



062719-00112-062599

Printed: 11:22:58 Thursday, 22 Jul, 1999 # 63 / 3765

Systems Integration Group, Inc.



U.S. ENVIRONMENTAL PROTECTION AGENCY  
Office of Pesticide Programs  
Registration Division (7505C)  
401 "M" St., S.W.  
Washington, D.C. 20460

EPA Reg. Number:

62719-112

Date of Issuance:

JUN 25 1999

NOTICE OF PESTICIDE:  
Registration  
X Reregistration

Term of Issuance:

Unconditional

Name of Pesticide Product:

Surflan\* A.S.

(under FIFRA, as amended)

Name and Address of Registrant (include ZIP Code):

Dow AgroSciences LLC  
9330 Zionsville Road  
Indianapolis, IN 46268

**Note:** Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

Based on your response to the Oryzalin Reregistration Eligibility Decision (RED) document, EPA has reregistered the product listed above. Please correct the following typographical error noted in the labeling before releasing the product for shipment:

1. In the second to last line of the paragraph "Mixing Order (Tank Mixing With Liquid Fertilizer)" on page 9, add a period (".") after the word "product" and capitalize the "A" in "allow". You should also close the parentheses around the statement "Allow extra mixing and dispersion time for dry flowable products" or omit the parentheses altogether.

Enclosed is a copy of your label stamped "Accepted with Comments". This action is taken under the authority of section 4(g)(2)(C) of the Federal Insecticide, Fungicide and Rodenticide Act, as amended. Reregistration under this section does not eliminate the need for continual reassessment of pesticides. EPA may require submission of data at any time to maintain registration of your product.

Signature of Approving Official:

Date:

JUN 25 1999

EPA Form 8570-6

RD:STANTON:PM Team 23:Rm. 237:CM-2:305-5218:Disk #10:62719-112.rrc

CONCURRENCES

SYMBOL ▶	7505C						
SURNAME ▶	S. Stanton						
DATE ▶	Jun 25, 1999						

page 2  
EPA Reg. No.62719-112

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Submit one copy of the revised final printed label for the record before you release the product for shipment.

Joanne I. Miller  
Product Manager (23)  
Herbicide Branch  
Registration Division (7505C)

Enclosure

# Surflan\* A.S.

62719-112

## Registration Notes:

Current label text based on EPA-accepted copy dated 04/11/92 and EPA-accepted WPS revisions dated 12/10/93.

**Note: According to EPA correspondence dated June 8, 1999, the label changes proposed in amended labeling dated 03/25/99 were not acceptable. The following changes were required [3(a)-3(f)]:**

- 3(a). Hazards to Humans and Domestic Animals: (1) Revise first sentence to read "Causes moderate eye irritation; and (2) revise the skin sensitization statement to read " Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals".
- 3(b). Changed the term "small fruits" to "berries" throughout the label per revised crop grouping definitions in 40 CFR 180.41.
- 3(c). Deleted reference to "aircraft" from "Engineering Controls" statement.
- 3(d). Added the following qualifying language to the Agricultural Use Requirements box (added text underlined): 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...
- 3(e). Deleted last two sentences under "Testing for Compatibility in Liquid Fertilizers" which refer to specific compatibility agents which have been deleted from the label.
- 3(f). Revised reference to crops in "Crop Listing" section from "crops such as, but not limited to" to crop grouping headings which read, e.g., "Citrus Fruits, Such as".

## Proposed Changes by Amendment (03/25-99):

1. Revised "Sale Copy" to accurately reflect labeled use sites.
2. **Ingredients Statements:** Added "Total... 100%".
3. **Precautionary Statements:** Revised format of KOROC statement, signal word and Spanish advisory on base label per recent guidance from EPA labeling team. Signal word and KOROC statement need not be repeated when Precautionary Statements appear on the same panel.
4. Deleted portions of the label booklet referral statement which inferred that certain precautionary statements did not appear on the container label.
5. **General Information:** (1) revised crop use descriptions; (2) added precautions relative to application timing and transplanting.
6. **Rotation Crop Interval:** The following statement was added as an advisory when rotating from tree and vine to row crops: "To avoid crop injury, a 24 month rotational interval is recommended when rotating from tree and vine crops to row crops."
7. **Mixing Directions:** (1) Added more detailed tank mixing instructions and precautions; (2) corrected mixing order for tank mixes.
8. **Approved Crops:**
  - (1) Crop groupings for which food tolerances exist (citrus, tree nuts, pome and stone fruit, berries, and vineyards) revised to be all-inclusive; other crops listed separately.
  - (2) Added chestnut, chinquapin, citrus citron, citrus hybrids, crabapple, guava, hickory nut, kumquat, lime, loquat, mandarin (tangerine), mayhaw, papaya, pummelo, and quince to crop listing.
  - (3) Added section entitled "Management of Orchard and Vineyard Middle Strips With Reduced Rates". Use of reduced rate allows a clean orchard floor necessary for harvest (i.e., almonds) but allows growth of desirable winter vegetation for soil cover.
  - (4) Added tank mix with Gallery\* 75 Dry Flowable to improve control of broadleaf non-bearing fruit tree and nut crops and vineyards.

