10 pies por encima de la copa de las plantas más grandes, a menos que se requiera mayor altura por razones de seguridad del aeroplano. Realizar las aplicaciones a la menor altura que sea segura reduce la exposición de las gotitas a la evaporación y el viento.

Ajuste de franja

Cuando las aplicaciones se lleven a cabo con viento lateral, la franja de aspersión se desplazará a favor del viento. Por ello, en los extremos con o contra el viento del campo, el aplicador debe compensar este desplazamiento ajustando la trayectoria del aeroplano contraria al viento. La distancia de ajuste de la franja debe aumentar, cuando aumenta la posibilidad de arrastre (mayor viento, gotitas más pequeñas, etc.).

Viento

El potencial de arrastre es menor cuando la velocidad del viento es de 2 a 10 millas por hora. Sin embargo, muchos factores, incluyendo el tamaño de las gotitas y el tipo de equipo determinan la posibilidad de arrastre a una velocidad determinada. Se debe evitar la aplicación a menos de 2 millas por hora debido a los cambios de dirección del viento y la posibilidad de inversión. NOTA: El terreno local puede influir en los patrones de viento. Las personas que aplican el producto deben estar familiarizadas con los modelos locales de vientos y saber cómo afectan el arrastre.

Temperatura y humedad

Cuando se realizan aplicaciones con humedad relativa baja, fije el equipo para que produzca gotitas más grandes para compensar por la evaporación. La evaporación de gotitas es más grave cuando las condiciones son calurosas y secas.

Inversiones de temperatura

No deben realizarse aplicaciones durante una inversión de temperatura debido a que la posibilidad de arrastre es alta. Las inversiones de temperatura restringen la mezcla de aire vertical, lo que causa que pequeñas gotitas suspendidas permanezcan en una nube concentrada. Esta nube puede moverse en direcciones no predecibles debido a los vientos variables leves que son comunes durante las inversiones. Las inversiones de temperatura están caracterizadas por temperaturas en aumento con altitud y son comunes en las noches con cobertura de nubes limitada y poco o ningún viento. Comienzan a formarse cuando se mete el sol y a menudo continúan en la mañana. Su presencia puede indicarse por neblina en el suelo; sin embargo, si la neblina no está presente, las inversiones también pueden identificarse por el movimiento del humo desde una fuente del suelo o por el generador de humo de un aeroplano. El humo en capas que se mueve lateralmente en una nube concentrada (bajo condiciones de poco viento) indica una inversión, mientras que el humo que se mueve hacia arriba y se disipa rápidamente indica buena mezcla de aire vertical.

Áreas sensibles

Este producto solo se debe aplicar cuando la posibilidad de arrastre hacia zonas adyacentes susceptibles (como por ejemplo, áreas residenciales, masas de agua, hábitat conocido de especies amenazadas o en peligro de extinción, cultivos que no sean el objetivo) sea mínima (como por ejemplo, cuando el viento sople lejos de las áreas susceptibles).

7.2 Equipo de aplicación al voleo terrestre

Para aplicaciones al voleo terrestre, a menos que se indique lo contrario en esta etiqueta, en etiquetas complementarias separadas o en las Fichas Técnicas publicadas por Monsanto, use este producto en una proporción de 1.5 a 3 pintas por acre para malezas anuales, de 3 a 7.5 pintas para malezas perennes y de 3 a 7.5 pintas por acre para matorrales leñosos y árboles. Cuando se usa de acuerdo con las instrucciones de la etiqueta, este producto brinda control total o parcial de las malezas herbáceas, matorrales leñosos y árboles mencionados en la sección **TIPOS DE MALEZAS CONTROLADAS** de esta etiqueta.
Use las proporciones indicadas en la etiqueta de este producto con 3 a 40 galones de agua por acre para aplicaciones al voleo, a menos que se especifique de otra manera en esta etiqueta, en etiquetas complementarias separadas o en las Fichas Técnicas publicadas por Monsanto. A medida que la densidad de las malezas aumenta, el volumen de rocío se debe aumentar también para conseguir una cobertura completa, pero siempre dentro de los límites recomendados. A fin de evitar una niebla muy fina, seleccione la boquilla cuidadosamente. Para obtener mejores resultados con equipo a

nivel del terreno, use boquillas tipo abanico plano. Asegúrese de que las gotas del rocío se distribuyan uniformemente.

7.3 Equipo de mano

Aplique al follaje de la vegetación a ser controlada. En aplicaciones de rocío para mojar, la cobertura del rocío debe ser completa y uniforme. No rocíe hasta el punto de escurrimiento. Utilizar sólo rociadores gruesos.

Para el control de las malezas enumeradas en la sección de **Malezas anuales** de la sección **TIPOS DE MALEZAS CONTROLADAS**, aplique una solución al 0.5 por ciento de este producto a las malezas de menos de 6 pulgadas de altura o largo de los tallos. Para malezas anuales de más de 6 pulgadas de altura utilice una solución al 1 por ciento, a menos que se especifique de otro modo. Haga la aplicación antes de la formación de semillas para el pasto, o la formación de brotes para las malezas de hoja ancha.

Para obtener los mejores resultados, utilice una solución al 1.5 por ciento en plantas perennes más difíciles de controlar, enredaderas leñosas, arbustos y árboles. Para obtener mejores resultados, realice aplicaciones en plantas perennes después de la emergencia de las semillas en pastos o la formación de brotes en las malezas de hoja ancha, matorrales leñosos y árboles.

En aplicaciones de rocío dirigido de bajo volumen, use una solución del 4 al 8 por ciento de este producto para el control total o parcial de malezas anuales, malezas perennes o matorrales leñosos y árboles. La cobertura del rocío debe ser uniforme y hacer contacto con al menos el 50 al 75 por ciento del follaje. Es importante lograr la cobertura de la mitad superior de la planta para lograr los mejores resultados. Si se utiliza una boquilla de caudal directo, comience la aplicación en la parte superior de la vegetación que sea el objetivo, y rocíe de arriba hacia abajo con un movimiento de zigzag lateral. Para boquillas cónicas y tipo abanico plano, y con sopladores de vaporización manuales, aplique la niebla sobre el follaje de la vegetación que sea el objetivo. Para asegurar una cobertura de rocío adecuada, rocíe ambos lados de los matorrales leñosos y de los árboles grandes o altos cuando el follaje es espeso y denso o cuando hay varios rebrotes. Para obtener resultados óptimos, aplique este producto a árboles y matorrales leñosos en crecimiento activo después de la expansión completa de las hojas y antes de que éstas adquieran color otoñal y se caigan.

Salvo que se especifique lo contrario, use las proporciones indicadas en la tabla siguiente para diversos métodos de aplicación foliar usando equipo de mano de alto volumen, tipo mochila y similares. Cuando se usa de acuerdo con las instrucciones de la etiqueta, este producto brinda control total o parcial de las malezas herbáceas, matorrales leñosos y árboles mencionados en la sección **TIPOS DE MALEZAS CONTROLADAS** de esta etiqueta.

PROPORCIONES DE APLICACIÓN

APLICACIÓN		VOLUMEN DE ROCÍO Galones/Acre
ROCÍO PARA MOJAR		
Pistola de mano o mochila	0.5 a 1.5% por volumen	rocío para mojar*
ROCÍO DIRIGIDO DE BAJO VOLUMEN		
Mochila	4 a 8% por volumen	15 a 25**
Alto volumen modificado	1.5 a 3% por volumen	40 a 60**

* En aplicaciones de rocío para mojar, la cobertura del rocío debe ser completa y uniforme. No rocíe hasta el punto de escurrimiento.

**Las aplicaciones con mochila de rocío dirigido de bajo volumen funcionan mejor para tratar malezas y matorrales de menos de 10 pies de altura. Para malezas y matorrales más altos, las pistolas de mano de alto volumen se pueden modificar reduciendo el tamaño de la boquilla y la presión del rocío para producir un rocío dirigido de bajo volumen.

7.4 Equipo selectivo

Este producto puede ser diluido con agua, mezclado bien y aplicado usando rociadores de recirculación, aplicadores con pantalla, rociadores con capucha, aplicadores con enjugador o barras de esponja, sobre las malezas indicadas que crecen en cualquier zona acuática o lugar no cultivado indicado en esta etiqueta.

Los rociadores de recirculación dirigen la solución de rocío hacia los tipos de malezas que crecen sobre vegetación deseable, mientras que la solución de rocío que no ha sido interceptada por las malezas se recoge y retorna al tanque para volverla a usar.

EVITE EL CONTACTO DE ESTE HERBICIDA CON LA VEGETACIÓN DESEABLE, YA QUE ES PROBABLE QUE OCURRA DAÑO GRAVE O MUERTE DE LA VEGETACIÓN.

El equipo de aplicación que se utilice por encima de la vegetación deseable debe ajustarse de manera que el chorro de rocío o punto de contacto del enjugador esté al menos 2 pulgadas por encima de la vegetación deseable. Es probable que las gotas, niebla, espuma o salpicaduras de la solución de herbicida sobre la vegetación deseable provoquen decoloración, atrofia o destrucción.

Se pueden obtener mejores resultados cuando se expone una mayor cantidad de la maleza a la solución de herbicida. Las malezas sin contacto con la solución de herbicida no serán afectadas. Esto puede ocurrir en lugares donde las malezas están muy concentradas, cuando la infestación es grave o donde la altura de las malezas es variada, lo que no permite que todas sean tocadas por el herbicida. En estos casos puede ser necesario repetir el tratamiento.

Aplicadores con pantalla y con capucha

Los aplicadores con pantalla o con capucha aplican la solución de herbicida directamente sobre las malezas, al mismo tiempo que protegen la vegetación deseable, para que no sea tocada por el herbicida. Use boquillas que aseguren una cobertura uniforme en toda el área tratada. En los rociadores con pantalla, mantenga las pantallas debidamente colocadas a fin de proteger la vegetación deseada. DEBE TENER SUMO CUIDADO PARA EVITAR EL CONTACTO DE ESTE HERBICIDA CON LA VEGETACIÓN DESEABLE.

Aplicadores con enjugador y barras de esponja

Los aplicadores con enjugador son dispositivos que pasan físicamente este producto directamente a la maleza.

El equipo debe ser diseñado, mantenido y operado de manera que la solución de herbicida no haga contacto con la vegetación deseable. Opere este equipo a velocidades inferiores a las 5 millas por hora. En áreas donde la infestación de malezas es grave, se puede mejorar la eficacia reduciendo la velocidad, así se asegura que el enjugador esté siempre adecuadamente saturado. Se obtienen mejores resultados si hacen 2 aplicaciones en direcciones opuestas.

Evite las filtraciones o el goteo en la vegetación deseable. Ajuste la altura de los aplicadores a fin de asegurar un contacto adecuado con las malezas. Mantenga limpias las superficies de enjugado. Tenga en cuenta que, en terreno en declive, la solución de herbicida puede cambiar de lugar, goteando en el extremo inferior y secando las mechas en el extremo superior del aplicador con enjugador.

No use aplicadores con enjugador cuando las malezas estén mojadas.

Mezcle solamente la cantidad de solución que se usará durante el período de un día, debido a que el uso de soluciones de días anteriores puede reducir la eficacia. Inmediatamente después de usar este producto, lave bien las partes del aplicador usando bastante agua.

Se recomienda surfactante no iónico en una proporción del 10 por ciento por volumen de la solución total de herbicida para todas las aplicaciones con enjugador.

Para aplicadores de cordón o de mecha de esponja — Pueden emplearse soluciones que oscilen entre 33 al 75 por ciento de este producto en agua.

Para aplicadores de panel — Pueden emplearse soluciones que oscilen entre 33 al 100 por ciento de este producto en agua en aplicadores con enjugador de papel.

7.5 Sistemas por inyección

Este producto puede usarse con sistemas de rocío por inyección, ya sean aéreos o a nivel del terreno. Puede usarse como concentrado líquido o diluido antes de la inyección en el chorro de rocío. No mezcle este producto con concentraciones de otros productos sin diluir cuando use los sistemas por inyección, a menos que se recomiende de manera específica.

7.6 Equipo de aplicación por goteo controlado (CDA)

La proporción de este producto aplicada por acre con el equipo de aplicación por goteo controlado (CDA) no debe ser menos que la cantidad indicada en esta etiqueta cuando se aplica con un equipo al voleo convencional. Cuando se usa el equipo aplicador por goteo controlado montado en un vehículo, use de 2 a 15 galones de agua por acre.

Para controlar malezas anuales con aplicadores por goteo controlado de mano — Aplique una solución de este producto al 15 por ciento (19.25 oz de producto por galón) a razón de 2 onzas líquidas por minuto y una velocidad de caminata de 1.5 millas por hora (1 cuarto de galón por acre). Para controlar malezas perennes, aplique una solución de este producto de 15 a 30 por ciento a razón de 2 onzas líquidas por minuto y una velocidad de caminata de 0.75 milla por hora (2 a 4 cuartos de galón por acre).

Los equipos de CDA producen un patrón de rocío que es difícil de ver. Se debe tener especial cuidado para evitar que el rocío o el arrastre entre en contacto con el follaje o cualquier otra parte verde de la vegetación deseable, ya que en caso contrario, es probable que ésta sea dañada o destruida.

8.0 RECOMENDACIONES SEGÚN ÁREAS Y USO

Este producto se puede usar para controlar las malezas, los matorrales leñosos y árboles en zonas acuáticas, lugares no cultivados y cultivados mencionados en esta etiqueta.

Los lugares no cultivados incluyen aeropuertos, complejos de viviendas, centros comerciales, acequias, acequias secas, canales secos, cercas, bosques, campos de golf, áreas de restauración y manejo de hábitats, terrenos industriales, depósitos de madera, zonas de manufactura, solares municipales, zonas naturales, complejos de oficinas, áreas públicas, parques, áreas de estacionamiento, pasturas, zonas con tanques de petróleo e instalaciones de bombeo, vías de ferrocarril, tierras de pastoreo, áreas recreativas, áreas residenciales, bordes de carreteras, escuelas, áreas de almacenamiento, subestaciones, derechos de paso de servicios públicos, zonas de servicios públicos, zonas de almacenes y zonas de manejo de vida silvestre.

Cultivos incluye cítricos, caña de azúcar, césped, tepes y barbecho vegetal.

A menos que se especifique de otra manera en esta etiqueta, en etiquetas complementarias separadas o en las Fichas Técnicas publicadas por Monsanto, pueden realizarse aplicaciones para controlar cualquier maleza indicada en las tablas de proporciones de **Malezas anuales, Malezas perennes, Matorrales leñosos y árboles**. Consulte también la sección sobre **Equipo selectivo**.

8.1 Zonas acuáticas

Este producto se puede aplicar a malezas emergidas en todas las masas de agua fresca o salobre, que pueden ser fluyentes, no fluyentes o intermedias. Esto incluye lagos, ríos, arroyos, estanques, estuarios, diques de arroz, filtraciones, acequias de irrigación y drenaje, canales, embalses, instalaciones de tratamiento de aguas residuales, zonas de restauración y manejo de hábitats de vida silvestre.

Si hay zonas acuáticas en el área y éstas son parte del tratamiento deseado, lea y siga estas instrucciones:

Este producto no proporciona control de plantas completamente sumergidas o que tengan la mayor parte de su follaje bajo agua.

No hay restricciones sobre el uso de agua tratada con propósitos domésticos, de irrigación o recreación.

Consulte su agencia local de caza y pesca y las autoridades de control de aguas antes de aplicar el producto en aguas públicas. Pueden requerirse permisos para tratar estas aguas.

NOTA: No aplique este producto **directamente al agua** dentro de 0.5 millas aguas arriba de una entrada activa de agua potable en agua fluyente (ej., río, arroyo, etc.) o dentro de 0.5 millas aguas arriba de una entrada de agua potable en una masa de agua estancada como un lago, estanque o embalse. Para hacer aplicaciones acuáticas alrededor y dentro de 0.5 millas de las entradas activas de agua potable, hay que cerrar la entrada de agua por un período mínimo de 48 horas después de la aplicación. La entrada de agua puede abrirse antes de las 48 horas si el nivel de glifosato en el agua de entrada es menos de 0.7 partes por millón según se determine por análisis de laboratorio. Estas aplicaciones acuáticas SOLAMENTE pueden hacerse si existen fuentes de aguas alternas o estanques de retención que permitan el cierre de una entrada activa de agua potable por un período mínimo de 48 horas después de la aplicación. Esta restricción **NO** aplica al rocío excesivo intermitente e involuntario de agua en aplicaciones terrestres.

Para aplicaciones después de interrumpir el suministro de agua o en acequias secas, espere 7 días o más después del tratamiento antes de restaurar el agua para obtener un control máximo de las malezas. Aplique este producto 1 día después de interrumpir el suministro de agua para asegurar la aplicación en las malezas con crecimiento activo.

Puede ser necesario repetir las aplicaciones en las masas flotantes de vegetación. Evite que la lluvia o la estela de barcos fumigadores o recreativos laven el follaje tratado hasta después de 6 horas de la aplicación. No repita la aplicación antes de 24 horas de la aplicación inicial.

La aplicación a masas de agua en movimiento deberá hacerse mientras se viaja corriente arriba para evitar la concentración de este herbicida en el agua. Al hacer aplicaciones en las riberas, no traslape más de 1 pie en aguas abiertas. No rocíe en masas de agua donde no existan malezas. No se puede exceder la proporción máxima de aplicación de 7.5 pintas por acre en una aplicación al voleo sobre agua, con las siguientes excepciones, donde se puede aplicar cualquier cantidad indicada en la etiqueta:

- Cruces de arroyos en servidumbres de servicios públicos.
- Si las aplicaciones se limitan a menos del 20 por ciento del área total de agua tratada.

Cuando las infestaciones emergidas requieren tratamiento de la superficie total del agua embalsada, hacer las aplicaciones por franjas puede evitar la disminución de oxígeno debido a la descomposición de la vegetación. La disminución de oxígeno puede causar la muerte de los peces.

