



A selective preemergence surface-applied herbicide for control of annual grasses and many broadleaf weeds in:

- Landscape Ornamentals
- Container Grown Ornamentals
- Field Grown Ornamentals
- Drainage Areas Under Shadehouse Benches
- Ornamental Bulbs
- Ground Covers/Perennials
- Christmas Tree Plantations
- Non-bearing fruit and nut trees and non-bearing vineyards
- Noncropland and Industrial Sites
- Established Warm Season Turf (including Bahiagrass, Bermudagrass, Buffalograss, Centipedegrass, St. Augustinegrass and Zoysiagrass)
- Tall Fescue (warm season areas)

<b>Active Ingredient:</b>		
oryzalin: 3,5-dinitro-N <sup>4</sup> N <sup>4</sup> -dipropylsulfanilamide .....	40.4%	
<b>Inert Ingredients</b> .....	59.6%	
<b>Total</b> .....	100.0%	

Contains 4.0 pounds of active ingredient per gallon.

## 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.)

### 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. 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 the National Pesticide Information Center 1-800-858-7378 for emergency medical treatment.

**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 at the end of label booklet. If terms are unacceptable, return at once unopened.**

For chemical emergency: Spill, leak, fire, exposure, or accident, call CHEMTREC 1-800-424-9300.

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

**Shake Well Before Using**  
EPA Reg. No. 70506-44

### PRECAUTIONARY STATEMENTS Hazards to Humans and Domestic Animals CAUTION PRECAUCION

**Causes Eye Irritation • Prolonged or frequently repeated contact may cause allergic reactions in some individuals**

**Avoid contact with eyes or clothing.**

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

**Applicators and other handlers must wear:**

- Long-sleeved shirt and long pants
- Chemical-resistant gloves
- Shoes plus socks
- Mixers and loaders must wear a chemical-resistant apron in addition to other PPE.

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 STATEMENTS

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the 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.
- 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.

### ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. Cover or incorporate spills.

### 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 24 hours. **Exception:** If the product is soil-injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

Workers may enter treated areas without required PPE during the reentry interval following 1/2 to 1 inch of rainfall or irrigation, if they are performing tasks that do not involve contact with the soil subsurface; otherwise, 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
- Shoes plus socks

### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard 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:** Keep all persons, children and pets out of treated area until sprays have dried.

### STORAGE AND DISPOSAL

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

**Pesticide Storage:** Store in original container only. In case of leak or spill, use absorbent materials to contain liquids and dispose as waste.

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

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

### GENERAL INFORMATION

Surflan AS Specialty herbicide is a preemergence surface-applied product for the control of many annual grasses and broadleaf weeds in ornamental plantings, bulbs, ground covers/perennials, established warm-season turfgrass, Christmas tree plantations, non-bearing trees and vines, and noncropland and industrial sites.

Surflan AS is orange in color and may cause temporary discoloration of sprayed surfaces. If this discoloration is undesirable, it may be altered by using a commercially available colorant such as Blazon or removed by spraying surface with water or washing with an industrial cleaner immediately after application. Surflan AS may also be applied with mulch colorants, such as Mulch Magic or Nu-Mulch.

### Treatment of Plant Species Not Listed on the Label for Surflan AS

Users who wish to use Surflan AS on plant species not recommended on this label may determine the suitability for use by treating a small number of such plants at a recommended rate. Prior to treatment of larger areas, the treated plants should be observed for any sign of herbicidal injury during 30-60 days of normal growing conditions to determine if the treatment is non-injurious to the target plant species. The user assumes responsibility for any plant damage or other liability resulting from use of Surflan AS on plant species not recommended on this label.

**Aerial Application: Do not aerially apply this product.**

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

Do not graze or feed forage from treated areas to livestock.

**Precaution:** Avoid spray drift to non-target areas when applying Surflan AS. Spray drift may result in reduced emergence of non-target plants adjacent to the treated area. Poor weed control may result if directions are not followed. Over-application may result in crop injury or excessive soil residue.

### APPLICATION

#### SOIL PREPARATION

Surflan AS controls weeds growing from seed. Surflan AS will not control emerged weeds. Surflan AS does not control established weeds, weeds growing from stolens, rhizomes, or root pieces. Therefore, areas to be treated should be free of emerged weeds. Weed residues, prunings, and trash should be thoroughly mixed into the soil or removed prior to treatment. In field applications, the soil should be in good tillth and free of clods at the time of application.

**Ground Application:** Apply Surflan AS as a directed spray to the soil surface or over the top of plants. Use only a properly calibrated, low-pressure, herbicide sprayer that will apply the spray uniformly. Use screens no finer than 50 mesh in nozzles and in-line strainers. Apply the appropriate rate of Surflan AS, as outlined in "Approved Uses" section of this label. In all cases, use sufficient water volume to obtain uniform coverage and deliver the desired rate of Surflan AS to the treated area. The volume of water used is not critical, as long as the desired rate of Surflan AS is delivered uniformly across the area treated. When calibrating, determine the volume of water delivered by the sprayer to a given area (1,000 sq ft, 1 acre, etc.). Then mix the desired rate of Surflan AS in the amount of water required to cover the entire area to be treated. As the amount of water used (spray volume) decreases, the importance of accurate calibration and uniform application increases. Check the sprayer daily to ensure proper calibration and uniform application. Maintain continuous agitation from mixing through application. Avoid spray pattern skips and overlaps that may result in incomplete coverage or over-application.

**Hand Held or Backpack Sprayer Application:** The amount of water used to apply Surflan AS herbicide is not critical, but should be sufficient for uniform coverage of the target area. Calibrate by determining the volume of water required to treat 1000 square feet. Use this calibration volume to determine the amount of water and Surflan AS herbicide needed to treat the target area (see the following calibration example). **Note:** Sprayer calibration (volume of spray needed to treat 1,000 square feet) will vary with each individual operator.

**Steps in Calibration:**

1. Mark an area of 1,000 square feet (i.e. 20 by 50 feet, or 25 by 40 feet).
2. Place the sprayer on a level surface and add water noting the final level of water in the spray tank.
3. Spray the marked area with a sufficient volume of water to provide uniform coverage. Refill the sprayer to the same level as before measuring the amount of water added. The measured water added to the sprayer is the volume needed to cover 1,000 square feet.
4. Determine the application rate (fl oz/1000 sq ft) for Surflan AS from the "Approved Uses" section of this label.
5. To each volume of water used, as measured in step 3, add the amount of Surflan AS as determined in step 4.

**Example:** If the sprayer used 2 gallons of water to cover 1,000 square feet and the desired application rate of Surflan AS is 3 fluid oz/1,000 square feet, then you would add 3 fluid ounces of Surflan AS to every 2 gallons of water to be used.

**MIXING DIRECTIONS**

**Shake Well Before Using**

**Precaution:** Do not allow the spray mixture to siphon back into water source.

**Surflan AS - Alone**

Make sure spray tank is clean and use only clean water. Fill spray tank 1/2 - 3/4 full. Start agitation and add the required amount of Surflan AS. Continue agitation and finish filling the spray tank. Maintain continuous agitation until application is completed.

**Surflan AS - Tank Mix Combinations**

Prior to mixing, read and carefully follow all label instructions and precautions for each product added to the tank mixture. Vigorous, continuous agitation is required for all tank mixes of Surflan AS. Sparger pipe agitators generally provide the best agitation in spray tanks.