- 9. **Compatibility Agents for Liquid Fertilizers:** Deleted reference to specific compatibility agents. General guidance on compatibility agents is provided.
- 10. **Weeds Controlled:** Add goosegrass (*Eleusine indica*) to the list of controlled grasses.
- 11. Deleted specific tank mix product/crop recommendations
- 12. Minor formatting changes utilizing white space to set off headings.

In addition to the above changes, the following changes, submitted to EPA SRRD on Feb. 26, 1999 in response to EPA correspondence dated January 13, 1999, are included in this submission.

Note: This label has been amended in accordance with the Federal Register Notice dated 11/06/98, in addition to changes specified in the Oryzalin RED dated 01/27/95.

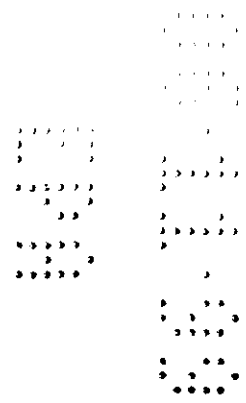
**Acute toxicity information of Surflan A.S. by route of exposure:**

Route of Exposure	Surflan A.S.
Oral LD50	IV
Dermal LD50	IV
Dermal Irritation	IV
Ocular Irritation	III
Inhalation	IV
Dermal Sensitization	sensitizer

**Changes by Amendment Per RED Requirements:**

- 1. **Precautionary Statements:** (1) revised statement of hazard and precautionary measures text in accordance with acute toxicity data; (2) revised PPE for applicators and other handlers; (3) revised User Safety statements; (4) added Engineering Controls" statements; and (5) added "toxic to fish" statement to Environmental Hazards section.
- 2. **Directions for Use:** (1) added language allowing workers to enter treated areas without required PPE during the reentry interval following 1/2 to 1 inch of rainfall or irrigation; (2) added prohibition against aerial application; (3) added application rate limitations (rate range, minimum time between applications, and total allowable use rate per year).

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(Base label):

(Logo) Dow AgroSciences LLC

# Surflan\* A.S.

A preemergence surface-applied herbicide for the control of most many annual grasses and certain broadleaf weeds in citrus, fruit and nut trees, berries, vineyards, and Christmas tree plantations.

Active Ingredient:

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

Contains four pounds of active ingredient per gallon.

**ACCEPTED  
with COMMENTS  
In EPA Letter Dated  
JUN 25 1999**

**Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.  
62719-112**

**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.)

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### Precautionary Statements

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#### Hazards to Humans and Domestic Animals

**Causes Moderate Eye Irritation • Prolonged Or Frequently Repeated Skin 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.

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**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: Flush with plenty of water. Get medical attention if irritation persists.

**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.

**Agricultural Use Requirements**

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

Refer to label booklet for Directions for Use, including Storage and Disposal.

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

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](http://www.dowagro.com).

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

**Shake Well Before Using.**

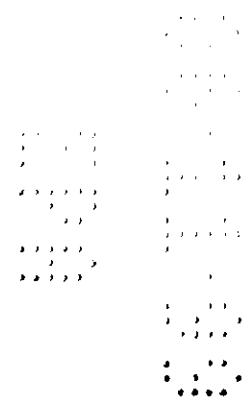
EPA Reg. No. 62719-112

EPA Est. 37429-GA-01

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Dow AgroSciences LLC • Indianapolis, IN 46268 U.S.A.

**Herbicide**



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(Datapack cover):

(Logo) Dow AgroSciences LLC

# Surflan\* A.S.

**A preemergence surface-applied herbicide for the control of most many annual grasses and certain broadleaf weeds in citrus, fruit and nut trees, berries, vineyards, and Christmas tree plantations.**

Active Ingredient:

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Inert Ingredients .....	59.6%
Total .....	100.0%

Contains four 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.)