Para controlar el cordgrass (*espartina*)

La presencia de desechos y cieno en la superficie de las plantas de cordgrass (espartina) reducirá el rendimiento del producto. Puede ser necesario lavar las plantas que sean el objetivo antes de la aplicación para mejorar la absorción del herbicida. Donde el cordgrass haya sido cortado o segado antes de la aplicación, permita que vuelva a crecer bastante antes de aplicar para asegurar una intercepción y absorción adecuadas de la solución herbicida. La lluvia antes de transcurridas 2 horas o la inmersión antes de transcurridas 4 horas de la aplicación pueden reducir la eficacia.

Antes de la aplicación, inspeccione las zonas a tratar para determinar si existen bancos de mariscos dentro de la zona de tratamiento deseado. Espere hasta la recolección de los mariscos para hacer la aplicación o no recolecte los mariscos hasta pasados 14 días después de la aplicación.

Agregue de 1 a 2 cuartos de galón o más de surfactante no iónico u otro adyuvante para usar en zonas acuáticas y que sea compatible con este producto, por 100 galones de solución de rocío para aplicaciones al voleo (terrestres o aéreas) y cuando use equipo de aplicación con sensores ópticos.

No use ningún sistema de irrigación para aplicar este producto.

APLICACIÓN

En condiciones ideales de aplicación, esto es, cuando no haya desechos ni cieno en la superficie de las plantas, se pueda lograr una buena cobertura de rocío, las plantas que sean el objetivo estén en crecimiento activo y se usen los volúmenes de aplicación y las proporciones recomendadas en la etiqueta, permita un tiempo de secado de por lo menos 4 horas antes de que la marea cubra las plantas. Si no se cumple alguna de estas condiciones, programe las aplicaciones para permitir un tiempo de secado de por lo menos 5 horas antes de que la marea cubra las plantas. No lo aplique cuando la velocidad del viento en el lugar de la aplicación exceda las 10 millas por hora.

Aplicación al voleo (Terrestre): Aplique de 2 a 8 cuartos de galón de este herbicida en 5 a 100 galones de solución de rocío por acre. Para obtener los mejores resultados, se requiere cubrir por completo las concentraciones de cordgrass.

Aplicación al voleo (Terrestre/Equipo de aplicación con sensor óptico): Aplique de 2 a 8 cuartos de galón de este producto en 5 a 100 galones de solución de rocío por acre usando equipo diseñado y calibrado para solución de rocío solo cuando existan plantas de cordgrass y se detecten con los sensores ópticos. Para obtener los mejores resultados, se requiere cubrir por completo las concentraciones de cordgrass.

Mochila de mano o equipo de alto volumen: Aplique una solución de 5 a 8 por ciento de este producto. Asegúrese de obtener una cobertura completa de las concentraciones de cordgrass. No rocíe hasta el punto de escurrimiento.

Aplicación al voleo (Aérea): Aplique de 2 a 8 cuartos de galón de este herbicida en 5 a 10 galones de solución de rocío por acre. Mantenga una zona de transición de por lo menos 50 pies entre los bancos comerciales de mariscos y las zonas tratadas. La posibilidad de arrastre del rocío depende de factores relacionados con el clima y con el equipo. Las personas que aplican el producto deben estar familiarizadas con los modelos locales de vientos, observar y registrar la temperatura y la velocidad del viento antes de la aplicación y periódicamente durante la misma. Programe la aplicación para permitir por lo menos 5 horas antes de que la marea cubra las plantas tratadas.

Para aplicación foliar y al voleo en knotweed (polígono) japonés

Para controlar el knotweed (*polígono*) japonés (*Polygonum cuspidatum*), este producto puede aplicarse como una solución de rocío para mojar al 2.0% v/v con 0.5 a 2.0% v/v de un surfactante no iónico que contenga por lo menos 70% de ingrediente activo. Asegúrese de lograr una cobertura completa cuando efectúe tratamientos de rocío para mojar mediante un equipo de mano.

Para aplicaciones al voleo, aplique 3 cuartos de galón de este producto con un sistema surfactante acuático aprobado que contenga 0.1% v/v de organosilicona no iónica y 0.25% v/v de surfactante no iónico adhesivo dispersante en 3 a 40 galones por acre como aplicación al voleo.

Deje pasar por lo menos 3 días antes de remover la vegetación tratada. Este producto no proporciona control de plantas completamente sumergidas o que tengan la mayor parte de su follaje bajo agua.

Para aplicación foliar y al voleo en Oriental bittersweet

Para controlar el Oriental bittersweet (*Celastrus orbiculatus*), este producto puede aplicarse como una solución de rocío para mojar al 2.0% v/v con 0.5 a 2.0% v/v de un surfactante no iónico que contenga por lo menos 70% de ingrediente activo. Asegúrese de lograr una cobertura completa cuando efectúe tratamientos de rocío para mojar mediante un equipo de mano.

Para aplicaciones al voleo, aplique 2.25 cuartos de galón de este producto con un sistema surfactante acuático aprobado que contenga 0.1% v/v de organosilicona no iónica y 0.25% v/v de surfactante no iónico adhesivo dispersante en 3 a 40 galones por acre como aplicación al voleo.

Deje pasar por lo menos 3 días antes de remover la vegetación tratada. Este producto no proporciona control de plantas completamente sumergidas o que tengan la mayor parte de su follaje bajo agua.

Mezclas de tanque

Se pueden usar mezclas de tanque de este producto más 2,4-D amina para aumentar el espectro de vegetación controlada en zonas acuáticas. Use de 1.5 a 2 pintas de este producto más 1 a 2 cuartos de galón de 2,4-D amina (4 libras de ingrediente activo por galón, aprobado para zonas acuáticas) para controlar las malezas anuales. Use de 3 a 7.5 pintas de este producto más 2 a 4 cuartos de galón de 2,4-D amina (4 libras de ingrediente activo por galón, aprobado para zonas acuáticas) para controlar total o parcialmente las malezas perennes, matorrales leñosos y árboles.

Cuando haga mezclas de tanque, lea y siga cuidadosamente las instrucciones de la etiqueta, las declaraciones preventivas y toda la información contenida en las etiquetas de todos los productos utilizados. Use conforme a las precauciones más restrictivas de cada producto en la mezcla. Mezcle en el orden siguiente: Llene de agua hasta la mitad el tanque rociador, agregue Roundup Custom para uso acuático y terrestre, luego 2,4-D amina y finalmente el surfactante. Termine de llenar con agua el tanque rociador hasta el volumen final.

NOTA: NO MEZCLE LOS CONCENTRADOS DE ROUNDUP CUSTOM PARA USO ACUÁTICO Y TERRESTRE Y 2,4-D AMINA SIN AGUA COMO SUSTANCIA PORTADORA. NO MEZCLE LOS CONCENTRADOS DE ROUNDUP CUSTOM PARA USO ACUÁTICO Y TERRESTRE Y 2,4-D AMINA EN EL EQUIPO ROCIADOR TIPO INYECTOR DE RETORNO.

8.2 Tocones cortados

El tratamiento de tocones cortados puede hacerse en cualquier área que se indique en esta etiqueta. Este producto controla muchas especies de matorrales leñosos y árboles. Aplique este producto utilizando el equipo apropiado para asegurar la cobertura total del cámbium. Corte los árboles o sus brotes cerca de la superficie del suelo. Aplique una solución de este producto de 50 a 100 por ciento a la superficie recientemente cortada **inmediatamente después** del corte. La demora en la aplicación puede causar un rendimiento inferior. Para obtener los mejores resultados, las aplicaciones deben realizarse durante los períodos de crecimiento activo y de expansión completa de las hojas.

Para controlar el (Árbol del cielo) *Ailanthus altissima*, haga una aplicación sobre tocones cortados de acuerdo con las instrucciones en esta sección usando una mezcla de rocío de 50% de Roundup Custom para uso acuático y terrestre y 10% de Arsenal.

NO HAGA LAS APLICACIONES SOBRE TOCONES CORTADOS CUANDO LAS RAICES DE LOS MATORRALES LEÑOSOS O ÁRBOLES DESEABLES PUEDEN ESTAR INJERTADAS A LAS RAICES DE LOS TOCONES CORTADOS. Algunos retoños, tallos o árboles pueden compartir el mismo sistema de raíces. Los árboles adyacentes de edad, altura y espaciado similares pueden tener raíces compartidas. Ya sean injertados o compartidos, es probable que se dañen tallos/árboles no tratados cuando se tratan uno o más árboles que comparten raíces entre sí.

8.3 Zonas de liberación herbácea y de coníferas

Este producto se puede usar para liberación de coníferas como rocío al voleo para control total o parcial o supresión de malezas herbáceas y árboles de madera dura indicados en la sección **TIPOS DE MALEZAS CONTROLADAS** de esta etiqueta. Úselo solamente en áreas donde se han establecido coníferas por más de un año, a menos que se indique lo contrario abajo. Este producto se puede aplicar como rocío directo o usando equipo

selectivo en lugares de coníferas y árboles de madera dura para forestación, incluyendo plantaciones de árboles de Navidad y viveros dedicados a la silvicultura.

Utilice un surfactante no iónico que esté indicado para aplicaciones desde arriba en liberación de coníferas. Consulte las dosis y otras declaraciones preventivas en la etiqueta del fabricante del surfactante. Si utiliza este producto sin un surfactante se reducirá el rendimiento del herbicida.

LA APLICACIÓN SE DEBE REALIZAR DESPUÉS DE LA FORMACIÓN DE LOS BROTES FINALES DE LAS CONIFERAS EN OTOÑO O ANTES DE COMENZAR LA HINCHAZÓN DE LOS BROTES EN PRIMAVERA.

Puede ocurrir daño a las coníferas tratadas para liberación, particularmente donde se superponen los patrones de rocío o se aplican las dosis más altas. El daño puede agravarse si se hacen las aplicaciones cuando las coníferas están en crecimiento activo, o cuando están en condiciones de estrés por sequía, inundaciones, siembra incorrecta, insectos, enfermedades o daño por animales.

Para liberación de las siguientes especies de coníferas fuera del sudeste de los Estados Unidos:

Douglas Fir, Abeto (Fir), Hemlock, Pinos*, Secuoya (Redwood) de California, Spruce

* Incluye todas las especies, con excepción de los pinos Loblolly, de hoja larga, de hoja corta o Slash.

Utilice de 1.5 a 3 pintas de este producto por acre como rocío al voleo.

Para liberación de Douglas Fir y especies de pino y spruce (abeto falso) al finalizar la primera temporada de crecimiento (excepto en California), este producto se puede usar en las proporciones más bajas indicadas de 1.5 a 2.5 pintas por acre. Antes de aplicar, asegúrese de que las coníferas se hayan endurecido bien. Antes de usarlo, asegúrese de que se haya probado bien el uso seguro del surfactante no iónico en el Douglas Fir.

Para liberación del Spruce (*especies de abeto falso*) en Maine, Michigan, Minnesota, New Hampshire y Wisconsin, se pueden usar hasta 4.5 pintas por acre de este producto para el control de especies de árboles y matorrales leñosos difíciles de controlar, y se debe aplicar después de la formación de los brotes finales de las coníferas en el otoño.

No se recomienda el uso de un surfactante para la liberación de especies de Hemlock o de Secuoyas de California. Si se usa un surfactante en grupos mezclados de coníferas se puede causar daño a estas especies.

Para liberación de las siguientes especies de coníferas en el sudeste de los Estados Unidos:

Pino Loblolly, pino Slash, pino blanco del este, pino de Virginia, pino de hoja corta, pino de hoja larga

Aplique de 2.25 a 3.75 pintas de este producto por acre como rocío al voleo durante finales del verano o comienzos de otoño después que los pinos se hayan endurecido.

Si realiza aplicaciones a finales de la primera temporada de crecimiento, use 1.5 pintas por acre de este producto.

MEZCLAS DE TANQUE: Este producto se puede mezclar en tanque con los siguientes productos para liberación herbácea y de coníferas. Cuando prepare mezclas de tanque, lea y siga cuidadosamente las instrucciones de la etiqueta, las declaraciones preventivas y toda la información contenida en las etiquetas de todos los productos utilizados. Utilice conforme con las declaraciones preventivas más restrictivas de cada producto en la mezcla.

Cuando se aplica según las instrucciones, este producto más los herbicidas residuales indicados brindan control post emergencia de las malezas anuales y control o supresión de las malezas perennes indicadas en esta etiqueta, y control residual de las malezas indicadas en la etiqueta del herbicida residual. Úselo solamente en las especies de coníferas indicadas en la etiqueta de ambos productos para rocío desde arriba.

atrazine
Arsenal Applicator Concentrate
Oust XP

Finales de verano y otoño, después de la formación de brotes latentes

Para la liberación de pino jack, pino blanco y spruce blanco, aplique de 1.5 a 3 pintas de este producto, más de 1 a 3 onzas de Oust XP por acre. Para pino blanco, prepare una mezcla de tanque con 1 a 1.5 onzas de Oust XP por acre.

Para liberación de coníferas de Douglas fir, utilice de 1.5 a 2.25 pintas de este producto, más de 2 a 6 onzas de concentrado para aplicadores Arsenal por acre. Para liberación de coníferas de balsam fir (abeto de Navidad) y red spruce, utilice 3 pintas de este producto, más de 1 a 2.5 onzas de concentrado para aplicadores Arsenal por acre.

Liberación herbácea

Para liberación herbácea en primavera y principios de verano de pino loblolly, pino de Virginia y pino de hoja larga, aplique de 12 a 18 onzas líquidas de este producto con 2 a 4 onzas de Oust XP.

Para liberación de Douglas fir a comienzos de primavera, antes de la hinchazón de los brotes, aplique 1.5 pintas de este producto, más 4 libras del ingrediente activo de atrazine por acre. Deje pasar una temporada de crecimiento completa antes de la aplicación. No agregue surfactantes a este tratamiento.

8.4 Preparación del lugar para forestación

Este producto puede ser utilizado para controlar total o parcialmente matorrales leñosos, árboles y malezas herbáceas en forestaciones, y preparar o crear claros para la vida silvestre en estos lugares y para mantener los caminos de las explotaciones forestales.

Este producto puede ser utilizado para preparar el lugar antes de plantar cualquier especie de árbol, como árboles de Navidad, eucaliptos, cultivos de árboles híbridos y viveros dedicados a la silvicultura.

Para aplicaciones usando diferentes tipos de equipos, consulte la tabla de PROPORCIONES DE APLICACIÓN en la sección **EQUIPO DE MANO** de esta etiqueta.

MEZCLAS DE TANQUE: Se pueden usar mezclas de tanque de este producto para aumentar el espectro de vegetación controlada en la preparación del lugar para forestación. Cuando prepare mezclas de tanque, lea y siga cuidadosamente las instrucciones de la etiqueta, las declaraciones preventivas y toda la información contenida en las etiquetas de todos los productos utilizados. Use conforme a las precauciones más restrictivas de cada producto en la mezcla.

NOTA: Para la preparación del lugar para forestación, asegúrese de que el producto para mezclar en tanque esté aprobado antes de plantar las especies deseadas. Respete las restricciones del intervalo de plantación.

Todas las proporciones recomendadas de este producto se pueden utilizar en una mezcla de tanque con los siguientes productos para la preparación de sitios de forestación.

Arsenal Applicators Concentrate	Garlon 3A
Chopper	Garlon 4
Chopper GEN2	Oust XP
Escort	

Para el control de malezas herbáceas, use las proporciones de mezcla de tanque más bajas. Para controlar grupos densos o difíciles de matorrales leñosos y árboles, utilice las proporciones de mayor concentración recomendadas en mezcla de tanque.

A menos que se especifique de otra manera en esta etiqueta, en etiquetas complementarias separadas o fichas técnicas publicadas por Monsanto, no aplique este producto como rocío desde arriba para liberación herbácea y de coníferas para forestación.

8.5 Áreas no cultivadas y áreas industriales

Aplique en áreas como aeropuertos, complejos de viviendas, centros comerciales, acequias, acequias secas, canales secos, cercas, bosques, campos de golf, terrenos industriales, depósitos de madera, zonas de manufactura, complejos de oficinas, parques, áreas de estacionamiento, zonas con tanques de petróleo e instalaciones de bombeo, vías de ferrocarril, áreas recreativas, áreas residenciales, bordes de carreteras, granjas de semillas de césped o tepes, escuelas, áreas de almacenamiento, subestaciones, zonas de servicios públicos, zonas de almacenes y zonas de manejo de vida silvestre.

Control general de malezas, recortado de bordes y suelo limpio de malezas

Este producto se puede usar en lugares no cultivados. Puede aplicarse con cualquiera de los equipos descritos en esta etiqueta. Este producto puede usarse para el recortado de bordes alrededor de objetos, para tratamiento localizado de vegetación no deseable y para eliminar las malezas no deseables que crecen en lechos de arbustos establecidos y plantaciones ornamentales. Este producto puede usarse antes de plantar un área con plantas ornamentales, flores, césped (tepes o semillas), o antes de colocar asfalto o de comenzar un proyecto de construcción.

Repita las aplicaciones de este producto según emerjan las malezas para mantener el suelo vacío.

MEZCLAS DE TANQUE: Este producto puede ser mezclado en el tanque con los productos siguientes.

Arsenal	Garlon 3A	Ronstar 50WP
atrazine*	Garlon 4	simazine*
Barricade 65WG	Goal 2XL	Surflan AS
Certainty®	Krovar I DF	Surflan WDG
Crossbow L	Landmark II	Telar DF
dicamba*	Landmark II MP	Transline
diuron*	Outrider®	Velpar DF
Endurance	Oust XP	Velpar L
Escort XP	Plateau	2,4-D*
Gallery 75DF	Poast	

* El usuario es responsable de asegurarse de que las mezclas de tanque con productos que contienen este ingrediente activo genérico pueden realizarse siempre y cuando dichos productos estén aprobados para su aplicación.

