

100-1010

9/17/2003

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

SEP 17 2003

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

Mr. Jerry Wells  
Syngenta Crop Protection, Inc.  
P.O. Box 18300  
Greensboro, NC 27419-8300

Dear Mr. Wells:

Subject: Surefire Herbicide  
EPA Registration Number 100-1010  
Application dated September 2, 2003

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act as amended is acceptable, provided you make the following changes before you release the product for shipment.

1. Under Conditions of Sale, specify what manner of use or application, weather, crop condition, presence of other materials or other influencing factors in use of this product will cause crop injury, ineffectiveness, or other unintended consequences. Currently this Conditions of Sale statements is inappropriate for this product, particularly in the first paragraph.
2. Change "waterproof gloves" to "chemical-resistant gloves made of any waterproof material" under PPE, Mixers and Loaders, and Agricultural Use Requirements.
3. Under STORAGE AND DISPOSAL, move the phrase "Do not contaminate water, food, or feed by storage and disposal" to directly following the heading STORAGE AND DISPOSAL, and before Pesticide Storage.

Submit three (3) copies of final printed labeling incorporating the above changes before you release the product for shipment. Amended labeling will supercede all previously accepted ones. A stamped copy of labeling is enclosed for your records.

Sincerely,

A handwritten signature in black ink, appearing to read "James A. Tompkins".

James A. Tompkins, haj  
Product Manager 25  
Herbicide Branch  
Registration Division (7505C)

2 8 25

**RESTRICTED USE PESTICIDE**  
**Due to Acute Toxicity**  
 For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

**SUREFIRE® HERBICIDE**

**ACTIVE INGREDIENT:**

Paraquat dichloride (1,1'-dimethyl-4,4'-bipyridinium dichloride)..... 29.48%

Diuron [3-(3,4-dichlorophenyl)-1,1-dimethylurea] ..... 10.68%

**INERT INGREDIENTS:**..... 59.84%

**TOTAL**..... 100.00%

Contains 2.0 pounds paraquat cation per gallon as 2.762 pounds salt per gallon.  
 Contains 1.0 pound diuron per gallon.  
 Contains emetic.

**KEEP OUT OF REACH OF CHILDREN**



**DANGER/ POISON**  
**PELIGRO**

**Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)**

**ONE SWALLOW CAN KILL!**

**SYMPTOMS ARE PROLONGED AND PAINFUL. ONSET OF SYMPTOMS MAY BE DELAYED FOR UP TO 3 DAYS AFTER SWALLOWING.**

- **DO NOT USE OR STORE IN OR AROUND THE HOME.**
- **DO NOT REMOVE CONTENTS EXCEPT FOR IMMEDIATE USE.**
- **NEVER PUT INTO FOOD, DRINK OR OTHER CONTAINERS.**

See additional precautionary statements and directions for use (inside booklet; on back panel; on side panel)

EPA Reg No. 100-1010  
 EPA Est No. xxxxx

Product of USA

ACCEPTED  
with COMMENTS  
in EPA Letter Dated

SEP 17 2003  
Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.

100-1010

3 7 25

SCP xxxx  
Net Weight/U.S. Standard Measure

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<b>FIRST AID</b>	
<b>If swallowed</b>	<p><del>\$Call Poison Control Center or doctor immediately for treatment advice.</del></p> <p><del>\$Immediately induce vomiting by touching back of throat with finger. Drink 1 or 2 glasses of water and induce further vomiting.</del></p> <p><del>\$If person is unconscious do not give anything by mouth and do not induce vomiting.</del></p> <p><del>\$Get to a medical facility fast and take container and labeling with you.</del></p> <ul style="list-style-type: none"> <li>• See note to physicians.</li> </ul>
<b>If inhaled</b>	<p><del>\$Move person to fresh air.</del></p> <p><del>\$If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</del></p> <p><del>\$Call a Poison Control Center or doctor for further treatment advice.</del></p> <ul style="list-style-type: none"> <li>• The odor of this product is from the stenching agent which has been added, not from paraquat.</li> </ul>
<b>If in eyes</b>	<p><del>\$Hold eye open and rinse slowly and gently with water for 15-20 minutes.</del></p> <p><del>\$Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</del></p> <ul style="list-style-type: none"> <li>• Call a Poison Control Center or doctor for treatment advice.</li> </ul>
<b>If on skin or clothing</b>	<p><del>\$Take off contaminated clothing.</del></p> <p><del>\$IMMEDIATELY wash skin with soap and water for 15-20 minutes. Prolonged contact will cause severe irritation. Contact with irritated skin or a cut or repeated contact with intact skin may result in poisoning.</del></p> <ul style="list-style-type: none"> <li>• GET MEDICAL ATTENTION. Call a Poison Control Center or doctor for treatment advice.</li> </ul>
<p><b>NOTE TO PHYSICIANS: CALL SYNGENTA MEDICAL EMERGENCY ASSISTANCE 1-800-888-8372 at any hour to obtain toxicology and medical management consultation; and paraquat analyses. Prompt treatment is essential and must be initiated immediately before signs and symptoms appear. Symptoms are prolonged and painful and may be delayed for days after swallowing. Treatment may include binding paraquat in the gut with suspensions of clay or charcoal; and/or removal of paraquat from the blood by prolonged charcoal hemoperfusion or continuous hemodialysis. Probable mucosal damage may contraindicate the use of gastric lavage.</b></p>	
<p>Have the product container or label with you when calling a poison control center or doctor or going for treatment.</p>	