### Agricultural Use Requirements

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

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

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

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](http://www.dowagro.com).

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

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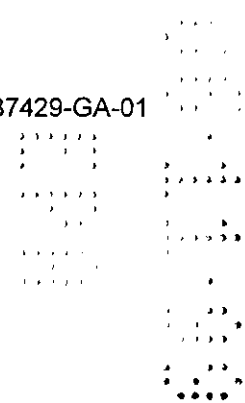
EPA Reg. No. 62719-112

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EPA Est. 37429-GA-01

## Herbicide





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(Page 1 through end):

Table of Contents	Page
Precautionary Statements	-
Hazards to Humans and Domestic Animals	-
Personal Protective Equipment (PPE)	-
User Safety Recommendations	-
First Aid	-
Environmental Hazards	-
Directions for Use	-
Agricultural Use Requirements	-
Storage and Disposal	-
General Information	-
General Use Precautions	-
Soil Preparation	-
Activation and Cultivation	-
Mixing Directions	-
Surflan A.S. - Alone	-
Surflan A.S. in Tank Mix	-
Tank Mixing Precautions	-
Mixing Order (Tank Mixing with Water)	-
Tank Mixing with Liquid Fertilizer	-
Mixing Order (Tank Mixing with Liquid Fertilizer)	-
Premixing	-
Testing for Compatibility in Liquid Fertilizers	-
Testing Procedure	-
Compatibility Agents	-
Application Methods	-
Ground Broadcast Application	-
Band Application	-
Chemigation	-
Weeds and Grasses Controlled in Fruit and Nut Crops and Vineyards	-
Approved Crops	-
Tree And Vine Crops - Citrus, Fruit and Nut Trees, Berries and Vineyards (Non Bearing and Bearing)	-
Crop Listing	-
Broadcast Application Rates	-
Management of Orchard and Vineyard Middle Strips with Reduced Rates	-
Surflan A.S. - Tank Mix Recommendations	-
Christmas Tree Plantations	-
Warranty Disclaimer	-
Inherent Risks of Use	-
Limitation of Remedies	-

9720

**Precautionary Statements**

**Hazards to Humans and Domestic Animals**

**CAUTION**

**Causes Moderate Eye Irritation • Prolonged Or Frequently Repeated Skin 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:

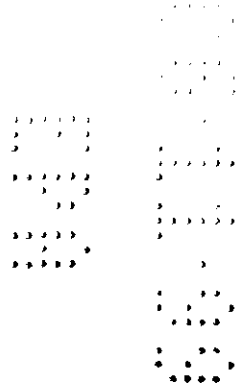
- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

**First Aid**

**If in eyes:** Flush with plenty of water. Get medical attention if irritation persists.

**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.



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## 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 formulate this product into other end-use products.**  
**Shake Well Before Using.**

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

## Agricultural Use Requirements

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

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12-24 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

## Storage and Disposal

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

**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 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 incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

## General Information

Surflan A.S. herbicide is a preemergence, surface applied herbicide for the control of most many annual grasses and certain broadleaf weeds in citrus, fruit and nut trees, berries, vineyards and Christmas tree plantations. Surflan A.S. controls susceptible annual weeds by disrupting plant growth processes during germination. Surflan A.S. may be applied in liquid sprays of water or liquid fertilizer. Surflan A.S. may be tank mixed with other herbicides to control existing vegetation or improve the spectrum of weeds controlled. Surflan A.S. alone does not control established weeds.

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Surflan A.S. may be applied before or after transplanting of the crop. If applied prior to transplanting: (1) disturbance of surface soil should be minimized to prevent loss of weed control; and (2) exposure of the roots of transplants to treated soil should be minimized to avoid any possibility of crop injury.

### General Use Precautions and Restrictions

- Do not graze or feed forage from treated fields or orchards to livestock.
- Poor weed control may result if directions are not carefully followed.
- Do not over-apply Surflan A.S. Over-application may result in crop injury or soil residue.
- Do not plant any root crop for 12 months following a Surflan A.S. application.
- Do not use Surflan A.S. on soils containing more than 5% organic matter.
- Apply Surflan A.S. directly to the soil surface in orchards or vineyards.
- Carefully follow label directions to avoid poor weed control or crop injury.
- **Chemigation:** See instructions for chemigation in "Application Methods".