**Mixing Order:** Fill the tank 3/4 full with clean water. Start agitation and add different formulation types in the order indicated below, allowing time for complete mixing and dispersion after addition of each product. Allow extra mixing and dispersion time for dry flowable products.

Add different formulation types in the following order: dry flowables (DF); wettable powders (WP); Surflan AS and other aqueous suspensions (AS), flowables (F), and liquids (L); solutions (S); and emulsifiable concentrates (EC).

Continue agitation and finish filling the spray tank with clean water. Maintain agitation until application is completed. If spraying and agitation must be stopped before the spray tank is empty, the materials may settle to the bottom. Settled materials must be completely resuspended before spraying is continued. A sparger agitator is particularly useful for this purpose.

**Premixing:** When tank mixing, initial mixing and dispersion of certain dry flowable or wettable powder products may be improved by premixing with water (slurrying). Adding the slurried material to the spray tank through a wetting screen of 20 or 35 mesh will help assure good initial dispersion.

**Equipment Cleaning**

If a buildup of material occurs on the walls of the spray tank, it should be removed between fillings by washing with soap and water and rinsing thoroughly. Tanks, lines, screens, and nozzles should be cleaned thoroughly after each use.

**Activation and Cultivation**

Surflan AS will remain stable on the soil surface up to 21 days following application. In the absence of timely rainfall, irrigation can be used to activate Surflan AS. A minimum of one-half (1/2) inch of rain or its equivalent in sprinkler irrigation is necessary to activate Surflan AS. If weeds begin to emerge due to lack of rainfall or irrigation, shallow cultivate 1-2 inches deep to destroy existing weeds, or remove them by hand. Shallow cultivation to a depth of 1-2 inches will enhance herbicidal effectiveness. Erratic weed control may result if Surflan AS is not activated by rainfall, irrigation, or cultivation within 21 days of application, or existing weeds have not been removed.

**WEEDS CONTROLLED BY SURFLAN AS**

**Annual Grasses:**

- Common Name**  
barley, little  
barnyardgrass  
(watergrass)  
bluegrass, annual  
crabgrass, large  
crabgrass, smooth  
crowfootgrass  
cupgrass, southwestern  
foxtail, bristlegrass  
foxtail, giant

- Scientific Name**  
*Hordeum pusillum*  
*Echinochloa crus-galli*  
  
*Poa annua*  
*Digitaria sanguinalis*  
*Digitaria ischaemum*  
*Dactyloctenium aegyptium*  
*Eriochloa gracilis*  
*Setaria magna*  
*Setaria faberi*

**WEEDS CONTROLLED BY SURFLAN AS (continued)**

**Annual Grasses:**

- Common Name**  
foxtail, green  
(pigeongrass)  
foxtail, robust  
foxtail, yellow  
goosegrass  
(silver crabgrass)  
Johnsongrass  
(seedling only)  
junglerice  
lovegrass, Mexican  
lovegrass, orcutt  
oat, wild  
panicum, browntop  
panicum, fall  
(spreading panicgrass)  
panicum, Texas  
(buffalograss)  
(Coloradograss)  
ryegrass, Italian  
signalgrass (Brachiaria)  
sprangletop, red  
witchgrass

**Broadleaf Weeds:**

- Common Name**  
bittercress  
carpetweed  
chickweed, common  
fiddleneck, coast  
filaree, redstem  
filaree, whitestem  
groundsel, common  
henbit  
knotweed, prostrate  
lambquarters  
pigweed, prostrate  
pigweed, redroot  
pigweed, spring  
pigweed, tumble  
puncturevine  
purslane, common  
pusley, Florida  
(Florida purslane)  
(Mexican clover)  
(pusley)  
rocket, London  
rockpurslane, desert  
shepherdspurse  
spurge, prostrate  
woodsorrel, yellow

**Scientific Name**

- Setaria viridis*  
  
*Setaria robusta*  
*Setaria glauca*  
*Eleusine indica*  
  
*Sorghum halepense*  
  
*Echinochloa colonum*  
*Eragrostis mexicana*  
*Eragrostis orcuttiana*  
*Avena fatua*  
*Panicum fasciculatum*  
*Panicum dichotomiflorum*  
  
*Panicum texanum*  
  
*Cenchrus incertus*  
*Brachiaria* spp.  
*Leptochloa filiformis*  
*Panicum capillare*

**Scientific Name**

- Cardamine oligosperma*  
*Mollugo verticillata*  
*Stellaria media*  
*Amsinckia intermedia*  
*Erodium cicutarium*  
*Erodium moschatum*  
*Senecio vulgaris*  
*Lamium amplexicaule*  
*Polygonum aviculare*  
*Chenopodium album*  
*Amaranthus blitoides*  
*Amaranthus retroflexus*  
*Amaranthus hybridus*  
*Amaranthus albus*  
*Tribulus terrestris*  
*Portulaca oleracea*  
*Richardia scabra*

- Sisymbrium irio*  
*Calandrinia ciliata*  
*Capsella bursa-pastoris*  
*Euphorbia humistrata*  
*Oxalis stricta*

**WEEDS SUPPRESSED BY SURFLAN AS**

Control of the following weeds may be erratic, ranging from poor to excellent, depending upon soil temperature, time of germination, depth of seed in the soil, and amount and timing of soil moisture:

**Common Name**

- horseweed  
ladysthumb  
lettuce, prickly  
mallow, common  
milkweed, climbing  
morningglory  
mustard, black  
mustard, wild  
nightshade, black  
ragweed, common  
smartweed  
sowthistle, annual  
spurge, spotted  
teaweed (prickly sida)  
velvetleaf  
wheat, volunteer

**Scientific Name**

- Coryza canadensis*  
*Polygonum persicaria*  
*Lactuca serriola*  
*Malva neglecta*  
*Sarcostemma cynanchoides*  
*Ipomoea* spp.  
*Brassica nigra*  
*Brassica kaber*  
*Solanum nigrum*  
*Ambrosia artemisiifolia*  
*Polygonum pensylvanicum*  
*Sonchus oleraceus*  
*Euphorbia maculata*  
*Sida spinosa*  
*Abutilon theophrasti*  
*Triticum* spp.

**CROP-SPECIFIC USE DIRECTIONS**

**ORNAMENTAL PLANTINGS**

Surflan AS is recommended for use on certain landscape container- and field-grown established ornamental plants including: trees, shrubs, ground covers/perennials, flowers, non-bearing fruit and nut trees, non-bearing vineyards; and in the production of ornamental bulbs (See "Ornamental Bulbs" section for special use directions).

**Broadcast Application Rates**

Labeled Use Site	Length of Control	Surflan AS		Minimum Time Between Applications (months)	Total Amount Allowed Per Year (qt/acre)
		(qt/acre)	(fl oz/1000 sq ft)		
Landscape Ornamentals	2 - 4 months	2	1.5	2	8
	3 - 6 months	3	2.2	4	12
	4 - 8 months	4	3	4	12
Field-grown and container-grown ornamentals	2 - 4 months	2	1.5	3	8
	3 - 6 months	3	2.2	3	9
	4 - 8 months	4	3	3	12

(continued)

**Tank Mix Combinations**

Tank mix combinations of Surflan AS plus glyphosate, and many other labeled herbicides may be used to control undesirable vegetation in ornamental areas. Surflan AS may also be tank mixed with Gallery herbicide and applied preemergence to broaden the spectrum of broadleaf weed control in ornamental areas. Applied as directed, these tank mixes of Surflan AS will provide control of susceptible weed species listed on the respective labels. Refer to tank mix product labels for specific use directions, precautions, and limitations before use.