No aplique mezclas con dicamba por aire en California. Solo se pueden utilizar formulaciones de 2,4-D amina para la aplicación aérea en California.

Mezclas de tanque para control de matorrales

MEZCLAS DE TANQUE: Se pueden usar mezclas de tanque de este producto para aumentar el espectro de control para malezas herbáceas, matorrales leñosos y árboles. Cuando prepare mezclas de tanque, lea y siga cuidadosamente las instrucciones de la etiqueta, las declaraciones preventivas y toda la información contenida en las etiquetas de todos los productos utilizados. Use conforme a las declaraciones preventivas más restrictivas de cada producto en la mezcla. Para la mezcla de tanque, puede utilizarse cualquier cantidad de este producto que se encuentre dentro del rango indicado en la etiqueta.

Para el control de malezas herbáceas, use las proporciones dosis más bajas de mezcla de tanque. Para controlar grupos densos o difíciles de matorrales leñosos y árboles, utilice las proporciones más altas recomendadas.

NOTA: Para el tratamiento de recorte lateral, este producto puede utilizase solo o en una mezcla de tanque con Garlon 4.

Arsenal	Garlon 3A
Escort XP	Garlon 4

Segado químico – Perennes

Este producto inhibe los pastos perennes indicados en esta sección y sirve como sustituto de la siega. Utilice 6 onzas líquidas de este producto por acre para el tratamiento de festuca alta, festuca fina, orchardgrass, quackgrass o reed canarygrass. Utilice 5 onzas líquidas de este producto por acre para el tratamiento del Kentucky bluegrass. Aplique los tratamientos en 10 a 40 galones de solución de rocío por acre. Aplique después que los pastos hayan alcanzado el 75 por ciento del color verde en primavera o de 7 a 10 días después de cortado cuando haya suficiente recrecimiento para proporcionar una altura deseable para regular el crecimiento.

Use solo en lugares donde se puede tolerar cierto daño o decoloración temporal en pastos perennes.

Segado químico – Plantas anuales

Para suprimir el crecimiento de algunos pastos anuales, tales como ryegrass, cebada silvestre y avena silvestre que crecen en céspedes agrestes al borde de las carreteras u otras áreas industriales, aplique de 3 a 4 onzas líquidas de este producto en 10 a 40 galones de solución de rocío por acre. Las aplicaciones se deben realizar cuando los pastos anuales crezcan activamente y antes de que las cabezuelas se encuentren en la etapa de bota del desarrollo. Los tratamientos pueden perjudicar los pastos deseables.

Césped latente (durmiente)

Use este producto para controlar o suprimir muchas malezas anuales de invierno y festuca alta para la liberación eficaz de céspedes de bermudagrass y bahiagrass durmientes. Trate solamente cuando el césped esté durmiente y antes de reverdecer en la primavera.

Aplique de 6 a 48 onzas líquidas de este producto por acre. Aplique las proporciones recomendadas en 10 a 40 galones de agua por acre. Úselo solamente en áreas donde el bermudagrass o bahiagrass son deseables y en las que puede tolerarse un poco de daño o decoloración.

Los tratamientos en exceso de 12 onzas líquidas por acre, pueden dañar o retrasar el reverdecer en las áreas donde se hace mucho mantenimiento, como campos de golf y jardines. NO aplique mezclas de tanque de este producto más Oust XP u Outrider en áreas de césped donde se hace mucho mantenimiento. Para otros usos, vea la sección **BORDES DE LAS CARRETERAS** de esta etiqueta, que ofrece las proporciones para tratamientos de bermudagrass y bahiagrass latentes.

Bermudagrass de crecimiento activo

Este producto puede usarse para controlar total o parcialmente muchas malezas anuales y perennes para liberación eficaz de bermudagrass en crecimiento activo. NO aplique más de 12 onzas líquidas de este producto por acre en áreas de céspedes de alto mantenimiento. NO aplique mezclas de tanque de este producto más Oust XP u Outrider en áreas de césped donde se hace mucho mantenimiento. Para otros usos, vea la sección **BORDES DE LAS CARRETERAS** de esta etiqueta, que ofrece las proporciones para tratamientos de bermudagrass de crecimiento activo. Utilícelo solo en áreas donde puede tolerarse algún daño temporal o descoloración.

Renovación del césped, producción de semillas o tepes

Este producto controla la mayoría de la vegetación existente antes de la renovación del césped o de establecer céspedes cultivados para semilla o tepes. Para un control máximo de la vegetación existente, demore la siembra o cobertura de césped a fin de determinar si las partes de la planta que quedaron bajo tierra vuelven a crecer. Cuando sea necesario repetir el tratamiento, permita que las plantas se desarrollen lo suficiente antes de volver a tratar. Para controlar más eficientemente los pastos de estación cálida, como bermudagrass, se debe aplicar este producto en el verano o en el otoño. En lugares donde la vegetación existente esté creciendo y el césped esté bajo un programa de siega, aplique este producto después de omitir por lo menos un corte del césped para permitir un crecimiento suficiente a fin de que el rocío sea interceptado por las plantas.
No remueva la tierra ni las partes de la planta que estén bajo tierra antes del tratamiento. La labranza o las técnicas de renovación como corte vertical, perforación o rebanado deben esperar 7 días después de la aplicación a fin de permitir la absorción adecuada en las partes de la planta que estén bajo tierra.
Pueden sembrarse los céspedes deseados siguiendo los procedimientos anteriormente mencionados.
Puede utilizarse equipo de mano para el tratamiento en sitio de vegetación no deseada que crezca en el césped existente. Puede utilizarse equipo al voleo o de mano para controlar los restos de tepes u otra vegetación no deseada después de cosechar el tepe. No utilice el césped que se cultiva para la producción de semillas o tepes para alimentar animales durante 8 semanas después de la aplicación.

8.6 Manejo del hábitat

Restauración y mantenimiento de hábitats

Utilice este producto para controlar la vegetación exótica y otro tipo de vegetación no deseada en zonas naturales y donde se realiza manejo del hábitat, incluyendo zonas de estuarios y riberas, tierras de pastoreo y refugios para la vida silvestre. Pueden hacerse aplicaciones para permitir la recuperación de las especies de plantas nativas, antes de plantar dichas especies nativas deseables, y para otros requisitos similares de control de la vegetación de amplia efectividad. A fin de eliminar selectivamente ciertas plantas indeseables, se pueden hacer aplicaciones localizadas para controlar y mejorar el hábitat.

Parcelas para alimento de la vida silvestre

Este producto se puede utilizar como tratamiento a fin de preparar el lugar antes de sembrar parcelas para alimento de la vida silvestre. Después de aplicar este producto se puede sembrar cualquier especie de alimento para la vida silvestre o se puede permitir la repoblación de la zona con especies nativas. Si debe labrar para preparar un semillero, deje transcurrir 7 días de la aplicación antes de hacerlo a fin de permitir la absorción adecuada en las partes de la planta que estén bajo tierra.

8.7 Inyección de tallos huecos

Aplique este producto a través de dispositivos de inyección manuales para administrar las cantidades recomendables de este producto a las plantas con tallo hueco identificadas que crecen en cualquiera de los lugares acuáticos o no cultivados especificados en esta etiqueta. Para el control de las siguientes plantas de tallo hueco, utilice según las instrucciones más abajo:

Castorbean (*Ricinus communis*)
Inyecte 4 ml por planta de este producto en la parte inferior del tallo principal.

Hemlock, Poison (*Conium maculatum*)
Inyecte una caña de una hoja por planta 10 a 12 pulgadas por encima de la corona de la raíz con 5 ml de una solución al 5% v/v de este producto.

Hogweed, Giant (*Heracleum mantegazzianum*)
Inyecte una caña de una hoja por planta 12 pulgadas por encima de la corona de la raíz con 5 ml de una solución al 5% v/v de este producto.

Horsetail, Field (*Equisetum arvense*)
Inyecte un segmento por encima de la corona de la raíz con 0.5 ml de este producto por tallo. Use una jeringa pequeña que pueda medir esa dosis.

Iris, Yellow Flag (*Iris Pseudocorus*)
Use una tijera de podar para cortar los tallos de las flores de 8 a 9 pulgadas por encima de la corona de la raíz. Utilice una aguja hueca que se introduce en el centro del tallo y luego se extrae lentamente a medida que inyecta 0.5 ml de este producto en cada tallo.

Knotweed, Bohemian (*Polygonum bohemicum*), **Knotweed, Giant** (*Polygonum sachalinense*), and **Knotweed, Japanese** (*Polygonum cuspidatum*)
Inyecte 5 ml por tallo de este producto en el segundo o tercer entrenudo.

Reed, Common (*Phragmites australis*)
Inyecte 5 ml por tallo de una solución al 50% de este producto en el segundo o tercer internudo o en tallos recién cortados.

Reed, Giant (*Arundo donax*)
Inyecte 6 ml por tallo de este producto en el segundo o tercer entrenudo.

Thistle, Canada (*Cirsium arvense*)
Use una tijera de podar para cortar de 8 a 9 de las plantas más altas en la etapa de brotación. Utilice una aguja hueca que se introduce en el centro del tallo y luego se extrae lentamente a medida que inyecta 0.5 ml de este producto en cada tallo.

NOTA: Basándose en la dosis máxima de uso anual de glifosato para estas áreas no cultivadas, el total combinado para todas las aplicaciones no debe exceder los 8 cuartos de galón de este producto por acre. A razón de 5 ml por tallo, 8 cuartos de galón deben tratar aproximadamente 1500 tallos.

8.8 Inyección y chorro (matorrales leñosos y árboles)

Este producto puede aplicarse por inyección o chorro para el control total o parcial de matorrales leñosos y árboles. Aplique este producto usando equipo adecuado, que debe ser capaz de penetrar en el tejido viviente. Aplique el equivalente a 1 ml de este producto por cada 2 ó 3 pulgadas de diámetro del tronco a la altura del pecho (DBH en inglés). La mejor forma de hacerlo es aplicando una solución a una concentración del 50 al 100 por ciento de este producto, con un chorro continuo alrededor del árbol o en cortes espaciados uniformemente alrededor del árbol y por debajo del nivel de las ramas. A medida que el diámetro del árbol aumenta, se obtienen mejores resultados con el chorro continuo alrededor del árbol o en cortes espaciados muy cerca entre sí alrededor del árbol. Evite las aplicaciones que permiten el escurrimiento de material cuando se chorrea alrededor del árbol o sobre los cortes en árboles que tienen la facilidad de exudar savia de los cortes. En especies de este tipo, haga los cortes de manera oblicua a fin de producir el efecto de copa y use el producto a una concentración del 100 por ciento. Para obtener mejores resultados, la aplicación debe tener lugar durante períodos de crecimiento activo y después de la expansión completa de las hojas.

8.9 Plantas ornamentales, viveros y árboles de Navidad

Post-dirigido y recortado de bordes

Este producto se puede utilizar como un rocío post-dirigido alrededor de especies ornamentales leñosas establecidas, como arborvitae, azalea, boj, manzano silvestre, eucalipto, evónimo, abeto, douglas fir, jojoba, acebo (hollies), lilo, magnolio, arce, roble, álamo, alheña, pino, spruce y tejo. Este producto también se puede utilizar para

recortado de bordes alrededor de árboles, edificios, aceras y carreteras, plantas en macetas y otros objetos de viveros.

Las plantas deseables se pueden proteger de la solución de rocío usando pantallas o cubriéndolas con cartón o con algún otro material impermeable. ESTE PRODUCTO NO SE RECOMIENDA PARA ROCIARSE DESDE ARRIBA SOBRE PLANTAS ORNAMENTALES Y ÁRBOLES DE NAVIDAD. Se debe tener mucho cuidado para que el rocío, arrastre o niebla de este producto no hagan contacto con el follaje o la corteza de las especies ornamentales establecidas.

Preparación del terreno

Este producto puede usarse antes de plantar cualquier tipo de planta ornamental, de vivero o árboles de Navidad.

Aplicaciones con enjugador

Este producto se puede usar mediante aplicadores de mecha de esponja u otro tipo de aplicadores con enjugador adecuados, para controlar total o parcialmente la vegetación indeseable alrededor de eucaliptos o álamos establecidos. Consulte la sección **Equipo selectivo** de esta etiqueta para obtener mayor información sobre el uso adecuado de los aplicadores con enjugador.

Invernaderos/cobertizos

Este producto se puede usar para controlar las malezas que estén creciendo en o alrededor de los invernaderos y cobertizos. No debe haber vegetación deseable durante la aplicación y los equipos de ventilación deben estar apagados.

8.10 Parques, áreas recreativas y residenciales

Todas las instrucciones de la sección **Áreas no cultivadas y Áreas industriales** son válidas para los parques y áreas recreativas.

Este producto se puede usar en parques, áreas recreativas y residenciales. Puede aplicarse con cualquiera de los equipos descritos en esta etiqueta para recortado de bordes alrededor de árboles, cercas y caminos, alrededor de edificios, aceras y otros objetos en estos lugares. Este producto puede usarse para tratamiento localizado de vegetación no deseable o para eliminar las malezas no deseables que crecen en lechos de arbustos establecidos y plantaciones ornamentales. Este producto puede usarse antes de sembrar un área con plantas ornamentales, flores, césped (tepes o semillas), o antes de colocar asfalto o de comenzar un proyecto de construcción.

8.11 Vías de ferrocarril

Todas las instrucciones de la sección **Áreas no cultivadas y Áreas industriales** son válidas para las vías de ferrocarril.

Suelo vacío, balastos y bordes, cruces y tratamiento localizado

Este producto puede usarse para mantener el suelo limpio de malezas en balastos y bordes de las vías de ferrocarril. Repita las aplicaciones de este producto según emerjan las malezas para mantener el suelo vacío. Este producto puede usarse para controlar las malezas altas y mejorar la línea visual en los cruces de ferrocarril y reducir la necesidad de segar a lo largo de las servidumbres de vía. Para aplicaciones en los cruces, pueden usarse hasta 80 galones de solución de rocío por acre.

MEZCLAS DE TANQUE: Este producto se puede mezclar en un tanque con los siguientes productos para tratamientos en balasto, bordes, tratamiento cruzado y suelo limpio, siempre que éstos estén aprobados para el área de uso deseada.

Arsenal	Hyvar X-L	Spike 80DF
atrazine*	Krovar I DF	Telar DF
dicamba*	Oust XP	Transline
Escort XP	Outrider	Velpar DF
Garlon 3A	Sahara DG	Velpar L
Garlon 4	simazine*	2,4-D*
Hyvar X		

*Pueden realizarse mezclas de tanque con productos que contengan este ingrediente activo siempre y cuando dichos productos estén aprobados para su aplicación. El usuario es responsable de garantizar que en la etiqueta del producto utilizado en la mezcla estén permitidas las aplicaciones específicas cuando se realicen mezclas de tanque con un ingrediente activo genérico.

Control de matorrales

Este producto se puede usar para controlar matorrales leñosos y árboles en las servidumbres de vías de ferrocarril. Aplique de 3 a 8 cuartos de galón de este producto por acre para aplicaciones diseminadas, usando boquillas tipo brazo o sin brazo. Pueden usarse hasta 80 galones de solución de rocío por acre. Aplique una solución de 0.75 a 1.5 por ciento de este producto cuando haga aplicaciones de rocío para mojar del alto volumen. Aplique una solución de 4 a 8 por ciento de este producto cuando haga aplicaciones de rocío dirigido de bajo volumen para tratamientos localizados.

MEZCLAS DE TANQUE: Este producto se puede mezclar en un tanque con los siguientes productos para un mejor control de matorrales leñosos y árboles, siempre y cuando estos productos estén aprobados para el área de uso deseada.

Arsenal	Krenite	Transline
Escort XP	Telar DF	Vanquish
Garlon 3A	Tordon K	Velpar DF
Garlon 4	Tordon 22K	Velpar L

Puede obtener instrucciones adicionales en la sección **Áreas no cultivadas y Áreas industriales** bajo Mezclas de tanque para control de matorrales.

Mantenimiento de Bermudagrass

Este producto puede usarse para controlar total o parcialmente muchas malezas anuales y perennes para el mantenimiento eficaz de bermudagrass en crecimiento activo. Aplique de 12 a 36 onzas líquidas de este producto en un máximo de 80 galones de solución de rocío por acre. Para tratar malezas anuales que tengan menos de 6 pulgadas de altura (o el largo de los tallos), use las proporciones más bajas. Use la proporción más alta a medida que las malezas aumenten de tamaño o cuando estén cerca de la floración o de la formación de semillas. Estas proporciones también controlan parcialmente las siguientes especies perennes:

Bahiagrass	Fescue, tall	Trumpetcreeper
Bluestem, silver	Johnsongrass	Vaseygrass

MEZCLAS DE TANQUE: Este producto puede ser mezclado con Oust XP. Si se mezcla en tanques, no use más de 12 a 36 onzas líquidas de este producto con 1 a 2 onzas de Oust XP por acre. Para tratar malezas anuales listadas en este etiqueta y en las etiqueta de Oust XP, que tengan menos de 6 pulgadas de altura (o el largo de los tallos), use las proporciones más bajas de cada producto. Use la proporción más alta a medida que las malezas anuales aumenten de tamaño o cuando estén cerca de la floración o de la formación de semillas. Estas proporciones también controlan parcialmente las siguientes malezas perennes:

Bahiagrass	Dock, curly	Trumpetcreeper
Blackberry	Dogfennel	Vaseygrass
Bluestem, silver	Fescue, tall	Vervain, blue
Broomsedge	Johnsongrass	
Dallisgrass	Poorjoe	
Dewberry	Raspberry	

Úselo solamente en bermudagrass que esté bien establecido. Como resultado del tratamiento, el bermudagrass puede sufrir deterioro, pero volverá a crecer si se riega. No se recomienda repetir el tratamiento en la misma estación, ya que esto puede ocasionar daños graves al bermudagrass.