Do not aerially apply this product.

**Rotation Crop Interval:** To avoid crop injury, a 24 month rotational interval is recommended when rotating from tree and vine crops to row crops.

### Soil Preparation

Optimum herbicidal activity occurs when Surflan A.S. is applied to the soil surface. Prior to application, existing unwanted vegetation should be destroyed by tillage or use of contact or translocated herbicides. Crop or weed residues, pruning and trash should be thoroughly mixed into the soil by tillage equipment or removed before treatment. Soil should be in good tilth and free of clods at the time of application.

### Activation and Cultivation

A single 1/2 to 1 inch rainfall or sprinkler irrigation is required to activate Surflan A.S. and move the herbicide into the zone of weed germination. Rainfall or irrigation of 1 inch or more is needed to activate Surflan A.S. on fine-textured, high organic matter soils. If weeds begin to emerge, a shallow cultivation to a depth of 1 to 2 inches will destroy existing weeds and place Surflan A.S. in the zone of weed germination.

### Mixing Directions

#### Surflan A.S. - Alone

Surflan A.S. may be applied in water or most liquid fertilizer materials. Prior to mixing Surflan A.S. in liquid fertilizer, refer to "Testing for Compatibility in Liquid Fertilizers" for test procedures to determine compatibility with the fertilizer product to be used. The combination of Surflan A.S. with solution and suspension-type fertilizers provides annual weed control equal to Surflan A.S. applied in water. Individual state regulations relating to liquid fertilizer mixing, registration, labeling and application are the responsibility of the individual and/or company offering the fertilizer and chemical mixture for sale.

Start with a clean spray tank. Fill the sprayer to 1/3 to 1/2 of the required spray volume. Start agitation. Shake the container well and add the correct amount of Surflan A.S., continue agitation and fill spray tank to required spray volume. Maintain continuous agitation from mixing through application.

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

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**Surflan A.S. in Tank Mix**

Vigorous, continuous agitation during mixing, filling and throughout application is required for all tank mixes. Sparger pipe agitators generally provide the most effective agitation in spray tanks. To prevent foaming in the spray tank, avoid stirring or splashing air into the spray mixture.

Surflan A.S. may be tank mixed with label rates of other products and applied with water or most liquid fertilizer materials, provided (1) the tank mix product is labeled for the timing and method of application for the use site to be treated; (2) tank mixing is not prohibited by the label of the tank mix product; and (3) A (jar) test is performed to ensure the compatibility of products to be used in tank mixture.

**Tank Mixing Precautions:**

- Read carefully and follow all applicable use directions, precautions, and limitations on the respective product labels.
- Do not exceed recommended application rates.
- For products packaged in water soluble packaging, do not tank mix with products containing boron or mix in equipment previously used to apply a product mixture containing boron unless the tank and spray equipment has been thoroughly cleaned.

**Tank Mix Compatibility Testing:** A jar test is recommended prior to tank mixing to ensure compatibility of Surflan A.S. and other products. Use a clear glass quart jar with lid and mix the tank mix ingredients in their relative proportions. Invert the jar containing the mixture several times and observe the mixture for approximately 1/2 hour. If the mixture balls-up, forms flakes, sludges, gels, oily films or layers, or other precipitates, it is not compatible and the tank mix combination should not be used.

**Mixing Order (Tank Mixing with Water):** Fill the spray tank to 1/4 to 1/3 of the total spray volume. Start agitation. Add different formulation types in the following order, allowing time for complete mixing and dispersion after addition of each product (allow extra mixing and dispersion time for dry flowable products):

1. Add dry flowables; wettable powders; Surflan A.S. or other aqueous suspensions, flowables and water-based solutions.
2. Maintain agitation and fill spray tank to 3/4 of total spray volume. Then add any emulsifiable concentrates.

Finish filling the spray tank. Maintain continuous agitation during mixing, final filling and throughout application. If spraying and agitation must be stopped before the spray tank is empty, the materials may settle to the bottom. Settled materials must be resuspended before spraying is resumed. A sparger agitator is particularly useful for this purpose. Settled material may be more difficult to resuspend than when originally mixed.