**Surflan AS Plus Glyphosate:** Tank mix combinations of Surflan AS plus glyphosate are recommended to control existing undesirable vegetation. Applied as directed, Surflan AS plus glyphosate will provide postemergence control of susceptible weed species listed on the label for glyphosate and residual preemergence control of susceptible weed species listed on the label for Surflan AS. Refer to the label for glyphosate for specific use directions, precautions, and limitations before use.

**Precautions:** Do not apply sprays containing glyphosate over the top of ornamental plants.

Extreme care must be exercised to prevent sprays containing glyphosate from coming in contact with foliage and stems of turfgrasses, trees, shrubs, or other desirable vegetation since severe damage or death may result. If spraying with glyphosate in areas adjacent to desirable plants, use a shield to prevent spray from contacting foliage and stems of desirable plants.

**Special Use Precautions:**

Apply only to established plants that have been transplanted into their growing location for a sufficient period of time to allow the soil to be firmly settled around the roots from packing and rainfall or irrigation.

Rooted liners should be removed from their original growing containers and placed in new containers at least two weeks prior to treatment or injury may occur.

To avoid possible injury, do not apply Surflan AS to:

- Nursery, forest, or Christmas tree: seedling beds, cutting beds, or transplant beds.
- Unrooted liners or cuttings that have been planted in pots for the first time.
- Pots less than four inches wide.
- Ground covers until they are established and well rooted.
- Ornamental plantings where there is likelihood of runoff onto lawn areas.
- Areas containing dichondra or cool season turfgrass species.

On container grown ornamentals where weed seed germination continues for extended periods of time, do not make repeat applications of Surflan AS for at least 90 days or crop injury may occur.

Applications of Surflan AS over the top of plants with newly forming buds may cause injury. In this situation a directed spray is recommended.

For soils treated with Surflan AS during the previous season, plant only the ornamental species listed on this label or injury may occur.

**Ice Plant:** When establishing unrooted ice plant on coarse-textured soils in landscape plantings, do not exceed the 2 quart per acre rate of Surflan AS or crop injury may occur.

**Note: Injury on the following plant species has been observed following applications of Surflan AS and use is not recommended:**

- Deutzia gracilis* (slender deutzia)
- Pseudotsuga menziesii* (Douglas-fir)
- Thuja occidentalis* "Techny" (Techny arborvitae)
- Tsuga canadensis* (eastern hemlock)
- Begonia* spp. (begonia)
- Coleus hybridus* (coleus)

**Surflan AS May be Used on the Following Established Plant Species:**  
(Note: Limitations on recommended treatment methods).

**TREES**

**Recommended Treatment Method**  
F = Field Grown  
C = Container Grown

Scientific Name	Common Name	
<i>Abies balsamea</i>	Fir, balsam	F
<i>Abies concolor</i>	Fir, white	F
<i>Abies fraseri</i>	Fir, fraser	F
<i>Abies grandis</i>	Fir, grand	F
<i>Abies veitchi</i>	Fir, Vietch	F
<i>Abies lasiocarpa</i>	Fir, alpine	F
<i>Abutilon hybridum</i>	Albus-flowering maple	F
	Luteus-flowering maple	F
	Roseus-flowering maple	F
	Tangerine-flowering maple	F
	Vesuvius red-flowering maple	F
<i>Acer ginnala</i>	Flame maple	F
<i>Acer rubrum</i>	Red sunset maple	F
<i>Acer saccharinum</i>	Silver maple	F
<i>Acer</i> spp.	Maple	F
<i>Alsophila australis</i>	Australian tree fern	C,F
<i>Areacastrum romanzoffianum</i>	Queen palm	F
<i>Betula nigra</i>	Birch, river	F
<i>Betula papyrifera</i>	Paper birch	F
<i>Betula pendula</i>	Birch, white	F
<i>Bucida buceras</i>	Black olive	F
<i>Carya</i> spp.	Pecan, ornamental	C,F
<i>Cedrus, atlantica</i>	Atlas cedar	C,F
<i>Cedrus deodara</i>	Deodar cedar	C,F
<i>Ceratonia siliqua</i>	Carob	F
<i>Cercidium floridum</i>	Palo Verde, blue	F
<i>Cercis canadensis</i>	Redbud	C,F
<i>Chamaecyparis lawsoniana</i>	Falsecypress, Lawson	F
<i>Chamaecyparis obtusa</i>	Filicoides-fernspray cypress	F
	Gracilis-slender Hinoki cypress	F
	Sawara-false cypress	F
	Squarrosa-moss cypress	F
<i>Chamaedorea cataractarum</i>	Cat Palm	F
<i>Chamaedorea costaricana</i>	Palm	F
<i>Chamaedorea elegans</i>	Parlor palm	F
<i>Citrus</i> spp.	Citrus, ornamental	C,F
<i>Cornus florida</i>	Dogwood, flowering	F

<i>Cryptomeria japonica</i>	Cryptomeria, Japanese	C,F
<i>Cupaniopsis anacardioides</i>	Carrot wood	F
<i>Cupressus arizonica (glabra)</i>	Cypress, Arizona	C,F
<i>Cupressus glabra</i>	Arizona cypress	C,F
<i>Cupressocyparis leylandii</i>	Leyland cypress	C,F
<i>Cupressus sempervirens</i>	Cypress, Italian	C,F
<i>Dicksonia antarctica</i>	Tasmanian tree fern	C,F
<i>Elaeagnus angustifolia</i>	Russian olive	C,F
<i>Eucalyptus camaldulensis</i>	Red gum eucalyptus	F
<i>Eucalyptus cinerea</i>	Eucalyptus, mealy	F
	Silver dollar eucalyptus	F
<i>Eucalyptus nicholii</i>	Eucalyptus, narrow-leaved	F
<i>Eucalyptus sideroxylon</i>	Eucalyptus, red ironbark	F
<i>Ficus benjamina</i>	Ficus	F
<i>Fraxinus</i> spp.	Ash	F
<i>Ginkgo biloba</i>	Ginkgo (Maidenhair tree)	C,F
<i>Gleditsia triacanthos</i>	Honey locust	F
<i>Heteromeles arbutiflora</i>	Toyon	F
<i>Juniperus virginiana</i>	Redcedar, Eastern	F
<i>Koelreuteria paniculata</i>	Goldenrain tree	F
<i>Liquidambar styraciflua</i>	Sweetgum, American	C,F
<i>Magnolia</i> spp.	Magnolia	F
<i>Malus</i> spp.	Crabapple	F
<i>Morus alba</i>	White mulberry	F
<i>Picea abies</i>	Pendula-weeping Norway spruce	F
	Repens-spreading Norway spruce	F
	Spruce, Norway	F
	Spruce, Englemann	F
	Spruce, white	F
	Conica-dwarf Alberta spruce	F
	Dwarf Alberta spruce	F
	Spruce, black	F
	Glaucia-Colorado blue spruce	F
	Hoopsii-Hoop's blue spruce	F
	Koster-Koster blue spruce	F
	Spruce, Colorado	C,F
	Bristlecone pine	F
	Canary Island pine	F
	Shore pine, beach pine	F
	Eldarica pine	F
	Aleppo pine	C,F
	Monterey pine	F
	Pine	C,F
	Eastern white pine	F
	Scotch pine	F
	Japanese black pine	F
	American sycamore	F
	Californina sycamore	F
	Podocarpus	F
	Cottonwood	F
	Cottonwood (grown for pulp)	F
	Laurelcherry, Carolina	F
	Dwarf flowering almond	C,F
	Laurelcherry, English	F
	Cherry, Mahaleb	F
	Yoshino flowering cherry	F
	Pear	F
	Pin oak	F
	Willow oak	F
	Red oak	C,F
	Oak	C,F
	Babylon weeping willow	F
	Corkscrew willow	F
	California pepper tree	F
	Redwood, coast	F
	Giant sequoia	F
	Mahogany	F
	Yellow tab	F
	Linden, little leaf	C,F
	Chinese elm	F
	California laurel	F
	Mexican fan palm	F