8.12 Bordes de carreteras

Todas las instrucciones de la sección **Áreas no cultivadas y Áreas industriales** son válidas para los bordes de las carreteras.

Tratamiento de bordes

Aplique este producto en los bordes de las carreteras como rociadores con brazos, rociadores con brazos y pantallas, boquillas concentradas de alto volumen, equipo de mano y equipos similares.

Barandas y otros obstáculos para la siega

Este producto puede ser usado para controlar las malezas que crecen debajo de las barandas y alrededor de la señalización y otros objetos en los bordes de las carreteras.

Tratamiento localizado

Este producto puede ser usado como tratamiento localizado para controlar la vegetación no deseada que crece a lo largo de los bordes de las carreteras.

MEZCLAS DE TANQUE: Este producto puede mezclarse en tanque con los siguientes productos para tratamientos de bordes, barandas, localizados y de suelo limpio siempre y cuando dichos productos estén aprobados para su uso en dichos sitios. Consulte las etiquetas de este producto y siga cuidadosamente las declaraciones preventivas y toda la información en las etiquetas de todos los herbicidas utilizados. Use conforme a las declaraciones preventivas más restrictivas de cada producto en la mezcla.

atrazine*	Landmark MP	Sahara DG
Crossbow L	Landmark XP	simazine*
dicamba*	Oust XP	Surflan AS
diuron*	Outrider	Surflan WDG
Escort XP	pendimethalin*	Telar DF
Endurance	Plateau	Velpar DF
Gallery 75 DF	Plateau DG	Velpar L
Krovar I DF	Poast	2,4-D*
Landmark II MP	Ronstar 50 WSP	

* Pueden realizarse mezclas en tanque con productos que contienen este ingrediente activo genérico siempre y cuando dichos productos estén aprobados para su aplicación. El usuario es responsable de asegurarse que la mezcla de productos permite la aplicación específica.

Liberación de Bermudagrass y Bahiagrass

Aplicaciones cuando estén latentes (durmientes)

Este producto puede usarse para controlar total o parcialmente muchas malezas anuales de invierno y festuca alta para el mantenimiento eficaz de bermudagrass y bahiagrass latentes. Trate solamente cuando el césped esté durmiente y antes de reverdecer en la primavera. Este producto puede mezclarse en tanque con el herbicida Outrider u Oust XP para el control residual. Las mezclas de tanque de este producto con Oust XP pueden retrasar el reverdecer.

Para obtener mejores resultados con malezas anuales de invierno, haga el tratamiento cuando las plantas estén en una etapa temprana de crecimiento (menos de 6 pulgadas de altura) después de que la mayoría haya germinado. Para obtener mejores resultados con festuca alta, haga el tratamiento cuando la festuca esté en o después de su etapa de 4 a 6 hojas.

Aplique de 6 a 48 onzas líquidas de este producto en una mezcla de tanque con 0.75 a 1.33 onzas de herbicida Outrider por acre. Lea y siga todas las instrucciones de la etiqueta del herbicida Outrider.

MEZCLAS DE TANQUE: Aplique de 6 a 48 onzas líquidas de este producto por acre, solo o en mezcla de tanque con 0.25 a 1 onza de Oust XP por acre. Aplique las dosis recomendadas en la etiqueta en 10 a 40 galones de agua por acre. Úselo solamente en áreas donde el bermudagrass o bahiagrass son deseables y en las que puede tolerarse un poco de daño o decoloración. Para evitar que el reverdecer se retrase y para minimizar el daño, no agregue más de 1 onza de Oust XP por acre sobre bermudagrass y no más de 0.5 onzas de Oust XP por acre sobre bahiagrass, y evite el tratamiento cuando estos pastos se encuentren en estado semilatente.

Bermudagrass de crecimiento activo

Este producto puede usarse para controlar total o parcialmente muchas malezas anuales y perennes para liberación eficaz de bermudagrass en crecimiento activo. Aplique de 12 a 36 onzas líquidas de este producto en 10 a 40 galones de solución de rocío por acre. Para tratar malezas anuales que tengan menos de 6 pulgadas de altura (o el largo de los tallos), use las proporciones más bajas. Use la proporción más alta a medida que las malezas aumenten de tamaño o cuando estén cerca de la floración o de la formación de semillas. Estas proporciones también controlan parcialmente las siguientes especies perennes:

Bahiagrass	Fescue, tall	Trumpetcreeper
Bluestem, silver	Johnsongrass	Vaseygrass

MEZCLAS DE TANQUE: Este producto puede ser mezclado en tanque con el Outrider para el control total o parcial de Johnsongrass y otras malezas indicadas en la etiqueta del Outrider. Use de 6 a 24 onzas líquidas de este producto con 0.75 a 1.33 onzas de Outrider. Utilice las proporciones más altas de ambos productos para el control de malezas perennes o anuales que tengan una altura superior a 6 pulgadas.

Este producto puede ser mezclado con Oust XP. Si se mezcla en tanques, no use más de 12 a 24 onzas líquidas de este producto con 1 a 2 onzas de Oust XP por acre. Para tratar malezas anuales listadas en este etiqueta y en las etiqueta de Oust XP, que tengan menos de 6 pulgadas de altura (o el largo de los tallos), use las proporciones más bajas de cada producto. Use la proporción más alta a medida que las malezas anuales aumenten de tamaño o cuando estén cerca de la floración o de la formación de semillas. Estas proporciones también controlan parcialmente las siguientes malezas perennes:

Bahiagrass	Dock, curly	Poorjoe
Bluestem, silver	Dogfennel	Trumpetcreeper
Broomsedge	Fescue, tall	Vaseygrass
Dallisgrass	Johnsongrass	Vervain, blue

Úselo solamente en bermudagrass que esté bien establecido. Como resultado del tratamiento, el bermudagrass puede sufrir deterioro, pero volverá a crecer si se riega. No se recomienda repetir el tratamiento de mezcla de tanque en la misma estación, ya que esto puede ocasionar daños graves al bermudagrass.

Bahiagrass de crecimiento activo

Para suprimir el crecimiento vegetativo e inhibir la formación de semillas de bahiagrass durante aproximadamente 45 días, aplique 4 onzas líquidas de este producto en 10 a 40 galones de agua por acre. Aplique de 1 a 2 semanas después de reverdecer completo o después de cortar a una altura uniforme de 3 a 4 pulgadas. Esta aplicación debe realizarse antes de la emergencia de las semillas.

Para suprimir hasta por 120 días, aplique 3 onzas líquidas de este producto por acre, y a continuación una aplicación de 2 a 3 onzas líquidas por acre unos 45 días más tarde. No haga más de 2 aplicaciones al año.

Este producto se puede utilizar para el control total o parcial de Johnsongrass y otras malezas indicadas en la etiqueta de Outrider, en bahiagrass en crecimiento activo. Use de 1.5 a 3.5 onzas líquidas de este producto con 0.75 a 1.33 onzas de Outrider. Utilice las proporciones más altas de ambos productos para el control de malezas perennes o anuales que tengan una altura superior a 6 pulgadas. Utilice solo en bahiagrass bien establecido.

Se puede utilizar la mezcla de tanque de este producto con Oust XP. Aplique 4 onzas líquidas de este producto con 1/4 onzas de Oust XP por acre, 1 a 2 semanas después de la primera siega de la primavera. Haga solamente una aplicación al año.

8.13 Sitios de servicios públicos

Este producto puede ser utilizado a lo largo de servidumbres de paso de energía eléctrica, conductos y teléfonos y en otros lugares asociados con estas servidumbres de paso, como subestaciones, bordes de carreteras, vías de ferrocarril o servidumbres de paso similares para servicios públicos. Úselo para preparar o establecer zonas de reserva de vida silvestre dentro de estos sitios, mantener los caminos de acceso y para el recorte lateral a lo largo de las servidumbres de paso.

MEZCLAS DE TANQUE: Se pueden usar mezclas de tanque de este producto para aumentar el espectro de control para malezas herbáceas, matorrales leñosos y árboles. Para la mezcla de tanque puede utilizarse cualquier cantidad de este producto que se encuentre dentro del rango indicado en la etiqueta.

Para el control de malezas herbáceas, use las proporciones más bajas de mezcla en tanque. Para controlar grupos densos o difíciles de matorrales leñosos y árboles, utilice las proporciones más altas recomendadas.

NOTA: Para el tratamiento de recorte lateral, este producto puede utilizase solo o en una mezcla de tanque con Garlon 4.

Arsenal	Krenite	Surflan AS
atrazine*	Krovar I DF	Surflan WDG
dicamba*	Oust XP	Telar DF
diuron*	Outrider	Transline
Endurance	pendimethalin*	Vanquish
Escort XP	Plateau	Velpar DF
Garlon 3A**	Sahara DG	Velpar L
Garlon 4	simazine*	2,4-D*

* Pueden realizarse mezclas de tanque con productos que contienen este ingrediente activo genérico siempre y cuando dichos productos estén aprobados para su aplicación. El usuario es responsable de asegurarse que la mezcla de productos permita la aplicación específica.

**Asegúrese de mezclar bien el Garlon 3A con agua según las instrucciones antes de agregar este producto. Para evitar problemas de incompatibilidad de rocío, agite la mezcla del rocío en el momento que agregue este producto.

Suelo limpio y recortado de bordes

Este producto puede ser utilizado en áreas de servicios públicos y subestaciones para el mantenimiento del suelo limpio, el recortado de bordes alrededor de objetos, y el tratamiento localizado de vegetación no deseable, así como para eliminar las malezas no deseables que crecen en lechos de arbustos establecidos o plantaciones ornamentales. Este producto puede utilizarse antes de sembrar un área de servicios públicos con plantas ornamentales, flores y césped (panes de césped o semillas) o antes de comenzar un proyecto de construcción.

Repita las aplicaciones de este producto según emerjan las malezas para mantener el suelo vacío.

MEZCLAS DE TANQUE: Mezcle en tanque con los siguientes productos. Consulte las etiquetas de cada producto para los sitios y proporciones de aplicación aprobados. Lea y siga cuidadosamente las declaraciones preventivas toda la información en las etiquetas de todos los herbicidas utilizados. Use conforme a las declaraciones preventivas más restrictivas de cada producto en la mezcla.

Arsenal	Garlon 3A	Poast
atrazine*	Garlon 4	Ronstar 50WP
Barricade 65WG	Goal 2XL	simazine*
Certainty	Krovar I DF	Surflan AS
Crossbow L	Landmark II MP	Surflan WDG
dicamba *	Landmark II	Telar DF
diuron*	Outrider	Transline
Endurance	Oust XP	Velpar DF
Escort XP	pendimethalin*	Velpar L
Gallery 75DF	Plateau	2,4-D*

*Pueden realizarse mezclas de tanque con productos que contienen este ingrediente activo genérico siempre y cuando dichos productos estén aprobados para su aplicación. El usuario es responsable de asegurarse que la mezcla de productos permita la aplicación específica.

9.0 PASTURAS Y TIERRAS DE PASTOREO

9.1 Pasturas

CULTIVOS CLASIFICADOS: Bahiagrass, Bermudagrass, Bluegrass, Brome, Fescue, Guineagrass, Kikuyugrass, Orchardgrass, Pangola grass, Ryegrass, Timothy, Wheatgrass.

Antes de sembrar, pre emergencia, renovación de pasturas

Este producto se puede aplicar antes de la siembra o emergencia de pastos para forraje. Además, este producto se puede utilizar para controlar especies de pasturas perennes indicadas en esta etiqueta antes de resembrar.

Si las proporciones de aplicación totales equivalen a 4.5 pintas por acre o menos, no se requiere período de espera entre el tratamiento y la utilización como alimento o pastoreo del ganado. Si la proporción es mayor de 4.5 pintas por acre, retire el ganado doméstico antes de aplicar y espere 8 semanas después de haber efectuado la aplicación para utilizar como pastura o para cosechar.

Tratamiento localizado, aplicaciones de enjugado por encima

Se puede aplicar este producto como tratamiento localizado o con aplicadores con enjugador en pasturas. Se pueden hacer aplicaciones en la misma área con intervalos de 30 días.

Para tratamientos localizados o métodos de aplicación de enjugado en los que se utilicen dosis de 4.5 pintas por acre o menos, se puede tratar todo el campo o una parte. Cuando se realicen tratamientos localizados o con aplicadores con enjugador utilizando dosis superiores a los 4.5 pintas por acre, no se podrá tratar más de 10 por ciento del total de la pastura cada vez. Para lograr el mejor rendimiento, retire el ganado doméstico antes de la aplicación y espere 7 días después de la aplicación antes de permitir el pastoreo del ganado o cosechar.

Control de malezas post emergencia (Tratamientos al voleo)

Este producto se puede aplicar en pasturas para suprimir el crecimiento competitivo y la producción de semillas de malezas anuales y vegetación no deseable. Para aplicaciones selectivas con equipo de rocío al voleo, aplique 9 a 12 onzas líquidas de este producto por acre al comenzar la primavera antes de que los pastos perennes deseables comiencen la actividad e inicien el crecimiento vegetativo. Se pueden efectuar aplicaciones al finalizar el otoño después de que los pastos perennes lleguen al período de inactividad.

Se producirá cierta atrofia de los pastos perennes si las aplicaciones al voleo se realizan cuando las plantas están activas. No se necesita período de espera entre la aplicación

y el pastoreo o para cosechar como alimento. El uso de proporciones mayores causará reducciones en el grupo de plantas. No aplique más de 4.5 pintas por acre por año en pastos de pastura, excepto en casos de renovaciones. Si debe resembrar debido a una severa reducción en el grupo de plantas, espere 30 días después de la aplicación para sembrar cualquier cultivo que no esté indicado en esta etiqueta.

9.2 Tierras de pastoreo

Este producto controla o inhibe muchas malezas anuales que crecen en tierras de pastoreo de pastos perennes de estaciones fría y cálida.

Para controlar satisfactoriamente e impedir la invasión de malezas de pastos anuales en tierras de pastoreo resulta imprescindible prevenir la producción de semillas de malezas. La repetición de aplicaciones en años subsiguientes debería eliminar la mayor parte de las semillas viables.

Se deberá demorar la utilización de las superficies tratadas como pastura para alentar el crecimiento de las plantas perennes deseables. Se alentará una transición satisfactoria si se permite la floración y el resembrado de las plantas perennes deseables en la zona tratada.

Aplique de 9 a 12 onzas líquidas de este producto por acre para controlar o inhibir muchas malezas, incluidas downy brome, cheatgrass, rye (centeno) para cereal y jointed goatgrass en tierras de pastoreo. Aplique cuando la mayoría de las plantas de brome se encuentren en la etapa de floración temprana y antes de que las plantas, incluidas las cabezuelas, cambien de color. Si permite el crecimiento secundario de malezas en la primavera después de las lluvias reducirá aún más la reserva de semillas y alentará la conversión del pasto perenne en lugares con malezas. Se recomienda realizar una aplicación en otoño en aquellas zonas donde la humedad en primavera es habitualmente limitada y la germinación de otoño permite el crecimiento de malezas.

En el caso de plantas de medusahead, aplique 12 onzas líquidas de este producto por acre en la etapa de 3 hojas. La demora de la aplicación después de esta etapa causará un control inferior o inaceptable. El quemado controlado puede ser útil para eliminar la capa seca superficial producida por tallos de gramíneas en descomposición lenta antes de la aplicación. Permita que las plantas broten nuevamente antes de rociar después de haber quemado. Puede ser necesario repetir las aplicaciones en años subsiguientes para eliminar el banco de semillas antes de restablecer los pastos perennes deseables en tierras de pastoreo dominadas por medusahead.

Se podría producir una ligera decoloración de los pastos deseables pero éstos reverdecerán y volverán a crecer en tierra húmeda a medida que desaparezcan los efectos de este producto. No utilice sulfato de amonio cuando rocíe pastos de tierras de pastoreo con este producto. No se requiere período de espera entre el tratamiento y la utilización como alimento o pastura para el ganado.

10.0 APLICACIONES EN CULTIVOS

10.1 CÍTRICOS

Para usarse en Florida y Texas en Calamondin, Chironja, Cidro (citron), Híbridos Cítricos, Toronja, Kumquat, Limón, Lima, Mandarina (tangerine), Naranjas (todas), Pummelo, Mandarina Satsuma, Tangelo (ugli), Tangor.

Este producto se puede aplicar como rocío al voleo antes de sembrar (preparación del lugar), en medios de hileras (entre árboles, arbustos o enredaderas), franjas (en las hileras de árboles, arbustos o enredaderas), rociadores con pantalla, aplicaciones con enjugadores, rocío dirigido o tratamiento localizado.

Se pueden realizar aplicaciones con equipo con brazos, aplicadores por goteo controlado (CDA), rociadores con pantalla, bastones de mano y de alto volumen, lanzas, pistolas para huertos o con aplicadores de enjugadores, excepto como se indique.

Las siguientes instrucciones son específicas para Florida y Texas.

Para quemar o controlar las malezas indicadas abajo, aplique las proporciones recomendadas de este producto en 3 a 30 galones de agua por acre. Cuando la maleza tiene follaje denso, utilice de 10 a 30 galones de agua por acre.

Para goatweed, aplique de 3 a 4.5 pintas de este producto por acre. Aplique en 20 a 30 galones de agua por acre cuando las plantas están en crecimiento activo. Use 3 pintas por acre cuando las plantas tengan menos de 8 pulgadas de altura, y 4.5 pintas por acre cuando las plantas tengan más de 8 pulgadas de altura. Si la goatweed tiene más de 8 pulgadas de altura, agregar Krovar I o Karmex puede mejorar el control. Consulte las etiquetas de los productos individuales para información específica sobre cultivos, dosis, restricciones geográficas y declaraciones preventivas.