**Tank Mixing with Liquid Fertilizer:** Prior to mixing Surflan A.S. with other products in liquid fertilizer, refer to the tank mix product manufacturer's label to determine if application in liquid fertilizer is recommended. Also refer to "Testing for Compatibility in Liquid Fertilizers" for testing procedures to determine tank mix compatibility with the liquid fertilizer product to be used. The combination of Surflan A.S. with solution and suspension-type fertilizers provides annual weed control equal to Surflan A.S. applied in water. Individual state regulations relating to liquid fertilizer mixing, registration, labeling and application are the responsibility of the individual and/or company offering the fertilizer and chemical mixture for sale. Read and follow all label instructions for each material to be added to the spray tank.

Vigorous continuous agitation is required for all tank mixes. Sparger pipe agitators generally provide the best agitation in spray tank. To prevent foaming, keep the end of the fill pipe below the surface of the water in the spray tank during filling to prevent air from being stirred or splashed into the mixture.

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**Mixing Order (Tank Mixing With Liquid Fertilizer):** Fill the spray tank to 3/4 of the total spray volume required. Start agitation. Add different formulation types in the following order, allowing time for complete mixing and dispersion after addition of each product allow extra mixing and dispersion time for dry flowable products):

Dry flowables; wettable powders; Surflan A.S. or other aqueous suspensions, flowables, water-based solutions, and any emulsifiable concentrates.

Finish filling spray tank. Maintain continuous agitation during mixing, final filling and throughout application. If spraying and agitation must be stopped before the spray tank is empty, the materials may settle to the bottom. Settled materials must be suspended before spraying is resumed. A sparger agitator is particularly useful for this purpose. Settled materials may be more difficult to resuspend than when originally mixed.

**Premixing:** When tank mixing, initial mixing and dispersion of certain dry flowable or wettable powder products may be improved by premixing with water (slurrying). Where recommended, follow product label instructions for each material. Adding the slurried material to the spray tank through a 20 to 35 mesh wetting screen will help assure good initial dispersion. Line screens in the tank through a 20 to 35 mesh wetting screen will help assure good initial dispersion. Line screens in the tank should be no finer than 50 mesh (100 mesh is finer than 50 mesh).

### Testing for Compatibility in Liquid Fertilizers

Surflan A.S. alone or in combination with dry flowable (DF), wettable powder (WP), aqueous suspension (AS), flowable (F), liquid (L), solution (S) or emulsifiable concentrate (EC) formulations may not combine properly with some liquid fertilizer materials. Small quantities of such mixtures should always be tested before full-scale mixing. Follow the testing procedure below to determine if a compatibility agent is needed or which compatibility agent works best in your liquid fertilizer plus herbicide mixture.

#### Testing Procedure

1. Add 1 pint of liquid fertilizer to 1-quart glass jar.
2. Add 1 to 4 teaspoonfuls of DF, WP, Surflan A.S., other AS formulations, F, or L formulations, depending on mixing ratio required, to the liquid fertilizer. Close the jar and shake until evenly dispersed after addition of each formulation. If dry flowable or wettable powder formulations do not disperse well, it may be necessary to slurry the materials in a small amount of water before addition to the liquid fertilizer.
3. After dispersing the materials in step 2, add any S formulations to the jar and shake well. Finally, add EC formulations to the mixture and shake well. Observe the jar for about 10 minutes. If materials rise to the surface and form a thick layer that will not redispense when agitated, a compatibility agent is needed. If the mixture is easily redispersed with slight agitation, a compatibility agent is not required. Good agitation, however, must be provided to maintain dispersion in the spray tank from mixing through application.
4. If the need for a compatibility agent is demonstrated in step 3, the following procedure is recommended: Using a clean clear plastic or glass container, repeat step 1 above and add 1/2 teaspoon of the compatibility agent to the liquid fertilizer mixture. Shake well and then repeat steps 2 and 3.

An effective compatibility agent will cause the mixture to remain uniformly mixed with little or no separation for 1/2 hour or longer. If slight separation occurs, 2 to 3 inversions of container should be sufficient to uniformly redispense the mixture. If layers form which will not disperse, try adding additional compatibility agent or use an alternative compatibility agent to achieve a uniform mixture.

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Use a clean jar in each test. A compatible mixture will have a uniform appearance and will be relatively easy to redisperse with gentle agitation of the jar.

### Compatibility Agents

Use a phosphate ester-type surfactant designed for use with liquid fertilizers mixed at rates as low as 1 1/2 to 2 pints per ton of liquid fertilizer. This type of surfactant usually doesn't work well as compatibility agent for tank mixes in plain water. Add the compatibility agent just before adding herbicides. Read and follow label directions for the compatibility agent.