*Picea englemanni*  
*Picea glauca*

*Picea glauca conica*  
*Picea mariana*  
*Picea pungens*

*Pinus aristata*  
*Pinus canariensis*  
*Pinus contorta*  
*Pinus eldarica*  
*Pinus halepensis*  
*Pinus radiata*  
*Pinus* spp.  
*Pinus strobus*  
*Pinus sylvestris*  
*Pinus thunbergiana*  
*Platanus occidentalis*  
*Platanus racemosa*  
*Podocarpus* spp.  
*Populus deltoides*

*Prunus caroliniana*  
*Prunus glandulosa*  
*Prunus laurocerasus*  
*Prunus mahaleb*  
*Prunus yedoensis*  
*Pyrus communis*  
*Quercus palustris*  
*Quercus phellos*  
*Quercus rubra*  
*Quercus* spp.  
*Salix babylonica*

*Schinus molle*  
*Sequoia sempervirens*  
*Sequoiadendron giganteum*  
*Swietenia mahogani*  
*Tabebuia caraiba*  
*Tilia cordata*  
*Ulmus parvifolia*  
*Umbellularia californica*  
*Washingtonia robusta*

**SHRUBS**

**Recommended Treatment Method**  
F = Field Grown  
C = Container Grown

Scientific Name	Common Name	
<i>Abelia grandiflora</i>	Glossy abelia	F
<i>Acacia redolens</i>	Acacia, prostrate	F
<i>Agave americana</i>	Century plant	F
<i>Agave macroculmis</i>	Agave	F
<i>Anisodonteia hypomandarum</i>	Cape mallow	C,F
<i>Arctostaphylos stanfordiana</i>	Manzanita, Stanford	F
<i>Astilbe chinensis</i>	Astilbe/false spirea	C,F
<i>Baccharis pilularis</i>	Coyotebush	F
<i>Berberis thunbergii</i>	Aurea-golden Japanese barberry	C,F
	Crimson pygmy barberry	C,F
	Atropurea-redleaf	C,F
	Japanese barberry	F
	Barberry, Japanese	C,F
<i>Bougainvillea</i> spp.	Barbara Karst	F
	California gold	F
	Scarlet O'Hara	F
	Texas dawn	F
<i>Buddleia davidii</i>	Butterfly bush	C,F
<i>Buxus microphylla</i>	Littleleaf boxwood	F
<i>Buxus microphylla japonica</i>	Boxwood, Japanese	C,F

(continued)

**SHRUBS (continued)**

**Recommended Treatment Method**  
**F = Field Grown**  
**C = Container Grown**

**Scientific Name**

**Common Name**

<i>Buxus sempervirens</i>	Boxwood, common	C,F
<i>Callistemon citrinus</i>	Bottlebrush, lemon	C,F
<i>Cassia artemisioides</i>	Cassia, feathery	F
<i>Ceanothus americanus</i>	Jerseytea, redroot	C,F
<i>Ceanothus</i> spp.	Wild lilac	C,F
<i>Chaenomeles japonica</i>	Flowering quince	C,F
<i>Chamaecyparis obtusa</i>	Kosteri cypress	F
	Nana-dwarf Hinoki cypress	F
	Torulosa cypress	F
	Squarrosa Minima cypress	F
<i>Chamaecyparis pisifera</i>	Fillifera-thread cypress	F
<i>Chamaecyparis pisifera</i> spp.	Areca palm	F
<i>Chrysalidocarpus lutescens</i>	Summersweet	C,F
<i>Clethra</i>	Cleyera, Japanese	C,F
<i>Cleyera japonica</i>	Pink breath of heaven	C,F
<i>Coleonema pulchrum</i>	Sibirica-Siberian dogwood	F
<i>Cornus alba</i>	Dogwood, kousa	C,F
<i>Cornus kousa</i>	Flaviramea-yellowtwig dogwood	F
<i>Cornus stolonifera</i>	Praecox-early cotoneaster	F
<i>Cotoneaster adpressus</i>	Cotoneaster, cranberry	C,F
<i>Cotoneaster apiculatus</i>	Cotoneaster, brightbead	F
<i>Cotoneaster buxifolius</i>	Cotoneaster, Pyrenees	F
<i>Cotoneaster congestus</i>	Cotoneaster, bearberry	F
<i>Cotoneaster dammeri</i>	Himalayan cotoneaster	F
<i>Cotoneaster himalayan</i>	Cotoneaster, rock	C,F
<i>Cotoneaster horizontalis</i>	Cotoneaster, parney	C,F
<i>Cotoneaster lacteus</i>	Cotoneaster, rockspray	F
<i>Cotoneaster microphyllus</i>	Willowleaf cotoneaster	C,F
<i>Cotoneaster salicifolia</i>	Hollandia-warminster broom	F
<i>Cytisus praecox</i>	Lena-Scotch broom	F
<i>Cytisus scoparius</i>	Sotol, desert spoon	F
<i>Dasyliiron wheeleri</i>	Nakiana-dwarf deutzia	F
<i>Deutzia crenata</i>	Hopseedbush, clammy	F
<i>Dodonaea viscosa</i>	Hopseed bush	F
	Escallonia	C,F
<i>Escallonia exoniensis</i>	Euonymus, winged	F
<i>Euonymus alata</i>	Canadale gold euonymus	C,F
<i>Euonymus fortunei</i>	Emerald'n gold euonymus	C,F
	Euonymus, stringybark	C,F
	Wintercreeper	C,F
<i>Euonymus japonica</i>	Euonymus, evergreen	C,F
	Silver king euonymus	F
<i>Euonymus kiatschovica</i>	Spreading euonymus	F
<i>Euonymus vegetus</i>	Bigleaf wintercreeper	C,F
<i>Fatsyhedera lizei</i>	Fatsyhedera	C,F
<i>Fatsia japonica</i>	Japanese aralia	C,F
<i>Felicia amelloides</i>	Blue marguerite	C,F
<i>Forsythia intermedia</i>	Forsythia, border	F
<i>Gardenia jasminoides</i>	Gardenia	C,F
<i>Genista pilosa</i>	Woadwaxen	F
<i>Hibiscus rosa-sinensis</i>	Ross Estey-hibiscus	F
	Hibiscus, Chinese	F
<i>Hibiscus syriacus</i>	Rose of Sharon, Red Bird	F
	Rose of Sharon, Red Heart	F
	Rose of Sharon, Woodbridge	F
	Rose-of-Sharon (Shrubalthea)	F
<i>Hydrangea macrophylla</i>	Hydrangea, French	C,F
<i>Hydrangea quercifolia</i>	Hydrangea, Oakleaf	C,F
<i>Ilex aquifolium</i>	Balkans holly	F
	Gold coast holly	F
	Holly, English	F
<i>Ilex aquipernyi</i>	San Jose holly	C,F
<i>Ilex cornuta</i>	Dwarf Burford holly	C,F
	Holly, Chinese	C,F
<i>Ilex crenata</i>	Compacta-dwarf Japanese holly	C,F
	Convexa holly	C,F
	Helleri-Heller's Japanese holly	C,F
	Holly, Japanese	C,F
<i>Ilex glabra</i>	Nordica-inkberry holly	F
<i>Ilex meserveae</i>	Blue boy holly	F
	Blue girl holly	F
	Ebony magic holly	F
<i>Ilex vomitoria</i>	Nana-dwarf yaupon holly	C,F
	Pendula-weeping yaupon holly	C,F
	yaupon holly	C,F
<i>Juniperus chinensis</i>	Media-old gold juniper	C,F
<i>Juniperus conferta</i>	Emerald sea shore juniper	F
<i>Juniperus horizontalis</i>	Huntington blue juniper	C,F
	Wiltonii-blue carpet juniper	C,F
<i>Juniperus procumbens</i>	Nana-dwarf Japaneses garden juniper	C,F
<i>Juniperus prostrata</i>	Prostrata juniper	C,F
<i>Juniperus sabina</i>	Broadmoor juniper	F
	Foemina-Hicks juniper	F
	Tamariscifolia-Tam juniper	F
<i>Juniperus scopulorum</i>	Emerald green juniper	F
<i>Juniperus</i> spp.	Juniper	C,F
<i>Juniperus squamata</i>	Blue juniper	F
	Blue star juniper	F
	Parsonii juniper	F
<i>Justicia brandegeana</i>	Shrimp plant	C,F
<i>Justicia spicigera</i>	Honeysuckle, Mexican	F
<i>Kalmia latifolia</i>	Laurel, mountain	F
<i>Lagerstroemia indica</i>	Crape myrtle	C,F
<i>Lavandula angustifolia</i>	English lavender	C,F