Malezas perennes:

S = Supresión B = Quema PC = Control parcial C = Control

ROUNDUP CUSTOM PARA USO ACUÁTICO Y TERRESTRE PROPORCIÓN POR ACRE

ESPECIES DE MALEZAS	1.5 PT	3 PT	4.5 PT	7.5 PT
Bermudagrass	B	--	PC	C
Guineagrass				
Texas y Florida Ridge	B	C	C	C
Florida Flatwoods	--	B	C	C
Paragrass	B	C	C	C
Torpedograss	S	--	PC	C

Permita como mínimo 1 día entre la última aplicación y la cosecha de cultivos cítricos. Para huertos de cidro (citron), aplique solamente como rocíos dirigidos.

10.2 Caña de azúcar

Este producto puede aplicarse en barbecho, antes de sembrar, pre emergencia o al momento de sembrar usando rociadores con capucha, rociadores con pantalla o aplicación con enjugador en medios de hileras, como tratamiento después de la cosecha, como tratamiento localizado o tratamiento foliar para regular el crecimiento de las plantas.

Antes de sembrar, pre emergencia, al momento de sembrar

Aplique este producto en o alrededor de los cultivos de caña de azúcar o en los campos antes de la emergencia de las cañas. No aplique a la vegetación en o alrededor de acequias, canales o estanques que contengan agua para riego.

Tratamiento localizado

Aplique este producto como tratamiento localizado en caña de azúcar. Para el control de la caña de azúcar espontánea o enferma, prepare una solución de 0.75 por ciento de este producto en agua y rocíe hasta mojar el follaje de la vegetación a controlar. La caña de azúcar espontánea o enferma debe tener por lo menos 7 hojas nuevas. Evite el contacto del rocío con las plantas de caña sanas porque puede causar daños graves o destruirlas. No utilice el follaje de la caña de azúcar tratada para alimentar animales después de la aplicación.

Tratamientos de barbecho

Este producto se puede utilizar como sustituto de labranza en campos en barbecho entre cultivos de caña de azúcar. Este producto también puede utilizarse para eliminar el último rastrojo de retoños de caña. Para quitar los últimos rastrojos de retoños de caña aplique de 6 a 7.5 pintas de este producto por acre en 10 a 40 galones de agua por acre a los nuevos brotes de al menos 7 nuevas hojas. Para labrar, deje transcurrir un lapso de 7 o más días después de la aplicación. Puede usar equipo de aplicación aérea. Pueden hacerse aplicaciones de hasta 4.5 pintas por acre con aplicación aérea en zonas en barbecho cuando hay suficiente zona de transición para evitar lesiones debido al arrastre a cultivos adyacentes. Se pueden emplear mezclas de tanque con 2,4-D y dicamba.

Rociadores con capucha

Aplique este producto usando rociadores con capucha para controlar las malezas entre las hileras de caña de azúcar. Consulte la sección **EQUIPOS Y TÉCNICAS PARA LA APLICACIÓN** de esta etiqueta para obtener instrucciones de uso adicionales.

No permita el contacto de las malezas tratadas con el cultivo. Las gotas, la niebla, la espuma o las salpicaduras de la solución de herbicida que se depositan en la vegetación deseable pueden causar decoloración, atrofia o destrucción. Este daño es responsabilidad exclusiva de la persona encargada de la aplicación del producto.

Tratamiento foliar para regular el crecimiento de las plantas

No siembre en cultivos subsiguientes aparte de los siguientes durante 30 días después de la aplicación: Maíz (todos), soya, sorgo (millo), algodón, alfalfa, frijoles (todos), pasto para forraje, papas (irlandesas, dulces), trigo.

Cuando se aplica según las instrucciones en las condiciones descritas, este producto acelerará la maduración y extenderá el período de nivel alto de sacarosa en la caña de azúcar. Es eficaz en la caña de azúcar tanto de bajo tonelaje como de gran tonelaje. Como resultado de la desecación de la hoja, se puede esperar mejor quema de los desechos. De 2 a 3 semanas después de la aplicación, este producto puede causar que las hojas pasen de un ligero color amarillento a marrón pronunciado y se sequen, y los entrenudos superiores se acorten; puede morir el eje. La mayor parte del aumento de sacarosa se concentra en los nódulos superiores del tallo de la caña tratada. Para recuperar la mayor cantidad de azúcar donde se practica el descopado, durante la cosecha, pode en la base de la cuarta hoja. Antes de la aplicación, consulte con la autoridad de caña de azúcar en su estado o con su representante local de Monsanto acerca del grado de respuesta de sacarosa anticipado de la variedad de caña de azúcar a tratar.

Vea lo siguiente para las proporciones y los tiempos de aplicación en el estado donde se harán las aplicaciones. **NOTA:** Al tratar caña de azúcar bajo condiciones de maduración adversas, o cuando trate variedades menos receptivas, utilice la proporción más elevada dentro del rango recomendado.

FLORIDA—Aplique de 6 a 14 onzas líquidas de este producto por acre de 3 a 5 semanas antes de la cosecha de la ÚLTIMA CAÑA SOCA SOLAMENTE.

HAWAII—Aplique de 10 a 24 onzas líquidas de este producto por acre de 4 a 10 semanas antes de la cosecha.

LOUISIANA—Aplique de 4 a 14 onzas líquidas de este producto por acre de 3 a 7 semanas antes de la cosecha de CAÑA SOCA SOLAMENTE.

PUERTO RICO—Aplique 6 onzas líquidas de este producto por acre de 3 a 5 semanas antes de la cosecha de CAÑA SOCA SOLAMENTE.

TEXAS—Aplique de 6 a 14 onzas líquidas de este producto por acre de 3 a 5 semanas antes de la cosecha de CAÑA SOCA SOLAMENTE.

La aplicación de este producto puede iniciar el desarrollo de los ojos en los retoños. Este producto no puede aumentar el contenido de sacarosa de la caña de azúcar en condiciones de buena maduración natural. No aplique a la caña de azúcar que se cosechará para la semilla. No utilice el forraje de la caña de azúcar tratada para alimentar animales después de la aplicación.

10.3 Tratamientos de barbecho químico

Aplique este producto durante intervalos de barbecho que preceden a la siembra, antes de sembrar o trasplantar, al momento de sembrar o pre emergencia de los cultivos vegetales.

Al aplicar este producto antes de trasplantar o de la siembra directa de cultivos vegetales en mantillo plástico, hay que asegurarse de eliminar los residuos de este producto del

plástico antes de sembrar para evitar daños al cultivo. Los residuos se pueden eliminar con una sola aplicación de agua de 0.5 pulgadas, ya sea por lluvia o con un sistema de riego por aspersión. Asegúrese de que el agua del enjuague salga del mantillo plástico y no entre en los agujeros para trasplantar. Las aplicaciones realizadas en la emergencia provocarán daños o serán fatales para las plántulas emergidas.

Evite el contacto de este herbicida con follaje, brotes verdes o tallos, cortezas, raíces expuestas (incluidas las que emergen del mantillo plástico) o frutos de cultivos, ya que podría ocasionar daños severos o destrucción de los cultivos. Las aplicaciones después de la cosecha o en barbecho deberán realizarse por lo menos 30 días antes de sembrar cualquier cultivo que no se mencione en la etiqueta.

10.4 Producción de panes de césped o panes de césped comercial

Antes de sembrar, pre emergencia, al momento de sembrar, renovación, preparación del lugar

Este producto controla la mayoría de la vegetación existente antes de la renovación del césped o de establecer céspedes cultivados para semilla o tepes. Realice las aplicaciones antes, durante o después de sembrar o para renovación. Para lograr máximo control de la vegetación existente, demore la siembra para determinar si se produce algún crecimiento de partes de plantas subterráneas que no fueron alcanzadas por el tratamiento. En lugares donde la vegetación existente esté creciendo y el césped esté bajo un programa de siega, aplique este producto después de omitir por lo menos un corte del césped para permitir un crecimiento suficiente a fin de que el rocío sea interceptado por las plantas. Cuando sea necesario repetir el tratamiento, permita que las plantas se desarrollen lo suficiente antes de volver a tratar. Para pastos de estación cálida, como bermudagrass, las aplicaciones en verano u otoño brindan el mejor control. Se pueden utilizar equipos al voleo para controlar restos de tepes o de otra vegetación no deseada después de cosechar los tepes.

No remueva la tierra ni las partes de la planta que estén bajo tierra antes del tratamiento. La labranza o las técnicas de renovación como corte vertical, perforación o rebanado deben esperar 7 días después de la aplicación a fin de permitir la absorción adecuada en las partes de la planta que estén bajo tierra. Si las dosis de aplicación ascienden a 72 onzas líquidas por acre o menos, no se requiere un período de espera entre el tratamiento y la alimentación o pastoreo del ganado. Si la proporción es mayor de 4.5 pintas por acre, retire el ganado doméstico antes de aplicar y espere 8 semanas después de haber efectuado la aplicación para utilizar como pastura o para cosechar. Para todos los cultivos no indicados en esta etiqueta, las aplicaciones se deben realizar al menos 30 días antes de sembrar. Las aplicaciones deben efectuarse antes de la emergencia del cultivo para evitar daños.

Rociadores con pantalla

Aplique de 1.5 a 4.5 pintas de este producto en 10 a 20 galones de agua por acre para controlar las malezas entre las hileras de semilla para pasto. La siembra uniforme en hileras rectas facilita las aplicaciones con rociador con pantalla. Se obtienen mejores resultados cuando el cultivo de semilla de pasto es suficientemente pequeño como para pasar con facilidad por las pantallas de protección. Para instrucciones adicionales, vea **Aplicadores con pantalla y con capucha** en la sección **Equipo selectivo.**

Cualquier tipo de contacto de este producto con vegetación que no se desea incluir en el tratamiento podría causar daño. Este daño es responsabilidad exclusiva de la persona encargada de la aplicación del producto.

Aplicaciones con enjugador por la parte superior

Los aplicadores se deben ajustar de manera que el punto de contacto del enjugador esté al menos 2 pulgadas por encima de la vegetación deseable. Las malezas deben tener al menos 6 pulgadas de altura más que la vegetación deseable. Se pueden obtener mejores resultados cuando se expone una mayor cantidad de la maleza a la solución de herbicida. Las malezas sin contacto con la solución de herbicida no serán afectadas. Esto puede ocurrir en lugares donde las malezas están muy concentradas, cuando la infestación es grave o donde la altura de las malezas es variada, lo que no permite que todas entren en contacto con el herbicida. En estas instancias, tal vez sea necesario repetir el tratamiento. Para instrucciones adicionales, vea **Aplicadores con enjugador** en la sección **Equipo selectivo.**

El contacto de la solución de herbicida con vegetación deseable puede provocar daño o destrucción.

Tratamiento localizado

Aplique este producto como una solución al 1 por ciento antes del despunte de los pastos cultivados para semilla. Los cultivos que reciban el rocío en el área tratada morirán. Intente evitar el arrastre o rocío fuera del área que no sea el objetivo por la misma razón. Se pueden utilizar equipos de mano para controlar restos de tepes o de otra vegetación no deseada después de cosechar los tepes.

Creación de hileras en ryegrass anual

Utilice de 12 a 24 onzas líquidas de este producto por acre. Use proporciones superiores cuando el ryegrass tiene una altura de más de 6 pulgadas. Se obtienen mejores resultados cuando las aplicaciones se realizan antes de que las plantas de ryegrass alcancen 6 pulgadas de alto.

Configure las alturas de las boquillas de modo que permita el espacio deseado entre hileras y al mismo tiempo evite que gotas, rocíos finos o arrastre del rocío entre en contacto con las plantas de ryegrass no tratado. Se recomienda utilizar boquillas de baja presión o boquillas de goteo diseñadas para concentrar la aplicación en una franja estrecha.

El cultivador asume toda la responsabilidad por la pérdida de cultivos a causa de la aplicación indebida de este producto.

11.0 APLICACIONES ALREDEDOR DEL ESTABLECIMIENTO

11.1 Control general de malezas y recortes y bordes

Este producto se puede utilizar para controlar malezas anuales, perennes y matorrales leñosos que se encuentran en todo el establecimiento, incluidos cimientos de edificaciones, en y a lo largo de cercas, en acequias y canales secos, a lo largo de bordes de acequias, caminos de la granja, barreras de protección, antes de sembrar ornamentos paisajistas y en zonas donde se guardan equipos.

Este producto se puede mezclar en tanque con los siguientes productos, siempre y cuando el producto específico utilizado esté registrado para el uso en estos lugares no cultivados. Consulte las etiquetas de estos productos para informarse sobre las áreas de uso y las dosis de aplicación aprobadas. Para malezas anuales, utilice 1.5 pintas de este producto por acre cuando las malezas tienen menos de 6 pulgadas de altura. 2.25 pintas por acre cuando las malezas tienen 6 a 12 pulgadas de altura y 3 pintas por acre cuando las malezas tienen más de 12 pulgadas de altura. Para las malezas perennes, aplique de 3 a 7.5 pintas por acre en estas mezclas de tanque. Para mezclas de tanque con estos productos con rociadores de mochila, pistolas de mano y otras aplicaciones de rocío para mojar de alto volumen, vea las proporciones específicas en la sección **MALEZAS ANUALES** para equipo de mano o de alto volumen de esta etiqueta.

Arsenal	Krovar I DF	Ronstar 50 WP
Banvel/Clarity	Oust XP	Sahara
Barricade 65WG	Pendulum 3.3 EC	simazine
diuron	Pendulum WDG	Surflan
Endurance	Plateau	Telar
Escort	Princep DF	Vanquish
Karmex DF	Princep Liquid	2,4-D

Este producto más las mezclas de tanque de dicamba no se pueden aplicar por rocío aéreo en California.

11.2 Invernaderos/Cobertizos

Este producto se puede usar para controlar las malezas que estén creciendo en o alrededor de los invernaderos y cobertizos. No debe haber vegetación deseable durante la aplicación y los equipos de ventilación deben estar apagados.

11.3 Segado Químico

Este producto inhibe los pastos perennes indicados en esta sección para servir como sustituto de la siega. Utilice 4.5 onzas líquidas de este producto por acre para el tratamiento de Kentucky bluegrass. Utilice 6 onzas líquidas de este producto por acre para el tratamiento de festuca alta, festuca fina, orchardgrass, quackgrass o reed canarygrass. Aplique 12 onzas líquidas por acre de este producto para el tratamiento de bermudagrass. Aplique 48 onzas líquidas de este producto por acre para el tratamiento de torpedograss o paragrass. Aplique los tratamientos en 10 a 20 galones de solución de rocío por acre. Se puede efectuar una aplicación de segado químico junto a acequias de la granja y en otros lugares del establecimiento.

Use solo en los lugares donde se puede tolerar cierto daño o decoloración temporal en pastos perennes.

12.0 TIPOS DE MALEZAS CONTROLADAS

Use siempre la proporción más alta de este producto por acre, dentro de las proporciones, cuando las malezas son densas o cuando crecen en un área no tocada (no cultivada).

Puede haber un resultado inferior cuando se traten malezas cubiertas con mucho polvo. Para las malezas que han sido segadas, pastadas o cortadas, permita que vuelvan a crecer antes del tratamiento.

Consulte las secciones siguientes para conocer las proporciones recomendadas para el control de malezas anuales y perennes, matorrales leñosos y árboles. Para las malezas perennes, matorrales leñosos y árboles difíciles de controlar, donde las plantas crecen en condiciones de estrés, o donde la infestación es densa, use de 4.5 a 8 cuartos de galón por acre de este producto para obtener mejores resultados.

12.1 Malezas anuales

Aplique a pastos anuales en crecimiento y malezas de hoja ancha.

Deje pasar por lo menos 3 días antes de remover la vegetación tratada. Después de este período las malezas se pueden cortar, labrar o quemar. Vea los usos recomendados y las instrucciones específicas de aplicación en **MODO DE EMPLEO, INFORMACIÓN SOBRE EL PRODUCTO, INSTRUCCIONES de MEZCLA y APLICACIÓN.**

Use 1.5 pintas por acre si las malezas tienen menos de 6 pulgadas de altura o largo de los tallos y 1 a 4 cuartos de galón por acre si las malezas tienen más de 6 pulgadas de altura o largo de los tallos o cuando las malezas crecen en condiciones de estrés.

Para aplicaciones de rocío para mojar, aplique una solución de 0.5 por ciento de este producto a las malezas que tengan menos de 6 pulgadas de altura o largo de los tallos. Haga la aplicación antes de

la formación de semillas para el pasto, o la formación de brotes para las malezas de hoja ancha. Para las malezas anuales que tienen más de 6 pulgadas de altura o las malezas más pequeñas que crecen en condiciones de estrés, use una solución de 0.75 a 1.5 por ciento. Use la dosis más alta para las especies difíciles de controlar o las malezas de más de 24 pulgadas de altura.