### Application Methods

#### Ground Broadcast Application

Apply Surflan A.S. directly to the soil surface of the orchard or vineyard in a total spray volume of 20 to 40 gallons per acre (broadcast basis), using any properly calibrated low pressure herbicide sprayer that will apply the spray uniformly. Use herbicide nozzle tips and screens no finer than 50 mesh for nozzle and in-line strainers. As the amount of spray volume per acre decreases, the importance of accurate calibration and uniform application increases. Check the sprayer daily to insure proper calibration and uniform application. Avoid boom overlaps that will increase rates above those recommended.

#### Band Application

For band application, use the following formula to calculate the required amount of product per acre.

$$\frac{\text{Band Width (inches)}}{\text{Row Width (inches)}} \times \text{Broadcast rate per acre} = \text{Amount required per acre}$$

#### Chemigation

Surflan A.S. may be applied through properly equipped chemigation systems for weed control in fruit and nut orchards or vineyards. Read and follow all label instructions outlined below concerning chemigation before applying Surflan A.S. by this method.

**Chemigation Use Precautions:** Apply this product only through solid set or hand move systems designed to distribute sprinkler irrigation beneath the tree canopy. Solid set systems utilizing tall risers for overhead application are excluded, except for dormant season applications of Surflan A.S. Do not apply this product through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.

If you have questions about calibration you should contact state extension specialists, equipment manufacturers or other experts.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system.

A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

**Sprinkler Chemigation Directions:** The following directions must be followed for all recommended sprinkler irrigation systems (solid set and hand move systems):

1. The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back-flow.

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2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
3. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
5. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point that pesticide distribution is adversely affected.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Do not apply when wind speed favors drift beyond the area intended for treatment.
8. Surflan A.S. should be injected continuously throughout the chemigation period. The chemigation metering pump should be checked periodically during application to insure proper operation.
9. The injection metering pump must be calibrated as specified by the manufacturer.
10. During chemigation, maintain agitation in supply tank at all times.
11. Surflan A.S. may cause some staining of plastic hoses and tanks.
12. Apply Surflan A.S. in sprinkler irrigation equal to 1/2 to 1 inch of water.

**Chemigation System Calibration:** Sample calculation for use of Surflan A.S. in a chemigation system:

- Assume, in this example, 35 acres are to be covered by a chemigation treatment.
- Product required, assuming 1 quart per acre is 35 quarts (8.75 gallons).
- Prepare a mixture containing 1 part water and 1 part Surflan A.S. by adding 8.75 gallons of product to the supply tank containing an equal amount of water (total volume = 17.5 gallons).
- Adjust the injection system to deliver 17.5 gallons during the time required to apply 1 inch of water to 35 acres.
- If the irrigation system requires 5 hours to apply 1 inch of water to 35 acres, the injection rate is 3.5 gallons per hour and is calculated as follows:

$$17.5 \text{ gallons} / 5 \text{ hours} = 3.5 \text{ gallons/hour}$$

$$[3.5 \text{ gallons} = 448 \text{ fluid ounces (fl oz)}]$$

Proper calibration requires the injection pump to be adjusted to deliver 7.47 fl oz per minute and is calculated as follows:

$$448 \text{ fl oz per hr} / 60 \text{ min per hr} = 7.47 \text{ fl oz/min.}$$

**Chemigation Mixing Directions:** The injection mixture (slurry) with minimum volume may be prepared by adding the required amount of Surflan A.S. to an equal amount of water in the injection tank (ratio, Surflan A.S. to water = 1:1). Meter the mixture into the irrigation system during the entire irrigation period. Additional dilution of Surflan A.S. may be necessary for accurate calibration of equipment designed to deliver a larger injection volume per hour. Maintain supply tank agitation throughout the irrigation period.



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Undiluted Surflan A.S. should not be injected into chemigation systems.