<i>Leucothoe axillaris</i>	Leucothoe, coast	F
<i>Leucothoe fontanesiana</i>	Leucothoe, drooping	F
<i>Ligustrum amurense</i>	Privet, amur	C,F
<i>Ligustrum japonicum</i>	Privet, Japanese	C,F
	yellow tip ligustrum	C,F
	Privet, glossy	C,F
<i>Ligustrum lucidum</i>	California privet	F
<i>Ligustrum ovalifolium</i>	Howardi privet	F
<i>Ligustrum texanum</i>	Wax leaf privet	F
	Privet, golden	C,F
<i>Ligustrum vicaryi</i>	Vicary golden privet	C,F
<i>Livistona chinensis</i>	Chinese fountain palm	F
<i>Lonicera fragrantissima</i>	Winter honeysuckle	F
<i>Lonicera periclymenum</i>	Flowering woodbine	F
	Serotina woodbine	F
	Trumpet honeysuckle	F
<i>Lonicera sempervirens</i>	(No common name)	C,F
<i>Lorpetalum chinense</i>	Oregon grape	F
<i>Mahonia aquifolium</i>	Myoporum, prostrate	F
<i>Myoporum parvifolium</i>	Myrtle, true	C,F
<i>Myrtus communis</i>	Compacta-dwarf heavenly bamboo	C,F
<i>Nandina domestica</i>	Harbour dwarf-heavenly bamboo	C,F
	Heavenly bamboo (Nandina)	C,F
	Nana compacta-heavenly bamboo	C,F
	Nana purpurea-heavenly bamboo	C,F
	Woods dwarf-heavenly bamboo	C,F
<i>Nerium oleander</i>	Hardy red oleander	C,F
	Oleander	C,F
	Ruby lace oleander	C,F
<i>Osmanthus heterophyllus</i>	Osmanthus, holly-leaf	F
<i>Pachysandra terminalis</i>	Japanese spurge	C,F
<i>Philadelphus</i> spp.	Mockorange	C,F
<i>Phoenix roeloenii</i>	Pigmy date palm	F
<i>Photinia fraseri</i>	Fraser's photinia	C,F
	Photinia	C,F
<i>Pieris japonica</i>	Lily-of-the-valley	F
	Snowdrift lily-of-the-valley	F
	Temple bells lily-of-the-valley	F
	Valley rose lily-of-the-valley	F
	Andromeda	C,F
<i>Pittosporum</i> spp.	Pittosporum	C,F
<i>Pittosporum tobira</i>	Green pittosporum	F
	Japanese pittosporum	F
	Tobira	F
	Wheeler's dwarf pittosporum	F
<i>Platycladus orientalis</i>	Arborvitae, Oriental	C,F
<i>Plumbago ariculata</i>	Blue cape plumbago	F
<i>Podocarpus macrophyllus</i>	Yewpine	C,F
<i>Potentilla fragiformis</i>	Cinquefoil	F
<i>Potentilla fruticosa</i>	Cinquefoil	C,F
<i>Protea neriifolia</i>	Protea	F
<i>Pyracantha coccinea</i>	Firethorn, scarlet	C,F
<i>Pyracantha fortuneana</i>	Lolendei Monrovia pyracantha	C,F
<i>Pyracantha fortuneana</i>	Monon pyracantha	C,F
	Red elf hybrid pyracantha	C,F
	Rutgers hybrid pyracantha	C,F
	Santa Cruz pyracantha	C,F
	Victory pyracantha	C,F
<i>Pyracantha skoidzumi</i>	Firethorn, formosa	C,F
<i>Pyracantha, fortuneana</i>	Firethorn	C,F
<i>Rhaphiolepis indica</i>	Enchantress-Moness rhaphiolepis	F
	Rhaphiolepis (India hawthorn)	C,F
	Springtime-Monme rhaphiolepis	F
	Roundleaf rhaphiolepis	F
<i>Rhaphiolepis ovata</i>	Eastercactus	C,F
<i>Rhipsalidopsis gaertneri</i>	Flame azalea	F
<i>Rhododendron calendulaceum</i>	Butterfly rhododendron	F
<i>Rhododendron campylocarpum</i>	PJM rhododendron	F
<i>Rhododendron carolinianum x daurium</i>	Catawba album rhododendron	C,F
<i>Rhododendron catawbiense</i>	Catawba rhododendron	C,F
	Lord Roberts rhododendron	C,F
	Rocket rhododendron	C,F
	Elizabeth rhododendron	F
<i>Rhododendron forrestii</i>	America rhododendron	F
<i>Rhododendron x griersonianum</i>	English Roseum rhododendron	F
<i>Rhododendron hybrid spp.</i>	Nova Zembla rhododendron	F
	Scintillation rhododendron	F
<i>Rhododendron impeditum</i>	Rhododendron	F
<i>Rhododendron indica</i>	Formosa azalea	C,F
	Waucubusa azalea	C,F
<i>Rhododendron kerume</i>	Coral bells azalea	C,F
	Hino crimson azalea	C,F
	Hino pink azalea	C,F
	Snow azalea	C,F
<i>Rhododendron maximum</i>	Rhodie max (rosebay)	C,F
<i>Rhododendron mucronulatum</i>	Rhododendron	F
<i>Rhododendron satsumi</i>	Gumpo pink azalea	F
	Higasa azalea	F
<i>Rhododendron</i> spp.	Azalea	C,F
	Rhododendron	C,F
<i>Rhododendron</i> spp. hybrids	Carror azalea	C,F
	Girard Roberta azalea	F
	Golden flare exbury azalea	F
<i>Rhus lancea</i>	Sumac, African	C,F
<i>Rosa rugosa</i>	Ramanas rose	F
<i>Rosmarinus officinalis</i>	Rosemary	F
<i>Senecio cineraria</i>	Dusty miller	C,F