**HOTLINE NUMBER**

For 24-Hour Medical Emergency Assistance (Human or Animal)  
or Chemical Emergency Assistance (Spill, Leak, Fire, or Accident)

Call

**1-800-888-8372**

**FIRST AID****Contains Paraquat, a Bipyridylum Herbicide**

<b><u>If swallowed</u></b>	<ul style="list-style-type: none"> <li>•<u>SPEED IS ESSENTIAL. Immediate medical attention is required. If available, give an adsorbent such as activated charcoal, bentonite or Fullers Earth.</u></li> <li>•<u>Call a poison control center or doctor immediately for treatment advice.</u></li> <li>•<u>Do not give anything by mouth to an unconscious person.</u></li> </ul>
<b><u>If in eyes</u></b>	<ul style="list-style-type: none"> <li>•<u>Hold eye open and rinse slowly and gently with water for 15-20 minutes.</u></li> <li>•<u>Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</u></li> <li>•<u>Call a poison control center or doctor for treatment advice.</u></li> </ul>
<b><u>If on skin or clothing</u></b>	<ul style="list-style-type: none"> <li>•<u>Take off contaminated clothing.</u></li> <li>•<u>Rinse skin immediately with plenty of water for 15-20 minutes.</u></li> <li>•<u>Call a poison control center or doctor for treatment advice.</u></li> </ul>
<b><u>If inhaled</u></b>	<ul style="list-style-type: none"> <li>•<u>Move person to fresh air.</u></li> <li>•<u>The odor of this product is from the stenching agent, which has been added, not from the paraquat.</u></li> <li>•<u>If person is not breathing, call 911 or an ambulance.</u></li> <li>•<u>Call a poison control center or doctor for further treatment advice.</u></li> </ul>

**NOTE TO PHYSICIAN**

Refer to the booklet 'Paraquat Poisoning. A Practical Guide to Diagnosis, First Aid and Hospital Treatment'. (<http://www.syngenta.com/pamedguide/>) Administer either activated charcoal (100g for adults or 2g/kg body weight in children) or Fuller's Earth (15% solution; 1 liter for adults or 15ml/kg body weight in children). NOTE: The use of gastric lavage without administration of an adsorbent has not shown any clinical benefit. Do not use supplemental oxygen. Eye splashes from concentrated material should be treated by an eye specialist after initial treatment. With the possibility of late onset corneal ulceration, it is advised that patients with paraquat eye injuries are reviewed by an eye specialist the day after first presentation. Use treatment that is appropriate for chemical burns. Intact skin is an effective barrier to paraquat, however contact with irritated or cut skin or repeated contact with intact skin may result in poisoning.

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

**HOT LINE NUMBER**

For 24-Hour Medical Emergency Assistance (Human or Animal)  
Or Chemical Emergency Assistance (Spill, Leak, Fire or Accident)

Call

1-800-888-8372

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**PRECAUTIONARY STATEMENTS**

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**Hazards to Humans and Domestic Animals**

**DANGER/ POISON**  
**PELIGRO**

FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CORROSIVE. CAUSES IRREVERSIBLE EYE DAMAGE OR SKIN BURNS. DO NOT BREATHE SPRAY MIST. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. PROLONGED OR FREQUENTLY REPEATED SKIN CONTACT MAY CAUSE ALLERGIC REACTION IN SOME INDIVIDUALS.