## Weeds and Grasses Controlled

### Annual Grasses

<b>Common Name</b>	<b>Scientific Name</b>
barley, little	<i>Hordeum pusillum</i>
barnyardgrass (watergrass)	<i>Echinochloa crus-galli</i>
bluegrass, annual (poa)	<i>Poa annua</i>
brachiaria (signalgrass)	<i>Brachiaria</i> spp.
browntop panicum	<i>Panicum fasciculatum</i>
crabgrass	<i>Digitaria</i> spp.
(large crabgrass)	
(smooth crabgrass)	
crowfootgrass	<i>Dactyloctenium aegyptium</i>
cupgrass	<i>Eriochloa gracilis</i>
downy brome	<i>Bromus tectorum</i>
fall panicum	<i>Panicum dichotomiflorum</i>
(spreading panicgrass)	
foxtails	<i>Setaria</i> spp.
(bottlegrass)	
(bristlegrass)	
(giant foxtail)	
(green foxtail)	
(pigeongrass)	
(robust foxtail)	
(yellow foxtail)	
guineagrass	<i>Panicum maximum</i>
(narrowleaf panicum)	
goosegrass	<i>Eleusine indica</i>
johnsongrass (seedling only)	<i>Sorghum halepense</i>
jungerice	<i>Echinochloa colonum</i>
lovegrass, Mexican	<i>Eragrostis mexicana</i>
lovegrass, orcutt	<i>Eragrostis orcuttiana</i>
oat, wild	<i>Avena fatua</i>
ryegrass, annual (Italian)	<i>Lolium multiflorum</i>
sandbur, field	<i>Cenchrus incertus</i>
sprangletop, red	<i>Leptochloa filiformis</i>
Texas panicum	<i>Panicum texanum</i>
(buffalograss)	
(Coloradograss)	
witchgrass	<i>Panicum capillare</i>

### Annual Broadleaf Weeds

<b>Common Name</b>	<b>Scientific Name</b>
carpet weed	<i>Mollugo verticillata</i>
chickweed	<i>Stellaria media</i>
cudweed	<i>Gnaphalium chilense</i>
fiddleneck, coast	<i>Amsinckia intermedia</i>
Florida pusley	<i>Richardia scabra</i>
(Florida purslane)	
(Mexican clover)	
(pusley)	

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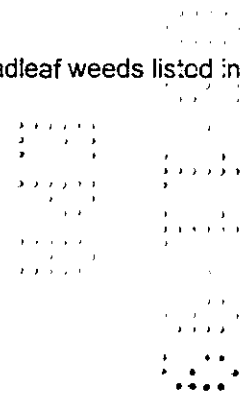
henbit	<i>Lamium amplexicaule</i>
knotweed, prostrate	<i>Polygonum aviculare</i>
lambsquarters	<i>Chenopodium album</i>
pigweeds	<i>Amaranthus</i> spp.
(carelessweed)	
(prostrate pigweed)	
(redroot pigweed)	
(rough pigweed)	
(smooth pigweed)	
(spiny pigweed)	
(tumble pigweed)	
puncturevine	<i>Tribulus terrestris</i>
purslane, common	<i>Portulaca oleracea</i>
rockpurslane, redmaids	<i>Calandrinia caulescens</i>
shepherdspurse	<i>Capsella bursa-pastoris</i>

**Surflan A.S. provides partial control or suppression of:**

<b>Common Name</b>	<b>Scientific Name</b>
filaree, redstem	<i>Erodium cicutarium</i>
filaree, whitestem	<i>Erodium moschatum</i>
groundsel, common	<i>Senecio vulgaris</i>
ladysthumb	<i>Polygonum persicaria</i>
lettuce, prickly	<i>Lactuca serriola</i>
mallow, common	<i>Malva neglecta</i>
milkweed, climbing	<i>Sarcostemma cynanchoides</i>
morningglory, annual	<i>Ipomoea</i> spp.
mustard, black	<i>Brassica nigra</i>
mustard, wild	<i>Sinapis arvensis</i>
nightshade, black	<i>Solanum nigrum</i>
prickly sida (teaweed)	<i>Sida spinosa</i>
ragweed, common	<i>Ambrosia artemisiifolia</i>
ragweed, giant	<i>Ambrosia trifida</i>
rocket, London	<i>Sisymbrium irio</i>
smartweed, annual	<i>Polygonum</i> spp.
sowthistle, annual	<i>Sonchus oleraceus</i>
spurge, prostrate	<i>Euphorbia humistrata</i>
spurge, spotted	<i>Euphorbia maculata</i>
velvetleaf	<i>Abutilon theophrasti</i>

**Approved Crops****Tree and Vine Crops - Citrus, Fruit and Nut Trees, Berries and Vineyards (Non Bearing and Bearing)**

Apply Surflan A.S. as a preemergence treatment to control annual grasses and broadleaf weeds listed in "General Information" section.