(continued)

**SHRUBS (continued)**

**Recommended Treatment Method**  
**F = Field Grown**  
**C = Container Grown**

Scientific Name	Common Name	
<i>Spiraea vanhouttei</i>	Bridal wreath	F
<i>Syringa vulgaris</i>	Lilac, common	C,F
<i>Syzygium paniculata</i>	Brush cherry	C,F
<i>Taxus cuspidata</i>	Yew, Japanese	F
<i>Taxus media</i>	Yew	F
<i>Thuja occidentalis</i>	Arborvitae, American	C,F
	Emerald arborvitae	F
	Globosa-globe arborvitae	F
	Little giant-dwarf arborvitae	F
	Nigra-dark American arborvitae	F
	Pyramidalis arborvitae	F
	Rheingold arborvitae	F
	Woodwardii arborvitae	F
	Aureus nana-dwarf golden arborvitae	F
	Minima glauca-dwarf arborvitae	F
	Red Cedar, Western	F
	Star jasmine, Chinese	F
	Christmas palm	F
	Koreanspice viburnum	C,F
	David viburnum	F
	Viburnum	F
	Viburnum	C,F
	Common snowball viburnum	F
	Doublefile viburnum	F
	Tea viburnum	F
	Virburnum, Sandankwa	F
	Viburnum, Laurustinus	C,F
	Compactum-spring bouquet viburnum	F
	Spring bouquet viburnum	F
	Dwarf cranberry bush	F
	Viburnum	F
	Bristol ruby weigela	F
	Java red weigela	F
	Minuet weigela	F
	Weigela, oldfashioned	F
	Xylosma	F
<i>Xylosma congestum</i>	Xylosma	F
<i>Yucca elata</i>	Yucca, soaptree	C,F
<i>Yucca recurvifolia</i>	Yucca, pendulous	F

**GROUNDCOVERS/PERENNIALS**

**Recommended Treatment Method**  
**F = Field Grown**  
**C = Container Grown**

Scientific Name	Common Name	
<i>Agapanthus africanus</i>	Lily-of-the-Nile	C,F
<i>Ajuga</i> spp.	Carpet bugle	F
<i>Arctotheca calendula</i>	Cape weed	F
<i>Asparagus retrofractus</i>	(No common name)	C,F
<i>Asparagus varieegata</i>	Tree fern	C,F
<i>Aster novae-angliae</i>	New England aster	C,F
<i>Aster novi-belgii</i>	New York aster	C,F
<i>Athyrium nipponicum</i>	Japanese painter fern	C,F
<i>Brassica oleracea</i>	Wild cabbage	C,F
<i>Callistephus chinensis</i>	China aster	C,F
<i>Campanula elatines</i>	Bellflower	C,F
<i>Carpobrotus edulis</i>	Ice plant, largeleaf (see label)	F
<i>Clytostoma callistegioides</i>	Trumpet vine, violet	C,F
<i>Cortaderia selloana</i>	Pampas grass	F
<i>Cuphea hyssopifolia</i>	False Mexican heather	C,F
<i>Delosperma alba</i>	White iceplant	F
<i>Dietes vegeta</i>	Fortnight lily	C,F
<i>Digitalis mertonensis</i>	Foxglove	C,F
<i>Doronicum cordatum</i>	Leopard's bane	C,F
<i>Drosanthemum floribundum</i>	Trailing rosea iceplant	F
<i>Erianthus ravennae</i>	Hardy pampus grass	C,F
<i>Festuca ovina glauca</i>	Blue fescue	F
<i>Gaillardia grandiflora</i>	Blanket flower	C,F
<i>Gazania rigens leucolaena</i>	Gazania, trailing	C,F
<i>Gazania</i> spp.	Gazania	F
<i>Hedera canariensis</i>	Ivy, Algerian	F
<i>Hedera helix</i>	Ivy, English	F
<i>Heliotropium fragrans</i>	Common heliotrope	C,F
<i>Hemerocallis</i> spp.	Daylily	C,F
<i>Hosta lancifolia</i>	Albo-marginata hosta	C,F
<i>Hosta</i> spp.	Lily, plantain	C,F
<i>Heuchera micrantha</i>	Coral bells	C,F
<i>Hypericum</i> spp.	St. Johnswort	C,F
<i>Iberis sempervirens</i>	Evergreen candytuft	C,F
<i>Lampranthus spectabilis</i>	Trailing iceplant	F
<i>Leptospermum scaparium</i>	New Zealand teatree/Manuka	C,F
<i>Limonium perezii</i>	Statice/Sea lavender	C,F
<i>Liriope gigantea</i>	White lily turf	F
<i>Liriope muscari</i>	Lilac beauty lily turf	C,F
	Majestic lily turf	C,F
	Monroe white lily turf	C,F
	Silvery sunproof lily turf	C,F
	Variiegated liriope lily turf	C,F
	Big blue lily turf	C,F
	Edging lobelia	C,F
<i>Lobelia erinus</i>	Honeysuckle, Japanese	F
<i>Lonicera japonica</i>	Ice plant (see label)	F
<i>Mesembryanthemum crystallinum</i>	Bee Balm	C,F
<i>Monarda didyma</i>	Mondo grass	F
<i>Ophiopogon japonicus</i>	Daisy, trailing African	F
<i>Osteospermum fruticosum</i>		F

<i>Pachysandra terminalis</i>	Japanese spurge	F
<i>Pennisetum setaceum</i>	Fountaingrass	C,F
<i>Polystichum polyblepharum</i>	Tassel fern	C,F
<i>Sedum brevifolium</i>	Stonecrop	C,F
<i>Sedum kamtschaticum</i>	Stonecrop	C,F
<i>Sedum spurium</i>	Stonecrop, tworow	C,F
<i>Tulbaghia violacea</i>	Society garlic	C,F
<i>Verbena rigida</i>	Veined verbena	C,F
<i>Veronica</i> spp.	Speedwell	C,F
<i>Vinca major</i>	Periwinkle, bigleaf	F
<i>Vinca minor</i>	Periwinkle, dwarf	F