ESPECIES DE MALEZAS

Anoda, spurred
Balsamapple**
Barley*
Barley, little*
Barnyardgrass*
Bassia, fivehook
Bittercress*
Bluegrass, annual*
Bluegrass, bulbous*
Brome, downy*
Brome, Japanese*
Broomsedge
Buttercup*
Castorbean
Cheatgrass*
Cheeseweed (Malva parviflora)
Chervil*
Chickweed*
Geranium, Carolina
Goatgrass, jointed*
Goosegrass
Groundsel, common*
Henbit
Horseweed/Marestail(Conyza canadensis)
Itchgrass*
Johnsongrass, seedling
Junglerice
Knotweed
Kochia
Lamb's-quarters*
Lettuce, prickly*
Mannagrass, eastern*
Mayweed
Medusahead*
Morningglory (Ipomoea spp)
Mustard, blue*
Mustard, tansy*
Mustard, tumble*
Mustard, wild*
Nightshade, black*
Oats
Panicum, browntop*
Panicum, fall*
Panicum, Texas*
Pennycress, field*
Pepperweed, Virginia*
Pigweed*
Puncturevine
Purslane, common
Pusley, Florida
Ragweed, common*
Cocklebur*
Copperleaf, hophornbeam
Copperleaf, Virginia
Coreopsis, plains/tickseed*
Corn*
Crabgrass*
Cupgrass, woolly*
Dwarfdandelion*
Eclipta*
Falsedandelion*
Falseflax, smallseed*
Fiddleneck
Filaree
Fleabane, annual*
Fleabane, hairy *(Conyza bonariensis)**
Fleabane, rough*
Foxtail*
Foxtail, Carolina*
Ragweed, giant
Rice, red
Rocket, London*
Rocket, Yellow
Rye*
Ryegrass*
Sandbur, field*
Sesbania, hemp
Shattercane*
Shepherd's-purse*
Sicklepod
Signalgrass, broadleaf*
Smartweed, ladysthumb*
Smartweed, Pennsylvania*
Sorghum, grain (milo)*
Sowthistle, annual
Spanishneedles***
Speedwell, Corn*
Speedwell, purslane*
Sprangletop*
Spurge, annual
Spurge, prostrate*
Spurge, spotted*
Spurry, umbrella*
Starthistle, yellow
Stinkgrass*
Sunflower*
Teaweed / Prickly sida
Thistle, Russian
Velvetleaf
Wheat*
Wild oats*
Witchgrass*

*Cuando use equipos de aplicación al voleo en el terreno (aplicaciones aéreas o rociadores con brazos que usen boquillas tipo abanico plano), estas especies serán controladas total o parcialmente usando 12 onzas líquidas de este producto por acre. Las aplicaciones deben hacerse usando de 3 a 10 galones de volumen de la sustancia portadora por acre. Use boquillas que garanticen una cobertura completa del follaje y aplique el tratamiento cuando las malezas estén en su etapa temprana de crecimiento.

** Aplique con equipo de mano solamente.

*** Aplique 3 pintas de este producto por acre.

12.2 Malezas perennes

Se obtienen mejores resultados cuando las malezas perennes son tratadas después de alcanzar la etapa reproductiva de su crecimiento (formación de las semillas para pastos y formación de brotes para malezas de hoja ancha). En las plantas sin flores, los mejores resultados se obtienen cuando las plantas alcanzan la madurez. En muchas situaciones, es necesario realizar tratamientos antes de esas etapas. En esas condiciones, use la dosis de aplicación más alta dentro del rango.

- Aplique cuando las plantas que sean el objetivo estén en crecimiento activo. No aplique cuando las plantas estén en condiciones de estrés por sequía.
- Asegúrese de lograr una cobertura completa cuando efectúe tratamientos de rocío para mojar mediante un equipo de mano.
- Cuando se utilice equipo manual para tratamientos puntuales localizados de bajo volumen, aplique una solución de 4 al 8 por ciento de este producto.
- Para labrar o segar, deje transcurrir un lapso de 7 días o más después de haber aplicado el producto. Si las malezas han sido labradas o segadas, no aplique el tratamiento hasta que el crecimiento alcance las etapas especificadas.
- El tratamiento otoñal debe aplicarse antes de una helada agresiva.
- Tal vez sea necesario repetir los tratamientos para controlar malezas que se regeneran de partes subterráneas o semillas.

Especies de malezas	Proporción (cuartos por acre)	% de solución de mano
Alfalfa*	0.7	1.5
Alligatorweed*	3	1.3
Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración. Será necesario repetir las aplicaciones para mantener el control.		
Anise (fennel)	1.5 – 3	1 – 1.5
Bahiagrass	2.3 – 3.75	1.5
Beachgrass, European *(Ammophila arenaria)*	–	3.5
Aplique una solución al 8 por ciento de este producto, más de 0.5 a 1.5 por ciento de un surfactante no iónico en una base de rocío para mojar de bajo volumen. Se obtienen mejores resultados si las aplicaciones se realizan cuando la planta beachgrass europea está en crecimiento activo alcanzando las etapas de desarrollo de bota a despunte completo. Realice las aplicaciones antes de que pierda más del 50% del color verde de las hojas en el otoño. Puede ser necesario repetir las aplicaciones para tratar los rezagos. Observe las zonas tratadas antes de volver a sembrar vegetación deseable. Para el control selectivo de beachgrass europea mediante aplicación con enjugador, aplique una solución al 33.3 por ciento de este producto, más de 1 a 2.5 por ciento de un surfactante no iónico durante el crecimiento activo. Evite el contacto de la solución herbicida con la vegetación deseable. Se puede mejorar el rendimiento enjugando las plantas en direcciones opuestas. El mejor rendimiento se obtiene procurando el máximo contacto del equipo de enjugado con las hojas individuales.		
Bentgrass*	1	1.5
Bermudagrass	4	1.5
Aplique a las plantas que sean el objetivo cuando aparezcan las cabezuelas.		
Bermudagrass, de agua (knotgrass)	1	1.5
Bindweed, de campo	2.3 – 3.75	1.5
Aplique de 3 a 3.75 cuartos de galón de este producto por acre como rocío al voleo al oeste del Río Mississippi y de 2.3 a 3 cuartos de galón de este producto por acre al este del Río Mississippi. Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. El desarrollo de nuevas hojas indica crecimiento activo. Para obtener los mejores resultados, aplique al finalizar el verano o en otoño.		
Bluegrass, Kentucky	1.5 – 2.3	0.75
Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.		
Blueweed, Texas	2.3 – 3.75	1.5
Aplique de 3 a 3.75 cuartos de galón de este producto por acre como rocío al voleo al oeste del Río Mississippi y de 2.3 a 3 cuartos de galón de este producto por acre al este del Río Mississippi. Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. El desarrollo de nuevas hojas indica crecimiento activo. Para obtener los mejores resultados, aplique al finalizar el verano o en otoño.		
Brackenfern	2.3 – 3	0.75 – 1
Aplique a las frondas completamente extendidas que tengan por lo menos 18 pulgadas de longitud.		
Bromegrass, smooth	1.5 – 2.3	0.75
Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.		
Bursage, woolly-leaf	–	1.5
Canarygrass, reed	1.5 – 2.3	0.75
Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.		
Cattail	2.3 – 3.75	0.75
Aplique cuando las plantas que sean el objetivo estén en crecimiento activo y en la etapa de floración temprana a completa. Se obtienen mejores resultados cuando la aplicación se realiza durante los meses de verano u otoño.		
Clover; (trébol); rojo, blanco	2.3 – 3.75	1.5
Cogongrass	2.3 – 3.75	1.5
Aplique cuando el cogongrass tenga por lo menos 18 pulgadas de altura y esté en crecimiento activo a finales de verano o en otoño. Debido a la naturaleza densa de la vegetación que puede impedir la correcta cobertura del rocío, o a las etapas de crecimiento irregulares, pueden ser necesarios varios tratamientos para lograr el control.		
Cordgrass	Vea Sección 8.1	2–8
Programe las aplicaciones para permitir por lo menos 6 horas antes de que la marea cubra las plantas tratadas. Al aplicar rocío para mojar con equipo de mano, use una solución de 2 a 8 por ciento de este producto. Asegúrese de cubrir completamente las concentraciones de plantas, pero no rocíe hasta el punto de escurrimiento. Siga las instrucciones específicas en la Sección 8.1 **Zonas acuáticas**.		
Cutgrass, giant*	3	1
Será necesario repetir las aplicaciones para mantener el control, particularmente donde la vegetación esté parcialmente sumergida en agua. Permita un recrecimiento sustancial hasta la etapa de 7 a 10 hojas antes de repetir la aplicación.		
Dallisgrass	2.3 – 3.75	1.5

Dandelion	2.3 – 3.75	1.5
Dock, curly	2.3 – 3.75	1.5
Dogbane, hemp	3	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Para obtener los mejores resultados, aplique al finalizar el verano o en otoño.

Fescue (excepto alta)	2.3 – 3.75	1.5
Fescue, alta	2.3	1

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado.

Guineagrass	2.3	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de crecimiento de por lo menos 7 hojas.

Hemlock, poison	1.5 – 3	0.75 – 1.5

Vea también la sección Inyección de tallos huecos de esta etiqueta.

Horsenettle	2.3 – 3.75	1.5
Horseradish	3	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Para obtener los mejores resultados, aplique al finalizar el verano o en otoño.

Iceplant	1.5	1.5
Ivy; German, cape	1.5 – 3	0.75 – 1.5
Jerusalem artichoke	2.3 – 3.75	1.5
Johnsongrass	1.5 – 2.3	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.

Kikuyugrass	1.5 – 2.3	0.75
Knapweed	3	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Para obtener los mejores resultados, aplique al finalizar el verano o en otoño.

Knotweed: Bohemian, Giant, Japanese (*Polygonum bohemicum, P. sachalinense and P. cuspidatum*)
Inyección de tallos. Vea la sección Inyección de tallos huecos de esta etiqueta.
Corte de tallos. Corte los tallos limpiamente justo debajo del segundo o tercer nódulo sobre la tierra. Aplique inmediatamente 0.36 onzas líquidas (10 ml) de una solución al 50 por ciento de este producto en el "pozo" o entrenudo restante. Asegúrese de que el material eliminado de la parte superior de la planta se recoja y deseche con cuidado para evitar que tenga contacto con el suelo y regenere plantas de los brotes. Se recomienda el uso de una barrera biológica como cartón, plywood o una lámina de plástico. El total combinado para todos los tratamientos no debe exceder 8 cuartos de galón por acre. A razón de 10 ml de una solución al 50%, puede cubrir aproximadamente 1500 tallos por acre.

Lantana	–	0.75 – 1

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. Utilice dosis más altas para plantas que han alcanzado la etapa de crecimiento leñoso.

Lespedeza	2.3 – 3.75	1.5
Loosestrife, purple	2	1 – 1.5

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. Se obtienen mejores resultados cuando la aplicación se realiza durante los meses de verano u otoño. El tratamiento otoñal debe aplicarse antes de una helada agresiva.

Lotus, American	2	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. Se obtienen mejores resultados cuando la aplicación se realiza durante los meses de verano u otoño. El tratamiento otoñal debe aplicarse antes de una helada agresiva. Puede ser necesario repetir el tratamiento para controlar plantas que se regeneran de partes subterráneas y semillas.

Maidencane	3	0.75

Será necesario repetir las aplicaciones, particularmente a la vegetación parcialmente sumergida en agua. En estas condiciones, permita el recrecimiento hasta la etapa de 7 a 10 hojas antes de repetir la aplicación.

Milkweed, common	2.3	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración.

Muhly, wirestem	1.5 – 2.3	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo tengan por lo menos 8 pulgadas de altura (etapa de crecimiento de 3 a 4 hojas) y estén creciendo activamente.

Mullein, common	2.3 – 3.75	1.5
Napiergrass	2.3 – 3.75	1.5
Nightshade, silverleaf	2.3 – 3.75	1.5

Aplique de 3 a 3.75 cuartos de galón de este producto por acre como rocío al voleo al oeste del Río Mississippi y de 2.3 a 3 cuartos de galón de este producto por acre al este del Río Mississippi. Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. Se pueden obtener resultados óptimos si se aplica después de formadas las bayas. El desarrollo de nuevas hojas indica crecimiento activo. Para obtener los mejores resultados, aplique al finalizar el verano o en otoño.

Nutsedge; purple, yellow	2.3	0.75

Aplique este producto para controlar las plantas existentes de nutsedge y nutlets inmaduros adjuntos a las plantas tratadas. Aplique cuando las plantas que sean el objetivo estén en floración o cuando se puedan ver nuevas nueces pequeñas en las puntas de los rizomas. No se podrán controlar las nueces que todavía no germinaron y estas podrán germinar después del tratamiento. Puede ser necesario repetir las aplicaciones para mantener el control a largo plazo.

Orchardgrass	1.5 – 2.3	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.

Pampasgrass	2.3 – 3.75	1.5
Para grass	3	0.75

Puede ser necesario repetir las aplicaciones. Permita el recrecimiento hasta la etapa de 7 a 10 hojas antes de repetir la aplicación.

Pepperweed, perennial	3	1.5
Phragmites*	2 – 3.75	0.75 – 1.5

Para el control parcial de phragmites en Florida y los condados de otros estados que bordean el Golfo de México, aplique 3.75 cuartos de galón por acre como rocío al voleo o aplique una solución al 1.5 por ciento con equipo de mano. Para el control parcial en otras áreas de los EE.UU., aplique de 2 a 3 cuartos de galón por acre como rocío al voleo o aplique una solución al 0.75 por ciento con equipo de mano. Para obtener los mejores resultados, realice el tratamiento al final del verano o en el otoño, cuando las plantas estén creciendo activamente y en floración completa. Debido a la naturaleza densa de la vegetación que puede impedir la correcta cobertura del rocío, o a las etapas de crecimiento irregulares, pueden ser necesarios varios tratamientos para lograr el control. Los efectos visuales del control pueden demorar.

Quackgrass	1.5 – 2.3	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo tengan por lo menos 8 pulgadas de altura (etapa de crecimiento de 3 a 4 hojas) y estén creciendo activamente.

Redvine*	1.5	1.5
Reed, giant	3 – 3.75	1.5

Se obtienen mejores resultados cuando las aplicaciones se realizan entre el final del verano y el otoño. Vea también la sección Inyección de tallos huecos de esta etiqueta.

Ryegrass, perennial	1.5 – 2.3	0.75

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.

Salvinia, giant	3 – 3.75	2

Aplique como una solución de rocío para mojar al 2.0% v/v con 0.5 a 2.0% v/v de surfactante no iónico que contenga por lo menos 70% de ingrediente activo. Para aplicaciones al voleo, aplique de 3 a 3.75 cuartos de galón de este producto con un sistema surfactante acuático aprobado que contenga 0.1% v/v de organosilicona no iónica y 0.25% v/v de surfactante no iónico adhesivo dispersante en 3 a 40 galones por acre como aplicación al voleo. Deje pasar por lo menos 3 días antes de remover la vegetación tratada. Este producto no proporciona control de plantas completamente sumergidas o que tengan la mayor parte de su follaje bajo agua.

Smartweed, swamp	2.3 – 3.75	1.5
Spatterdock	3	0.75

Aplique cuando la mayoría de las plantas estén en floración completa. Para obtener resultados óptimos, aplique durante los meses de verano u otoño.

Spurge, leafy*	–	1.5
Starthistle, yellow	–	1.5
Sweetpotato, wild*	–	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de floración o después de ella. Será necesario repetir las aplicaciones. Permita que la planta alcance la etapa de crecimiento específica antes de repetir la aplicación.

Thistle, artichoke	1.5 – 2.3	2

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de brotación o después de ella.

Thistle, Canada	1.5 – 2.3	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de brotación o después de ella. Vea también la sección Inyección de tallos huecos de esta etiqueta.

Timothy	1.5 – 2.3	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.

Torpedograss*	3 – 3.75	0.75 – 1.5

Use las proporciones más bajas recomendadas en condiciones terrestres y las proporciones más altas en condiciones de inmersión parcial o masa flotante. Será necesario repetir las aplicaciones para mantener el control.

Trumpetcreeper*	1.5 – 2.3	1.5
Tules, common	–	1.5

Aplique cuando la mayoría de las plantas que sean el objetivo se encuentren en la etapa de brotación o después de ella. Después de la aplicación, el efecto visual tardará en aparecer y puede que no ocurra por 3 semanas o más.

Vaseygrass	2.3 – 3.75	1.5
Velvetgrass	2.3 – 3.75	1.5
Waterhyacinth	2.5 – 3	0.75 – 1

Aplique cuando las plantas que sean el objetivo se encuentren en la etapa de brotación o después de ella. Después de la aplicación, puede ser que los efectos visuales tarden 3 semanas o más en aparecer, y generalmente ocurre la necrosis completa y descomposición dentro de 60 a 90 días. Use las proporciones más altas recomendadas cuando se deseen efectos visuales más rápidos.

Waterlettuce	–	0.75 – 1

Use las proporciones más altas recomendadas donde la infestación de malezas sea grave. Se obtienen mejores resultados si se aplica de mediados de verano a invierno. Si se aplica en primavera puede ser necesario repetir las aplicaciones.

Waterprimrose	–	0.75

Aplique cuando las plantas se encuentren en la etapa de brotación o después de ella, pero antes del cambio de color del otoño. Para lograr el control óptimo es necesaria una completa cobertura.		
Wheatgrass, western	1.5 – 2.3	0.75
Aplique cuando la mayoría de las plantas que sean el objetivo hayan alcanzado la etapa de desarrollo de brotación tardía a floración. Si lo aplica antes de la etapa de bota, puede obtener menor control del deseado. En el otoño, aplique antes de que las plantas se pongan marrones.		

*Control parcial

Otras plantas perennes indicadas en esta etiqueta – Aplique de 2.3 a 3.75 cuartos de galón de este producto por acre como rocío al voleo o como solución de 0.75 a 1.5 por ciento con equipo de mano. Aplique cuando las plantas que sean el objetivo estén creciendo activamente y deben haber alcanzado la etapa de crecimiento temprano de cabeza o brote temprano.

12.3 Matorrales leñosos y árboles

Aplique este producto después de la expansión completa de las hojas, a menos que se indique lo contrario. Utilice una proporción mayor para plantas más grandes y/o zonas de crecimiento más densas. En enredaderas, utilice la proporción máxima para plantas que han alcanzado la etapa de crecimiento leñoso. Se obtienen mejores resultados cuando la aplicación se realiza a finales del verano o en otoño, después de la formación de frutos. Aplique cuando las plantas estén en crecimiento activo. Para lograr el mejor control es necesario una completa cobertura. Evite aplicar a plantas afectadas por la sequía.
En zonas áridas, se obtienen los mejores resultados cuando las aplicaciones se realizan entre primavera y comienzos de verano, cuando las especies de matorrales tienen gran contenido de humedad y están en floración.
Asegúrese de lograr una cobertura completa cuando realice tratamientos de rocío para mojar con un equipo de mano.
Cuando use equipos de mano para tratamientos localizados con rocío dirigido de bajo volumen, aplique una solución del 4 al 8 por ciento de este producto.
Es posible que los síntomas no aparezcan antes de las heladas o del envejecimiento con tratamientos de otoño.
Para labrar, segar o eliminar, deje transcurrir un lapso de 7 días o más después de haber aplicado el producto. Tal vez sea necesario repetir el tratamiento para controlar plantas que se regeneran de partes subterráneas o semillas. Se aceptan algunos colores otoñales en especies de hoja caduca no deseables siempre y cuando no se haya producido una importante caída de las hojas. El rendimiento será inferior si se realizan tratamientos en otoño, después de una helada.