**Crop Listing:** Surflan A.S. may be used in the following crop groupings:

<b>Citrus Fruits such as:</b>	<b>Pome and Stone Fruits such as:</b>	<b>Tree Nuts such as:</b>	<b>Berries such as:</b>	<b>Vineyards</b>
citrus citron citrus hybrids grapefruit kumquat lime lemon mandarin (tangerine) orange pummelo	apple apricot cherry crabapple loquat mayhaw nectarine peach pear plum prune quince	almond chestnut chinquapin filbert hickory nut macadamia nut pecan pistachio walnut	blackberry blueberry† boysenberry currant dewberry elderberry gooseberry loganberry raspberry	grapes

†Do not apply Surflan A.S. to lowbush blueberries.

**In addition to the crops within crop groupings listed above, Surflan A.S. may be used in the following crops:** avocado, fig, guava, kiwi fruit, olive, papaya, and pomegranate

#### Broadcast Application Rates

<b>Soil Texture</b>	<b>Length of Control</b>	<b>Surflan A.S. (qt/acre)</b>	<b>Minimum Time Between Applications (months)</b>	<b>Total Amount Allowed Per Year (qt/acre/)</b>
All Soil Textures	Short Term (2 - 4 months)	2	2.5	12
	Long Term (6 - 8 months)	4	2.5	12
	(8 - 12 months)	6	2.5	12

#### Management of Orchard and Vineyard Middle Strips with Reduced Rates

In areas between tree or vine rows apply 1-2 quarts/acre of Surflan for temporary suppression of weed growth in spring and summer months. Include a burndown treatment if existing weeds are present. Adjust rates of repeat applications as necessary to achieve re-establishment of desired vegetation during winter months.

#### Chemigation

Surflan A.S. may be applied through properly equipped chemigation systems for weed control in fruit and nut orchards and vineyards. Refer to "Chemigation" in "General Information" for use directions. Do not apply Surflan A.S. by chemigation unless these use directions are carefully followed.

Apply Surflan A.S. by chemigation prior to weed germination or immediately after existing weeds have been controlled. Control existing unwanted vegetation by tillage or with a contact or translocated herbicide. Use broadcast application rates recommended for Surflan A.S. alone. Apply in sprinkler irrigation equal to 1/2 to 1 inch of water on medium to fine textured or high organic matter soils.

#### Surflan A.S. Tank Mix Recommendations

To broaden the spectrum of weed control, Surflan A.S. may be applied in tank mix combination with labeled rates of other herbicide products, including, but not limited to Goal, Gramoxone Super, Princep,

(Simazine), Roundup/glyphosate, or Solicam herbicide. Performance and risk of carryover from tank mixed products used in combination with Surflan A.S. at recommended rates is the same as when each product is used separately.

**Non-Bearing Tree and Vine Crops:** For additional broad spectrum control of broadleaf weeds in non-bearing fruit and nut trees, berries, and vineyards, Surflan A.S. may be applied in tank mix combination with labeled rates of Gallery\* 75 Dry Flowable herbicide. Non-bearing crops are defined as plants that will not bear fruit for at least one year after treatment.

Follow tank mixing instructions in the "Mixing Directions" section of this label when mixing Surflan A.S. with other products.

Users should always consult the manufacturer's label for the product(s) to be tank mixed with Surflan A.S. for specific information on use rates, additional weeds controlled, rotational crop restrictions or risk of carryover, special tank mix instructions, additional use directions, precautions and limitations.

### Christmas Tree Plantations

#### Surflan A. S. - Alone

Apply Surflan A. S. 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.). Do not apply to Douglas-fir (*Pseudotsuga menziesii*). Do not apply to seedbeds or seedling transplant beds. Apply only to established plantings. Established plantings are defined as those 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. Follow all instructions provided in the "General Information" section of this label.

#### Broadcast Application Rates

Length of Control	Surflan A.S.		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 A. S. 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 label of the product to be tank mixed with Surflan A.S. for specific use directions, precautions and limitations before use.

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

**Precautions:**

- Do not apply sprays containing Roundup over the top of Christmas tree plantings.
- Extreme care must be exercised to avoid contact of spray containing Roundup with foliage and stems of Christmas trees or severe damage or death may result.

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**Warranty Disclaimer**

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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.

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**Inherent Risks of Use**

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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.

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**Limitation of Remedies**

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The exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at 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.

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