**FLOWERS**

**Recommended Treatment Method**  
**F = Field Grown**  
**C = Container Grown**

Scientific Name	Common Name	
<i>Achillea</i> spp.	Yarrow	C,F
<i>Antirrhinum majus</i>	Snapdragon	F
<i>Caladium bicolor</i>	Caladium, fancy leafed	F
<i>Chrysanthemum</i> spp.	Chrysanthemum	C,F
<i>Mixed Hybrid</i>	Dahlia	C,F
<i>Cladium bicolor</i>	Fancy-leafed caladium	F
<i>Coreopsis lanceolata</i>	Coreopsis	F
<i>Coreopsis verticulata</i>	Threadleaf coreopsis	C,F
<i>Dianthus barbatus</i>	Sweet William	F
<i>Dianthus gratianopolitanus</i>	Cheddar pink	C,F
<i>Dicentra spectabilis</i>	Bleeding heart	C,F
<i>Dimorphotheca</i> spp.	Marigold, cape	F
<i>Echinacea purpurea</i>	Coneflower, purple	C,F
<i>Evolvulus nuttallianus</i>	Blue daze	C,F
<i>Geum quellyon</i>	Geum	F
<i>Gladiolus hortulanus</i>	Gladiolus	F
<i>Gypsophila paniculata</i>	Baby's breath	F
<i>Impatiens wallerana</i>	Impatiens (Busy lizzie)	F
<i>Iris</i> spp.	Iris, bearded	F
<i>Liatris spicata</i>	Bleeding star	C,F
<i>Pelargonium hortorum</i>	Geranium	F
<i>Petunia</i> spp.	Petunia	C,F
<i>Portulaca grandiflora</i>	Moss, rose	F
<i>Ranunculus asiaticus</i>	Ranunculus, Persian	F
<i>Rosa</i> spp.	Rose	F
<i>Rudbeckia fulgida</i>	Blackeyed susan	C,F
<i>Rudbeckia hirta</i>	Daisy, gloriosa (black-eyed Susan)	F
<i>Salvia</i> spp.	Salvia (Sage)	F
<i>Stokesia laevis</i>	Aster, stokes	F
<i>Strelitzia reginae</i>	Bird of paradise	F
<i>Tagetes</i> spp.	Marigold	F
<i>Viola wittrockiana</i>	Pansy	F
<i>Zinnia elegans</i>	Zinnia, common	F

**NON-BEARING TREES AND VINES**

**Recommended Treatment Method**  
**F = Field Grown**  
**C = Container Grown**

almond	F
apple	F
apricot	F
avocado	F
blackberry	F
blueberry	F
boysenberry	F
cherry, sour	F
cherry, sweet	F
currant	F
dewberry	F
elderberry	F
fig	F
filbert	F
gooseberry	F
grape, American	F
grape, European	F
grapefruit	F
kiwi	F
Kumquat	C,F
lemon	F
loganberry	F
macadamia nut	F
nectarine	F
olive	F
orange	C,F
peach	F
pear	F
pecan	C,F
pistachio	F
plum	F
pomegranate	F
prune	F
raspberry	F
walnut, black	F
walnut, English	F

† Non-bearing plants are defined as those that will not bear fruit for at least one year after treatment.

## ORNAMENTAL BULBS

Surflan AS may be applied for control of susceptible annual weeds in ornamental bulbs, e.g., bulbous iris, daffodil (narcissus), hyacinth, and tulip. Apply Surflan AS to the soil surface 2-4 weeks after planting, but prior to the emergence of annual weeds. For fall planted bulbs, apply Surflan AS again in late winter or early spring to weed-free soil surfaces.

### Broadcast Application Rates

Time of Application	Soil Texture	Surflan AS		Minimum Time Between Applications (months)	Total Amount Allowed Per Year (qt/acre)
		(qt/acre)	(fl oz/1000 sq ft)		
Fall	Coarse	0.75	0.5	3	1.5
Fall	Medium and Fine	1.5	1.0	3	2.25
Feb. - March	All Soil Textures	0.75	0.5	3	2.25

### Special Use Precautions:

Do not apply to tulip plants that have emerged to a height greater than 3/4 inch. Do not apply to gladioli corms prior to emergence or less than one (1) inch in diameter.

## SHADEHOUSE AREAS

Surflan AS may be applied to drainage areas under benches in open shadehouse-type structures where the natural flow of air is unimpeded. Do not apply in enclosed greenhouses or in enclosed shadehouse-type structures. Do not apply within 3 weeks prior to enclosure of greenhouse or poly-type structures.

## CHRISTMAS TREE PLANTATIONS

### Surflan AS Alone

Apply Surflan AS as a directed spray to the soil surface or as an overtop spray to established plantings of field grown Christmas tree species, including fir (*Abies* spp.), pine (*Pinus* spp.), and spruce (*Picea* spp.). Follow all instructions provided in the "General Information" section of this label.

### Broadcast Application Rates

Length of Control	Surflan AS		Minimum Time Between Applications (months)	Total Amount Allowed Per Year (qt/acre)
	(qt/acre)	(fl oz/1000 sq ft)		
2 - 4 months	2	1.5	2	8
4 - 8 months	4	3	2	8

### Tank Mix Combinations

Tank mix combinations of Surflan AS plus other labeled herbicides may be used as directed or overtop sprays in established Christmas tree plantings. When applied according to use directions, these tank mixes will provide control of susceptible weed species listed on the respective product labels. Refer to tank mix product labels for specific use directions, precautions, and limitations before use.

**Surflan AS Plus Glyphosate:** Apply tank mix combinations of Surflan AS plus glyphosate only as directed sprays in Christmas tree plantings. When applied according to use directions, Surflan AS plus glyphosate will provide postemergence control of susceptible weed species listed on the label for glyphosate and residual preemergence control of susceptible weed species listed on the label for Surflan AS. Refer to the label for glyphosate for specific use directions, precautions, and limitations before use.

### Special Use Precautions:

Do not apply to Douglas-fir (*Pseudotsuga menziesii*). Do not apply to seedbeds or seedling transplant beds. Apply only to established plants that have been transplanted into their final growing location for a sufficient period of time to allow the soil to be firmly settled around the roots from packing and rainfall or irrigation.

## NONCROPLAND AREAS AND INDUSTRIAL SITES

### Noncropland Areas - Tank Mix Combinations

Tank mix combinations of Surflan AS plus glyphosate and many other labeled herbicides may be used to control undesirable vegetation in noncropland areas such as roadsides, rights-of-way, etc. When applied according to use directions, these tank mixes will provide control of susceptible weed species listed on the respective product labels. Refer to tank mix product labels for specific use directions, precautions, and limitations before use.

### Broadcast Application Rates

Length of Control	Surflan AS		Minimum Time Between Applications (months)	Total Amount Allowed Per Year (qt/acre)
	(qt/acre)	(fl oz/1000 sq ft)		
2 - 4 months	2	1.5	2	6
4 - 8 months	4	3	4	12
8 - 12 months	6	4.5	8	12

### Industrial Sites - Tank Mix Combinations

Tank mix combinations of Surflan AS plus glyphosate, Spike herbicide, and many other labeled herbicides may be used as overtop sprays to control existing vegetation on industrial sites such as utility substations, highway guard rails, sign posts, and delineators. When applied according to use directions, these tank mixes will provide control of susceptible weed species listed on the respective product labels. Refer to tank mix product labels for specific use directions, precautions, and limitation before use.

## WARM SEASON TURFGRASSES

Surflan AS may be applied as a preemergence treatment for control of annual grasses and certain broadleaf weeds in established warm season turf including bahiagrass, bermudagrass, buffalograss, centipedegrass, St. Augustinegrass, zoysiagrass, and established tall fescue growing in warm season areas. Established turf is defined as a dense turf having a well-anchored root system and healthy, vigorous top growth. Use Surflan AS only as a part of a total turf management program that includes good fertilization practices.