Especies de malezas	Proporción por difusión (cuarto de galón por acre)	% Solución Rocío para mojar a mano
Alder	2.3 – 3	0.75 – 1.2
Ash*	1.5 – 3.75	0.75 – 1.5
Aspen, quaking	1.5 – 2.3	0.75 – 1.2
Bearclover (Bearmat)*	1.5 – 3.75	0.75 – 1.5
Beech*	1.5 – 3.75	0.75 – 1.5
Birch	1.5	0.75
Blackberry	2.3 – 3	0.75 – 1.2
Blackgum	1.5 – 3.75	0.75 – 1.5
Bracken	1.5 – 3.75	0.75 – 1.5
Broom; French, Scotch	1.5 – 3.75	1.2 – 1.5
Buckwheat, California*	1.5 – 3	0.75 – 1.5
Cascara*	1.5 – 3.75	0.75 – 1.5
Castorbean	1.5 – 3.75	1.5
Vea también la sección Inyección de tallos huecos de esta etiqueta.		
Catsclaw*	–	1.2 – 1.5
Para control parcial, aplique este producto cuando por lo menos el 50 por ciento de las hojas nuevas estén completamente desarrolladas		
Ceanothus*	1.5 – 3.75	0.75 – 1.5
Chamise*	1.5 – 3.75	0.75
Cherry; bitter, black, pin	1.5 – 3.75	1 – 1.5
Cottonwood, eastern	1.5 – 3.75	0.75 – 1.5
Coyote brush	2.3 – 3	1.2 – 1.5
Para control, aplique este producto cuando por lo menos el 50 por ciento de las hojas nuevas estén completamente desarrolladas.		
Cypress; swamp, bald	1.5 – 3.75	0.75 – 1.5
Deerweed	1.5 – 3.75	0.75 – 1.5
Dewberry	2.3 – 3	0.75 – 1.2
Dogwood*	3 – 3.75	1 – 2
Elderberry	1.5	0.75
Elm*	1.5 – 3.75	0.75 – 1.5
Eucalyptus, bluegum	–	1.5
Para control de los rebrotes de eucalipto, aplique este producto con equipo de mano cuando los brotes tengan una altura de 6 a 12 pies. Asegurese de conseguir una cobertura completa		
Gallberry	1.5 – 3.75	0.75 – 1.5
Gorse*	1.5 – 3.75	0.75 – 1.5
Hackberry, western	1.5 – 3.75	0.75 – 1.5
Hasardia*	1.5 – 3	0.75 – 1.5
Hawthorn	1.5 – 2.3	0.75 – 1.2
Hazel	1.5	0.75
Hickory*	3 – 3.75	1 – 2
Honeysuckle	2.3 – 3	0.75 – 1.2
Hornbeam, American*	1.5 – 3.75	0.75 – 1.5
Huckleberry	1.5 – 3.75	0.75 – 1.5
Ivy, poison	3 – 3.75	1.5
Kudzu	3	1.5
Locust, black*	1.5 – 3	0.75 – 1.5
Madrone resprouts*	–	1.5
Magnolia, sweetbay	1.5 – 3.75	0.75 – 1.5
Manzanita*	1.5 – 3.75	0.75 – 1.5
Maple, red	1 – 3.75	0.75 – 1.2
Para control, aplique una solución de 0.75 a 1.2 por ciento con equipo de mano cuando las hojas estén completamente desarrolladas. Para control parcial, aplique de 1 a 3.75 cuartos de galón de este producto por acre como rocío al voleo.		
Maple, sugar	–	0.75 – 1.2
Para control, aplique una solución de 0.75 a 1.2 por ciento con equipo de mano cuando por lo menos el 50 por ciento de las hojas nuevas estén completamente desarrolladas.		
Maple, vine*	1.5 – 3.75	0.75 – 1.5
Monkey flower*	1.5 – 3	0.75 – 1.5
Oak; black, white*	1.5 – 3	0.75 – 1.5
Oak; northern pin	1.5 – 3	0.75 – 1.2
Para control, aplique este producto cuando por lo menos el 50 por ciento de las hojas nuevas estén completamente desarrolladas.		
Oak, poison	3 – 3.75	1.5
Puede requerirse repetir las aplicaciones para mantener el control. Los tratamientos otoñales deben aplicarse antes de que las hojas pierdan su color verde.		
Oak, post	2.3 – 3	0.75 – 1.2
Oak, red	–	0.75 – 1.2
Para control, aplique una solución de 0.75 a 1.2 por ciento con equipo de mano cuando por lo menos el 50 por ciento de las hojas nuevas estén completamente desarrolladas.		
Oak, scrub*	1.5 – 3	0.75 – 1.5
Oak, southern red	1.5 – 3.75	1 – 1.5
Orange, Osage	1.5 – 3.75	0.75 – 1.5
Peppertree, Brazilian (Florida holly)*	1.5 – 3.75	1.5
Persimmon*	1.5 – 3.75	0.75 – 1.5
Pine	1.5 – 3.75	0.75 – 1.5
Poplar, yellow*	1.5 – 3.75	0.75 – 1.5
Prunus	1.5 – 3.75	1– 1.5
Raspberry	2.3 – 3	0.75 – 1.2
Redbud, eastern	1.5 – 3.75	0.75 – 1.5
Redcedar, eastern	1.5 – 3.75	0.75 – 1.5
Rose, multiflora	1.5	0.75
Debe aplicarse antes de que las hojas se deterioren por los insectos que se alimentan de hojas.		
Russian olive*	1.5 – 3.75	0.75 – 1.5
Sage, black	1.5 – 3	0.75
Sage, white*	1.5 – 3	0.75 – 1.5
Sagebrush, California	1.5 – 3	0.75
Salmonberry	1.5	0.75
Saltbush	–	1
Saltcedar	3 – 3.75	1 – 2
Para control parcial, aplique una solución de 1 a 2 por ciento de este producto con equipo de mano o de 3 a 3.75 cuartos de galón por acre como rocío al voleo. Para control, aplique una solución de 1 a 2 por ciento de este producto mezclado con 0.25 por ciento de Arsenal con equipo de mano. Para control usando aplicaciones al voleo, aplique 1.5 cuartos de galón de este producto en una mezcla de tanque con 1 pinta de Arsenal a las plantas de con menos de 6 pies de altura. Para control del saltcedar mayor de 6 pies de altura usando aplicaciones al voleo, aplique 3 cuartos de galón de este producto en una mezcla de tanque con 2 pintas de Arsenal.		
Sassafras*	1.5 – 3.75	0.75 – 1.5
Sea Myrtle	–	1
Sourwood*	1.5 – 3.75	0.75 – 1.5
Sumac; laurel, poison, smooth, sugarbush, winged*	1.5 – 3	0.75 – 1.5
Sweetgum	1.5 – 2.3	0.75 – 1.5
Swordfern*	1.5 – 3.75	0.75 – 1.5
Tallowtree, Chinese	–	0.75
Tanoak resprouts*	–	1.5
Thimbleberry	1.5	0.75
Tobacco, tree*	1.5 – 3	0.75 – 1.5
Toyon*	–	1.5
Trumpetcreeper	1.5 – 2.3	0.75 – 1.2
Vine maple*	1.5 – 3.75	0.75 – 1.5
Virginia creeper	1.5 – 3.75	0.75 – 1.5
Waxmyrtle, southern*	1.5 – 3.75	1.5
Willow	2.3	0.75
Yerba Santa, California*	–	1.5

* Control parcial

Otros matorrales leñosos y árboles indicados en esta etiqueta – Para control parcial, aplique de 1.5 a 3.75 cuartos de galón de este producto por acre como rocío al voleo o como solución de 0.75 a 1.5 por ciento con equipo de mano.

13.0 LÍMITES EN LA GARANTÍA Y EN LA RESPONSABILIDAD

Monsanto Company garantiza que este producto concuerda con la descripción química de la etiqueta y es razonablemente adecuado para los propósitos descritos en el folleto titulado Instrucciones de Uso Completas ("Instrucciones") cuando se usa de acuerdo con dichas Instrucciones y las condiciones que allí se detallan. NO SE HACE NINGUNA OTRA GARANTÍA EXPRESA O IMPLÍCITA ACERCA DE LA IDONEIDAD PARA UN USO PARTICULAR O COMERCIABILIDAD. Esta garantía está sujeta también a las condiciones y limitaciones que aquí se indican.

El comprador y todos los usuarios deberán reportar con prontitud a esta compañía acerca de cualquier reclamo que se base en un contrato, negligencia, estricta responsabilidad, u otros actos ilícitos.

Hasta el grado máximo permitido por la ley, el comprador y todos los usuarios son responsables por todas las pérdidas o daños que resultasen por el uso o manejo en condiciones que estén más allá del control de esta Compañía, incluyendo pero no limitándose a: incompatibilidad con productos que no sean los señalados en las Instrucciones, aplicación o contacto con vegetación que no se quiera destruir, condiciones climáticas inusuales, condiciones climáticas que estén fuera de los límites que se consideran normales en el lugar de la aplicación y para el período de tiempo en el cual se aplica, así como condiciones climáticas que estén fuera de los límites indicados en las Instrucciones, aplicaciones que no estén explícitamente aconsejadas en las Instrucciones, condiciones de humedad que estén fuera de los límites establecidos en las Instrucciones, o la presencia de productos en la tierra o sobre ella, en las plantas o en la vegetación que se está tratando, diferentes a los indicados en las Instrucciones.

Esta Compañía no garantiza ninguno de los productos reformulados o reempacados de este producto, excepto de acuerdo a los requisitos de la administración de esta Compañía y con el permiso escrito expreso de esta Compañía.

LA ÚNICA Y EXCLUSIVA COMPENSACIÓN AL USUARIO O COMPRADOR Y EL LÍMITE DE RESPONSABILIDAD DE ESTA COMPAÑÍA O DE CUALQUIER OTRO VENDEDOR POR CUALQUIER PÉRDIDA O POR TODAS LAS PÉRDIDAS, PERJUICIOS O DAÑOS QUE RESULTASEN DEL USO O MANEJO DE ESTE PRODUCTO (INCLUYENDO RECLAMOS QUE SE BASEN EN UN CONTRATO, NEGLIGENCIA, ESTRICTA RESPONSABILIDAD Y OTROS ACTOS ILÍCITOS) SERÁ EL PRECIO PAGADO POR EL USUARIO O EL COMPRADOR POR LA CANTIDAD INVOLUCRADA DE ESTE PRODUCTO, O A ELECCIÓN DE ESTA COMPAÑÍA O DE OTRO VENDEDOR, EL REEMPLAZO DE DICHA CANTIDAD, O SI NO SE OBTUVO MEDIANTE COMPRA, EL REEMPLAZO DE DICHA CANTIDAD DEL PRODUCTO. HASTA EL GRADO MÁXIMO PERMITIDO POR LA LEY, EN NINGUN CASO ESTA COMPAÑÍA U OTRO VENDEDOR SERÁN RESPONSABLES POR DAÑOS INCIDENTALES, CONSECUENTES O ESPECIALES.

En el momento de abrir y usar el producto, se asume que el comprador y todos los usuarios han aceptado las condiciones de los LÍMITES EN LA GARANTÍA Y EN LA RESPONSABILIDAD que no pueden variar por medio de ningún acuerdo verbal o escrito. Si las condiciones son inaceptables, devuelva el producto inmediatamente sin abrir el envase.

No se han otorgado licencias de uso bajo ninguna patente que no sea de los Estados Unidos de América.

Reg. EPA nro. 524-343

En caso de una emergencia originada por este producto o para solicitar asistencia médica, llame con cobro revertido las 24 horas al (314) 694-4000.

MONSANTO

Envasado por:
MONSANTO COMPANY
800 N. LINDBERGH BLVD.
ST. LOUIS, MISSOURI 63167, EE.UU.

032712

MONSANTO COMPANY
Safety Data Sheet
Commercial Product

1. PRODUCT AND COMPANY IDENTIFICATION

Product name
Roundup Custom[TM] for Aquatic & Terrestrial Use

EPA Reg. No.
524-343
Product use
Herbicide
Chemical name
Not applicable.
Synonyms
None.
Company
MONSANTO COMPANY, 800 N. Lindbergh Blvd., St. Louis, MO, 63167
Telephone: 800-332-3111, **Fax:** 314-694-5557
E-mail: safety.datasheet@monsanto.com
Emergency numbers
FOR CHEMICAL EMERGENCY, SPILL LEAK, FIRE, EXPOSURE, OR ACCIDENT Call CHEMTREC - Day or Night: 1-800-424-9300 toll free in the continental U.S., Puerto Rico, Canada, or Virgin Islands. For calls originating elsewhere: 703-527-3887 (collect calls accepted).
FOR MEDICAL EMERGENCY - Day or Night: +1 (314) 694-4000 (collect calls accepted).

2. HAZARDS IDENTIFICATION

Emergency overview
Appearance and odour (colour/form/odour): Colourless - Amber / Liquid, (viscous) / Odourless

CAUTION!

Potential health effects
Likely routes of exposure
Skin contact, eye contact, inhalation
Eye contact, short term
Not expected to produce significant adverse effects when recommended use instructions are followed.
Skin contact, short term
Not expected to produce significant adverse effects when recommended use instructions are followed.
Inhalation, short term
Not expected to produce significant adverse effects when recommended use instructions are followed.
Single ingestion
Not expected to produce significant adverse effects when recommended use instructions are followed.

Refer to section 11 for toxicological and section 12 for environmental information.

OSHA Status
This product is not hazardous according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Active ingredient

Isopropylamine salt of N-(phosphonomethyl)glycine; {Isopropylamine salt of glyphosate}

Composition

COMPONENT	CAS No.	% by weight (approximate)
Isopropylamine salt of glyphosate	38641-94-0	53.8
Water	7732-18-5	46.2

4. FIRST AID MEASURES

Use personal protection recommended in section 8.

Eye contact
If in eyes, hold eye open and rinse slowly and gently for 15-20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.

Skin contact
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.
Wash clothes and clean shoes before re-use.

Inhalation
If inhaled, move person to fresh air. If person is not breathing, call emergency number or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

Ingestion
Call poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison center or doctor. Do not give anything by mouth to an unconscious person.

Advice to doctors
This product is not an inhibitor of cholinesterase.

Antidote
Treatment with atropine and oximes is not indicated.

5. FIRE-FIGHTING MEASURES

Flash point
Does not flash.

Extinguishing media
Recommended: Water, foam, dry chemical, carbon dioxide (CO2)

Unusual fire and explosion hazards
None.
Minimise use of water to prevent environmental contamination.
Environmental precautions: see section 6.

Hazardous products of combustion
Carbon monoxide (CO), phosphorus oxides (PxOy), nitrogen oxides (NOx)

Fire fighting equipment
Self-contained breathing apparatus.
Equipment should be thoroughly decontaminated after use.

6. ACCIDENTAL RELEASE MEASURES

Environmental precautions
SMALL QUANTITIES:
Low environmental hazard.
LARGE QUANTITIES:
Minimise spread.
Keep out of drains, sewers, ditches and water ways.

Methods for cleaning up
SMALL QUANTITIES:
Absorb only in non-combustible material.
Sweep, scoop or vacuum to remove.
LARGE QUANTITIES:
Absorb in earth, sand or absorbent material.
Dig up heavily contaminated soil.
Collect in containers for disposal.
Flush residues with small quantities of water.
Minimise use of water to prevent environmental contamination.
Refer to section 7 for types of containers.

Refer to section 13 for disposal of spilled material.
Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

7. HANDLING AND STORAGE

Good industrial practice in housekeeping and personal hygiene should be followed.

Handling
Avoid contact with eyes, skin and clothing.
When using do not eat, drink or smoke.
Wash hands thoroughly after handling or contact.
Wash contaminated clothing before re-use.
Thoroughly clean equipment after use.
Do not contaminate drains, sewers and water ways when disposing of equipment rinse water.
Refer to section 13 of the safety data sheet for disposal of rinse water.
Emptied containers retain vapour and product residue.

Storage
Minimum storage temperature: -15 °C
Maximum storage temperature: 50 °C
Compatible materials for storage: stainless steel, fibreglass, plastic
Incompatible materials for storage: galvanised steel, unlined mild steel, see section 10.
Keep out of reach of children.
Keep away from food, drink and animal feed.
Keep only in the original container.
Keep container tightly closed in a cool, well-ventilated place.
Partial crystallization may occur on prolonged storage below the minimum storage temperature.
If frozen, place in warm room and shake frequently to put back into solution.
Minimum shelf life: 5 years.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne exposure limits

Components	Exposure Guidelines
Isopropylamine salt of glyphosate	No specific occupational exposure limit has been established.

Water	No specific occupational exposure limit has been established.

Engineering controls
No special requirement when used as recommended.

Eye protection
No special requirement when used as recommended.

Skin protection
No special requirement when used as recommended.

Respiratory protection
No special requirement when used as recommended.

When recommended, consult manufacturer of personal protective equipment for the appropriate type of equipment for a given application.

9. PHYSICAL AND CHEMICAL PROPERTIES

These physical data are typical values based on material tested but may vary from sample to sample. Typical values should not be construed as a guaranteed analysis of any specific lot or as specifications for the product.