**Personal Protective Equipment**

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

Applicators and other handlers (other than Mixers and Loaders) must wear:

- Coveralls **OR** long-sleeved shirt and long pants
- Chemical resistant gloves (such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride, or viton)
- Shoes plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure
- A dust mist NIOSH-approved respirator with any N, R, P, or HE filter

Mixers and Loaders (pouring, loading and mixing concentrate, cleaning equipment, or when exposure to concentrate is possible) must wear:

- Coveralls over long-sleeved shirt and long pants
- Waterproof gloves
- Chemical-resistant footwear plus socks
- Protective eyewear plus a dust mist NIOSH-approved respirator with any N, R, P, or HE filter
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron when cleaning equipment, mixing, or loading

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for



washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

### Engineering Controls

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

**WILDLIFE:** This product is toxic to wildlife. Birds and other wildlife in treated areas may be killed. Do not apply directly to water or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning of equipment or disposing of equipment washwaters.

**DRIFT:** SUREFIRE® herbicide is a contact herbicide that kills all green plant tissue. Paraquat dichloride is toxic to nontarget crops and plants if off-target movement occurs. Extreme care must be taken to ensure that off-target drift is minimized to the greatest extent possible. Do not apply under conditions involving possible drift to food, forage, or other plantings that might be damaged or the crops thereof rendered unfit for sale, use, or consumption. Do not apply when weather conditions favor drift from areas treated. For aerial applicators use, do not apply during periods of thermal inversion to avoid drift. Refer to the local state laws, regulations, guidelines, and spray drift information contained in the **Directions for Use** section for proper application to avoid off-target movement.

**PHYSICAL AND CHEMICAL HAZARDS:** This product reacts with aluminum to product hydrogen gas which may form a highly combustible gas mixture. Such gas could flash or explode, causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette, or other ignition source. Do not mix or store in containers, spray tanks, nurse tanks, or such systems made of aluminum or having aluminum fittings. After dilution with water to spray concentrations, spray systems made of, or containing aluminum parts, may be used but should not be used for extended (overnight) storage.

**EQUIPMENT/CONTAINER:** Flush all spray equipment with water after use each day. This product is corrosive to aluminum. Aluminum spray equipment and aluminum aircraft structures that are exposed to spray solution or spray drift should be flushed thoroughly with water immediately after use.

**CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY**

**NOTICE:** Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product should be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of Syngenta Crop Protection, Inc. or Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold Syngenta and Seller harmless for any claims relating to such factors.

Syngenta warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. This warranty does not extend to the use of this product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller or Syngenta, and Buyer and User assume the risk of any such use. **SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.**

In no event shall Syngenta or Seller be liable for any incidental, consequential or special damages resulting from the use or handling of this product. **THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

Syngenta and Seller offer this product, and Buyer and User accept it, subject to the foregoing conditions of sale and limitations of warranty and of liability, which may not be modified except by written agreement signed by a duly authorized representative of Syngenta.

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**DIRECTIONS FOR USE**

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**Restricted Use Pesticide**

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

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

**AGRICULTURAL USE REQUIREMENTS**

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

**For Preplant or Preemergence (Broadcast or Banded), Chemical Fallow, Postemergence Directed and Broadcast, and Dormant Season Applications:**  
Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls over long-sleeved shirt and long pants
- Waterproof gloves
- Chemical-resistant footwear plus socks
- Protective eyewear
- Chemical-resistant headgear for overhead exposure

Notify workers of the application by warning them orally and by posting warning signs at entrances to treated areas.

**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.

**NOTE: DO NOT USE AROUND HOME GARDENS, SCHOOLS, RECREATIONAL PARKS, GOLF COURSES, OR PLAYGROUNDS.**

**DO NOT APPLY THIS PRODUCT THROUGH ANY TYPE OF IRRIGATION SYSTEM.**

**DO NOT** enter or allow others to enter the treated area until sprays have dried.

**AVOID** working in spray mist. If there is risk of exposure, wear goggles and approved face mask capable of filtering spray droplets.

**KEEP ALL UNPROTECTED PERSONS OUT OF OPERATING AREAS OR VICINITY WHERE THERE MAY BE DANGER OF DRIFT.**

Certain states may require more restrictive reentry intervals; consult your State Department of Agriculture for further information.

Written or oral warnings regarding use of protective clothing and accidental exposure must be given to workers who are expected to be in treated areas or in areas about to be treated.