Surflan AS may be tank mixed with Gallery herbicide (California registration pending) and applied preemergence to broaden the spectrum of broadleaf weed control in warm season turf. Refer to the label for Gallery for specific use directions, precautions, and limitations before use.

Any cultural practices that disturb the soil, such as aerification or verticutting, should be done prior to application of Surflan AS.

Surflan AS will not control emerged weeds. Successful preemergence control of weeds listed on this label requires that Surflan AS be applied prior to weed germination and be activated by at least one-half (1/2) inch of rainfall or irrigation within 21 days of application.

Surflan AS may injure turf that is not well established or is stressed or weakened due to unfavorable winter climatic conditions, drought, nematodes, or other factors which damage or weaken turf root systems. Apply Surflan AS only to healthy, well-established turf that has a well-anchored root system.

Do not apply Surflan AS in the spring or early summer to tall fescue turfgrass reseeded the previous fall. In such cases, apply Balan 2.5G granular herbicide at 60-80 pounds per acre in early summer (Round 1) and Surflan AS at 1.5 quarts per acre approximately eight weeks later (Round 2). Do not apply Surflan AS at the single application rate (2 quarts per acre) to established tall fescue; in such cases, apply 1.5 quarts per acre of Surflan AS in an initial application, followed by a second application of 1.5 quarts per acre 8-10 weeks later.

In bermudagrass areas that have been overseeded with winter grasses, a spring application of Surflan AS will thin the overseeded grasses.

## ANNUAL GRASSES CONTROLLED BY SURFLAN AS

### Summer Annuals:

**Common Name**  
barnyardgrass (watergrass)  
crabgrass, large  
crabgrass, smooth  
crabgrass  
crowfootgrass  
foxtail, bristleglass  
foxtail, giant  
foxtail, green (pigeongrass)  
foxtail, robust  
foxtail, yellow  
goosegrass (silver crabgrass)  
Johnsongrass (seedling only)  
ryegrass, Italian  
sandbur, field

### Scientific Name

*Echinochloa crus-galli*  
*Digitaria sanguinalis*  
*Digitaria ischaemum*  
*Digitaria* spp.  
*Dactyloctenium aegyptium*  
*Setaria magna*  
*Setaria faberi*  
*Setaria viridis*  
*Setaria robusta*  
*Setaria glauca*  
*Eleusine indica*  
*Sorghum halepense*  
*Lolium multiflorum*  
*Cenchrus incertus*

### Winter Annuals:

**Common Name**  
bluegrass, annual

### Scientific Name

*Poa annua*

## ANNUAL BROADLEAF WEEDS CONTROLLED BY SURFLAN AS

### Summer Annuals:

**Common Name**  
carpetweed  
knotweed, prostrate  
purslane, common

### Scientific Name

*Mollugo verticillata*  
*Polygonum aviculare*  
*Portulaca oleracea*

### Winter Annuals:

**Common Name**  
chickweed, common  
henbit

### Scientific Name

*Stellaria media*  
*Lamium amplexicaule*

## BROADLEAF WEEDS SUPPRESSED BY SURFLAN AS

**Common Name**  
groundsel, common  
spurge, prostrate  
woodsorrel, yellow

### Scientific Name

*Senecio vulgaris*  
*Euphorbia humistrata*  
*Oxalis stricta*

### Application Rates, Frequency, and Timing of Application

Surflan AS can be applied in the spring for summer annual grass and broadleaf weed control, and in the fall for annual bluegrass (*Poa annua*) and winter annual broadleaf weed control.

### Broadcast Application Rates (Warm Season Turfgrasses)

Use Area	Surflan AS		Minimum Time Between Applications (months)	Total Amount Allowed Per Year (qt/acre)
	(qt/acre)	(fl oz/1000 sq ft)		
All, except Florida	1.5	1	3	6
	2	1.5	3	6
Florida	1.5	1	3	4.5

### 1. Summer Annual Grasses and Broadleaf Weeds

**Single Application Program:** Apply 2 quarts per acre of Surflan AS in late winter or early spring, prior to the onset of conditions favorable for annual weed germination.

**Split Application Program:** As an alternative to a single application program, Surflan AS may be applied in a split application. This program is desirable when the initial application is made well in advance of weed germination and where weed control is desired for a longer period of time. Apply 1.5 quarts per acre of Surflan AS in an initial application, followed by a second application of 1.5 quarts per acre 8-10 weeks later.

The second treatment of the split application may follow application of a different pre-emergence grass herbicide in place of the initial application of Surflan AS.

### 2. Annual Bluegrass (*Poa annua*) and Winter Annual Broadleaf Weeds

In areas of heavy annual bluegrass infestation, its elimination will result in temporary thinning of turfgrass cover. Proper fertilization, irrigation, and soil incorporated reseeding should be employed to speed the restoration of desirable turfgrass cover in areas previously occupied by annual bluegrass (see section on reseeding).

Apply Surflan AS as a preemergence treatment in late summer or early fall, prior to the expected germination period for annual bluegrass and winter annual broadleaf weeds. If annual bluegrass infestation is severe and its elimination will result in thinning of turfgrass cover, apply Surflan AS at 1.5 quarts per acre. If thinning of turfgrass cover is not a potential problem, Surflan AS may be applied at 2 quarts per acre.

### Weed Control in Florida

In Florida, apply 1.5 quarts per acre of Surflan AS three times per year, or every 90-100 days, in the fall, early spring, and early summer. Do not apply more than 1.5 quarts per acre of Surflan AS in any single application.

### Application Equipment

Apply Surflan AS evenly over the turfgrass area. Avoid spray pattern skips and overlaps that may result in incomplete coverage or over-application. For best results, use application equipment designed to uniformly broadcast liquid herbicides. Calibrate application equipment prior to use, according to manufacturer's directions. Check equipment frequently to make sure it is working properly and distributing spray uniformly.

### Reseeding

Herbicides that control annual weeds may also affect establishment of desirable turfgrass seedlings. Reseeding should be delayed for at least 90-120 days following application of Surflan AS. When reseeding, it is essential that proper cultural practices such as soil cultivation and seedbed preparation, irrigation, and fertilization be followed. For satisfactory reseeding results following use of Surflan AS, the seeding rate should be increased and equipment designed to place seed in full contact with soil (such as the Rogers Aero Seeder) should be employed.

### Special Use Precautions:

To avoid possible injury, do not apply Surflan AS to:

- Cool season turfgrass species.
- Golf course putting greens and tees or lawns containing dichondra or cool season turfgrass species.
- Newly sprigged or sodded areas of bermudagrass, St. Augustinegrass, centipedegrass, or zoysiagrass until these turfgrasses are well established and have well-anchored root systems.
- Newly hydromulched areas of bermudagrass until such areas are well established.
- Bermudagrass variety "Sun Turf" when tank mixed with atrazine.

### 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

United Phosphorus, Inc. (UPI) 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. UPI 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 UPI 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 UPI's election, one of the following:

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

UPI shall not be liable for losses or damages resulting from handling or use of this product unless UPI is promptly notified of such loss or damage in writing. In no case shall UPI be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer and Inherent Risks of Use above and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of UPI 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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