Colour/colour range:	Colourless - Amber
Odour:	Odourless
Form:	Liquid, (viscous)
Physical form changes (melting, boiling, etc.):	
Melting point:	Not applicable.
Boiling point:	No data.
Flash point:	Does not flash.
Explosive properties:	No data.
Auto ignition temperature:	No data.
Specific gravity:	1.206 @ 20 °C / 15.6 °C
Vapour pressure:	No significant volatility; aqueous solution.
Vapour density:	No data.
Evaporation rate:	No data.
Dynamic viscosity:	No data.
Kinematic viscosity:	No data.
Density:	1.206 g/cm3 @ 20 °C
Solubility:	Water: Completely miscible.
pH:	4.6 - 4.8 @ 63 g/l
Partition coefficient:	log Pow: < 0.000 (active ingredient)

10. STABILITY AND REACTIVITY

Stability
Stable under normal conditions of handling and storage.

Oxidizing properties
No data.

Materials to avoid/Reactivity

Reacts with galvanised steel or unlined mild steel to produce hydrogen, a highly flammable gas that could explode.

Hazardous decomposition
Thermal decomposition: Hazardous products of combustion: see section 5.

Self-accelerating decomposition temperature (SADT)
No data.

11. TOXICOLOGICAL INFORMATION

This section is intended for use by toxicologists and other health professionals.

Data obtained on product, similar products and on components are summarized below.

Mutagenicity
Micronucleus test(s):
Not mutagenic.
Ames test(s):
Not mutagenic with and without metabolic activation.

Isopropylamine salt of glyphosate (62%)

Data obtained on product and components are summarized below.

Acute oral toxicity
Rat, LD50 (limit test): > 5,000 mg/kg body weight
Practically non-toxic.
FIFRA category IV.
No mortality.
Mouse, LD50 (limit test): > 5,000 mg/kg body weight
Practically non-toxic.
FIFRA category IV.
No mortality.
Acute dermal toxicity
Rabbit, LD50 (limit test): > 5,000 mg/kg body weight
Practically non-toxic.
FIFRA category IV.
No mortality.
Skin irritation
Rabbit, 6 animals, Draize test:
Days to heal: 3
Primary Irritation Index (PII): 0.0/8.0
Essentially non irritating.
FIFRA category IV.
Eye irritation
Rabbit, 6 animals, OECD 405 test:
Days to heal: 0
FIFRA category IV.
Acute inhalation toxicity
Rat, LC50, 4 hours, aerosol: > 4.24 mg/L
Practically non-toxic.
FIFRA category IV.
No mortality. Maximum attainable concentration.
Skin sensitization
Guinea pig, 3-induction Buehler test:
Positive incidence: 0 %

N-(phosphonomethyl)glycine; (glyphosate)

Mutagenicity
In vitro and in vivo mutagenicity test(s):
Not mutagenic.

Repeated dose toxicity
Rabbit, dermal, 21 days:
NOAEL toxicity: > 5,000 mg/kg body weight/day
Target organs/systems: none
Other effects: none
Rat, oral, 3 months:
NOAEL toxicity: > 20,000 mg/kg diet
Target organs/systems: none
Other effects: none

Chronic effects/carcinogenicity
Rat, oral, 24 months:
NOAEL toxicity: ~ 8,000 mg/kg diet
Target organs/systems: eyes
Other effects: decrease of body weight gain, histopathologic effects
NOEL tumour: > 20,000 ppm
Tumours: none

Toxicity to reproduction/fertility
Rat, oral, 2 generations:
NOAEL toxicity: 10,000 ppm
NOAEL reproduction: > 30,000 mg/kg diet
Target organs/systems in parents: none
Other effects in parents: decrease of body weight gain
Target organs/systems in pups: none
Other effects in pups: decrease of body weight gain
Effects on offspring only observed with maternal toxicity.

Developmental toxicity/teratogenicity
Rat, oral, 6 - 19 days of gestation:
NOAEL toxicity: 1,000 mg/kg body weight
NOAEL development: 1,000 mg/kg body weight
Other effects in mother animal: decrease of body weight gain, decrease of survival
Developmental effects: weight loss, post-implantation loss, delayed ossification
Effects on offspring only observed with maternal toxicity.
Rabbit, oral, 6 - 27 days of gestation:
NOAEL toxicity: 175 mg/kg body weight
NOAEL development: 175 mg/kg body weight
Target organs/systems in mother animal: none
Other effects in mother animal: decrease of survival
Developmental effects: none

12. ECOLOGICAL INFORMATION

This section is intended for use by ecotoxicologists and other environmental specialists.

Data obtained on components are summarized below.

Isopropylamine salt of glyphosate (62%)

Aquatic toxicity, fish
Bluegill sunfish (Lepomis macrochirus):
Acute toxicity, 96 hours, static, LC50: > 1,000 mg/L
Practically non-toxic.

Rainbow trout (Oncorhynchus mykiss):
Acute toxicity, 96 hours, static, LC50: > 1,000 mg/L
Practically non-toxic.

Aquatic toxicity, invertebrates

Water flea (Daphnia magna):
Acute toxicity, 48 hours, static, EC50: 930 mg/L
Practically non-toxic.

Aquatic toxicity, algae/aquatic plants

Green algae (Scenedesmus subspicatus):
Acute toxicity, 72 hours, static, EbC50 (biomass): 72.9 mg/L
Slightly toxic.

Soil organism toxicity, invertebrates

Earthworm (Eisenia foetida):
Acute toxicity, 14 days, LC50: > 5,000 mg/kg dry soil
Practically non-toxic.

N-(phosphonomethyl)glycine; { glyphosate}

Avian toxicity

Bobwhite quail (Colinus virginianus):
Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet
No more than slightly toxic.

Mallard duck (Anas platyrhynchos):
Dietary toxicity, 5 days, LC50: > 4,640 mg/kg diet
No more than slightly toxic.

Bobwhite quail (Colinus virginianus):
Acute oral toxicity, single dose, LD50: > 3,851 mg/kg body weight
Practically non-toxic.

Arthropod toxicity

Honey bee (Apis mellifera):
Oral, 48 hours, LD50: 100 µg/bee

Honey bee (Apis mellifera):
Contact, 48 hours, LD50: > 100 µg/bee
Practically non-toxic.

Bioaccumulation

Bluegill sunfish (Lepomis macrochirus):
Whole fish: BCF: < 1
No significant bioaccumulation is expected.

Dissipation

Soil, field:
Half life: 2 - 174 days
Koc: 884 - 60,000 L/kg
Adsorbs strongly to soil.

Water, aerobic:
Half life: < 7 days

13. DISPOSAL CONSIDERATIONS

Product

Not classified as hazardous waste by the Resource, Conservation and Recovery Act (RCRA), 40 CFR 261.
Keep out of drains, sewers, ditches and water ways.
Recycle if appropriate facilities/equipment available.
Burn in proper incinerator.
Follow all local/regional/national/international regulations.

Container

Dispose of as non hazardous industrial waste.

See the individual container label for disposal information.
Emptied containers retain vapour and product residue.
Observe all labelled safeguards until container is cleaned, reconditioned or destroyed.
Empty packaging completely.
Triple or pressure rinse empty containers.
Pour rinse water into spray tank.
Do NOT contaminate water when disposing of rinse waters.
Do NOT re-use containers.
Store for collection by approved waste disposal service.
Follow all local/regional/national/international regulations.

Use handling recommendations in Section 7 and personal protection recommendations in Section 8.

14. TRANSPORT INFORMATION

The data provided in this section is for information only. Please apply the appropriate regulations to properly classify your shipment for transportation.

Not hazardous under the applicable DOT, ICAO/IATA, IMO, TDG and Mexican regulations.

15. REGULATORY INFORMATION

TSCA Inventory
All components are on the US EPA's TSCA Inventory

SARA Title III Rules
Section 311/312 Hazard Categories
Not applicable.
Section 302 Extremely Hazardous Substances
Not applicable.
Section 313 Toxic Chemical(s)
Not applicable.

CERCLA Reportable quantity
Not applicable.

16. OTHER INFORMATION

The information given here is not necessarily exhaustive but is representative of relevant, reliable data.
Follow all local/regional/national/international regulations.
Please consult supplier if further information is needed.
For more information refer to product label.
Please consult Monsanto if further information is needed.
In this document the British spelling was applied.
® Registered trademark of Monsanto Company or its subsidiaries.

	Health	Flammability	Instability	Additional Markings
NFPA	0	1	1	

0 = Minimal hazard, 1 = Slight hazard, 2 = Moderate hazard, 3 = Severe hazard, 4 = Extreme hazard

Full denomination of most frequently used acronyms: BCF (Bioconcentration Factor), BOD (Biochemical Oxygen Demand), COD (Chemical Oxygen Demand), EC50 (50% effect concentration), ED50 (50% effect dose), I.M. (intramuscular), I.P. (intraperitoneal), I.V. (intravenous), Koc (Soil adsorption coefficient), LC50 (50% lethality concentration), LD50 (50% lethality dose), LDLo (Lower limit of lethal dosage), LEL (Lower Explosion Limit), LOAEC (Lowest Observed Adverse Effect Concentration), LOAEL (Lowest Observed Adverse Effect Level), LOEC (Lowest Observed Effect Concentration), LOEL (Lowest Observed Effect Level), MEL (Maximum Exposure limit), MTD (Maximum Tolerated Dose), NOAEC (No Observed Adverse Effect Concentration), NOAEL (No Observed Adverse Effect Level), NOEC (No Observed Effect Concentration), NOEL (No Observed Effect Level), OEL (Occupational Exposure Limit), PEL (Permissible Exposure Limit), PII (Primary

Irritation Index), Pow (Partition coefficient n-octanol/water), S.C. (subcutaneous), STEL (Short-Term Exposure Limit), TLV-C (Threshold Limit Value-Ceiling), TLV-TWA (Threshold Limit Value - Time Weighted Average), UEL (Upper Explosion Limit)

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course. Use, storage and disposal of pesticide products are regulated by the EPA under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) through the product labeling, and all necessary and appropriate precautionary, use, storage, and disposal information is set forth on that labeling. It is a violation of federal law to use a pesticide product in any manner not prescribed on the EPA-approved label.

Although the information and recommendations set forth herein (hereinafter "Information") are presented in good faith and believed to be correct as of the date hereof, MONSANTO Company or any of its subsidiaries makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that the persons receiving same will make their own determination as to its suitability for the purposes prior to use. In no event will MONSANTO Company or any of its subsidiaries be responsible for damages of any nature whatsoever resulting from the use of or reliance upon information. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR TO THE PRODUCT TO WHICH INFORMATION REFERS.

APPENDIX B

Further Discussion of Herbicide Restrictions and Regulations at the Port's Sites

The **Use Restriction** subsections of Section 4 discuss limits on use of each herbicide. There are multiple sources for these restrictions. Many restrictions are printed on the product labels and often originate directly from the EPA's findings on the actions, toxicity etc. of the specific herbicides. In addition some restrictions are a result of specific Oregon laws, either Oregon Administrative Rules (OARs[2004]) or Oregon Revised Statutes (ORSs [2003]).

Other restrictions come from a NOAA Fisheries' Biological Opinion (BO) resulting from formal consultation under the Endangered Species Act (ESA) and the Magnuson-Stevens Fishery Conservation and Management Act in support of the US Army Corps of Engineers (Corps) permits Nos. 200100247 and 200100553 (NOAA 2004). These permits were issued for the Port's Rivergate Enhancement Area and Toyota T-4 sites. The restrictions are to protect fish species covered either under the ESA or Magnuson-Stevens Act from potential adverse effects from herbicide contamination. The Evolutionary Significant Units (ESUs) of ESA- protected fish that may be present at Port sites are Snake River (SR) sockeye salmon (*Oncorhycus nerka*), SR spring/summer Chinook salmon (*O. tshawytscha*), SR fall Chinook, Lower Columbia River (LCR) steelhead (*O. mykiss*), Upper Columbia River (UCR) steelhead, SR steelhead, Middle Columbia River (MCR) steelhead, Columbia River (CR) chum salmon (*O. keta*), LCR Chinook salmon, UCR spring Chinook salmon, Upper Willamette River (UWR) steelhead and UWR Chinook salmon (NOAA 2004).

Some of the restrictions result from a ruling in US District Court in a law suit filed by the Washington Toxics Coalition *et. al.* vs. the EPA to restrict the use of 55 pesticides near water-bodies that may contain threatened or endangered salmonid species in Oregon, Washington and California. In January of 2004, the US District Court (US District Court of Seattle 2004) imposed buffer zones with a minimum of 20 yards (60 feet) width for "ground use" and 100 yards (300 feet) for "aerial application" between the application site and water-bodies containing listed Evolutionary Significant Units (ESUs) of threatened or endangered salmon or steelhead species. However the court agreed with the EPA's finding of "no effect" for 13 pesticides for all ESUs of ESA-listed fish. These 13 pesticides thus have no new buffer restrictions under this court order, but rather retain any previous restrictions placed upon their use by the EPA. Of the remaining 21 pesticides, EPA is in consultation with the National Marine Fisheries Service to determine what appropriate, science-based measure may be necessary to prevent jeopardy to the species. Additionally the court order resulted in several other pesticides given new buffer restrictions, other than the 20 yard (ground) and 100 yard (aerial) widths imposed on most of the chemicals. Also the buffer requirements for some pesticides in some ESUs were waived because of "no effect" determinations for those *particular* ESUs. Effect determinations are still pending for certain pesticides the ester formulation of triclopyr (triclopyr BEE); until that effect call is made and concurred with by the court, the new buffer widths still apply. While some authorities feel that this will ultimately reduce the number of pesticide restrictions (ODA 2004), it is not a foregone conclusion. Indeed, a citizens group called Earth Justice sent the EPA a notice of intent to sue to seek re-evaluation of several of the pesticides that currently have "no effect" determinations (The Oregonian 2004). Since the Port owns property near several water-bodies

with numerous ESUs of protected fish species, it must exercise due diligence in following the changing regulations pertaining to the herbicides and the buffer width restrictions.
Finally, DEQ's Pesticide General Permit (PGP) went into effect on October 31st, 2011. It provides coverage for discharges of any pesticide to waters of the state. Pesticides are very defined broadly as any "defoliant, desiccant, fungicide, herbicide, insecticide, nematicide, plant regulator or any substance (or mixture) intended to be used for defoliating plants, preventing, destroying repelling or mitigating insects, plant fungi, weeds, rodents, predatory animals"… or any other form of pest. An application of any pesticide is covered under this permit if it is applied in any of the following locations;

1. In or over waters of the state;
2. Within three feet of waters of the state;
3. In or within three feet of conveyances with a hydrologic connection to waters of the state at the time of application.

Because the Port does not allow for any herbicides to be applied within 3 feet of any water body, thresholds will not be exceeded on Port mitigation sites.

APPENDIX C

Spill Response Policies

1. Spill Reporting Procedure for all Non-aviation Properties (Port of Portland)
2. Spill Reporting Procedure for all Aviation Properties (Port of Portland)

PORT OF PORTLAND

Spill Reporting for all Non-Aviation Properties*

If this is an **Emergency** requiring Fire, Medical, HazMat or Police Response…
Dial 911 from a safe location…
then Notify Marine Security

For Spills which are on or may impact Port of Portland Property…

Notify Marine Security
as soon as possible at:

503-240-2230

Marine Security will ask for information regarding the location, source, and volume of the release...
Marine Security will then page the On-Call Environmental Staff

*including all Port-Owned Terminals,
Rivergate/Harborgate /Swan Island Properties and Navigation Facilities

November 2007

PORT OF PORTLAND

Spill Reporting for Mitigation Sites on Aviation Properties*

If this is an **Emergency** requiring Fire, Medical, HazMat or Police Response…
Dial 911 from a safe location…
then the PDX Communications Center

For Spills which are on or may impact Port of Portland Property…

Notify the PDX Communications Center

as soon as possible at:

503-460-4000

PDX Communications Center will ask for information regarding the location, source, and volume of the release...
The communications Center will then page the On-Call Aviation Environmental Staff

*including Buffalo, Elrod, PIC E-Zone and Columbia Slough sites

February 2008 – adapted specifically for the Port of Portland Vegetation Management Plan for Mitigation Natural Areas

APPENDIX D

Herbicide Application Report

PORT OF PORTLAND
7200 N.E. Airport Way
Portland, OR 97218
Carrie Butler: 503-415-6319

HERBICIDE APPLICATION REPORT

APPLICATION SITE NAME: _____

WEATHER: _____ _____ _____
Wind Speed Humidity Temperature

ADDRESS or MAP REFERENCE* OF APPLICATION SITE: _____
Street City Zip

SPECIFIC LOCATIONS TREATED ON SITE (NE CORNER ETC.): _____

APPROXIMATE SIZE OF AREA TREATED (ACRES, SQUARE FEET ETC.): _____

DATE OF APPLICATION (BEGINNING & ENDING):

Beginning: _____ _____ _____ _____ Ending: _____ _____ _____ _____
Time Month Day Year Time Month Day Year

HERBICIDE INFORMATION:

1: _____ _____ _____ _____
Trade Name EPA Registration Number Concentration (oz/gallon) Amount of Solution Applied (gallons)

2: _____ _____ _____ _____
Trade Name EPA Registration Number Concentration (oz/gallon) Amount of Solution Applied (gallons)

SURFACTANTS USED: _____
Trade Name

APPLICATION METHOD (BACKPACK SPRAYER ETC.): _____

TARGET PLANT SPECIES OR TYPE (BROADLEAF WEEDS, GRASSES, SHRUBS, TREES ETC.): _____

_____

NAME OF APPLICATOR/TRAINEE and LICENSE NUMBER: _____ _____

_____ _____

***You may reference the Port of Portland Vegetation Management Plan (VMP) for mitigation sites mapped in that document**