**IMPORTANT:** The effect of swallowing SUREFIRE is far more severe than that which usually results from skin contact or inhalation of spray mist. This product should not cause injury if used according to label instructions. Follow the label **as if your life depends on it.**

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**STORAGE AND DISPOSAL**

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**PESTICIDE STORAGE:** Do not contaminate water, food, or feed by storage and disposal. Open dumping is prohibited. Store at temperature above 32°F. Do not contaminate feed, foodstuffs or drinking water. Do not store next to feed or food, or transport in or on vehicles containing foodstuffs or feeds. For help with any spill, leak, fire or exposure involving this material, call 1-800-888-8372.

**PESTICIDE DISPOSAL:** This product is acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**CONTAINER DISPOSAL:** Triple rinse (or equivalent). Do not reuse container. Offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or dispose of by other procedures allowed by state and local authorities.

**CONTAINER IS NOT SAFE FOR FOOD, FEED OR DRINKING WATER!**

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## **GENERAL INSTRUCTIONS AND INFORMATION**

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**DO NOT APPLY THIS PRODUCT THROUGH ANY TYPE OF IRRIGATION SYSTEM.**

### **SPRAY DRIFT**

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment-and-weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions. The following drift management requirements must be followed to avoid off-target drift movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

1. The distance of the outer most nozzles on the boom must not exceed  $3/4$  the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.

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

The applicator should be familiar with and take into account the information covered in the **Aerial Drift Reduction Advisory Information**.

### **AERIAL DRIFT REDUCTION ADVISORY INFORMATION**

(This section is advisory in nature and does not supersede the mandatory label requirements.)

#### **Information on Droplet Size**

The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if

applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

### **Controlling Droplet Size**

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

### **Boom Length**

For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

### **Application Height**

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

### **Swath Adjustment**

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

## **Wind**

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

## **Temperature and Humidity**

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

## **Temperature Inversions**

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

## **Sensitive Areas**

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

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## **GENERAL INFORMATION**

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SUREFIRE Herbicide and SUREFIRE tankmixes may be applied in liquid nitrogen and/or complete liquid fertilizer solutions as a spray carrier (follow label recommendations for crop involved) when 20 to 60 gals. of dilute solution are applied per acre in combination with 1 to 2 pts. of spreader (nonionic) per 100 gals. Equipment must be adjusted and calibrated to obtain thorough coverage of undesirable vegetation. Inadequate coverage and/or the absence of spreader (nonionic) will result in a severe



reduction of SUREFIRE activity. Phosphate containing liquid fertilizer solutions will reduce the activity of SUREFIRE. When liquid fertilizer solutions containing phosphorus are used with SUREFIRE and a more rapid kill is desired, use the high SUREFIRE label rate.

### **Surfactant**

Always use a nonionic surfactant (spreader) approved for agricultural use and which contains at least 75% surface-active ingredient. Non-use of a surfactant will result in incomplete spray coverage and reduced control of weeds. Use the higher rate of surfactant if weeds are difficult to wet or if tankmixes with additional herbicides are used.

### **Spray Coverage**

Apply using flat-fan nozzles using adequate total spray per acre to ensure complete coverage of weeds. Total weed coverage is essential for good control. For broadcast applications of SUREFIRE with backpack sprayers, the application rate should not exceed 0.50 lbs ai/A in a minimum of 30 gallons of spray solution per acre.

### **Spray Nozzles**

Flat-fan nozzles of size 3 to 8 and maximum 20-inch spacing are preferred for ground application of SUREFIRE. If spray volumes used will be in the 10- to 20-gallon-per-acre range, twin-orifice flat-fan nozzles (example: Twinjet 2-60-8004) will improve droplet size and spray distribution characteristics. If flood-type nozzles must be used, use a minimum of 20 gallons of finished spray per acre and select nozzle sizes to produce medium-fine droplets. Flood-type nozzle spacing should not exceed 40 inches. Flood-type nozzle size should not exceed size 10. Screen size in nozzle or line strainers should be no finer than 50 mesh.

### **Spray Pressures**

Operate spray equipment so that pressure at the nozzle is between 30 and 50 psi. Operating nozzles below or above this range will often result in inadequate or uneven spray coverage.

### **Boom Height**

Spray booms should be adjusted so that recommended spray pattern overlap is obtained at the top of the weed or cover crop canopy. Flat-fan nozzle spray patterns should overlap 30% on each edge, while flood-type nozzle spray patterns should overlap 50% on each edge.

### **Spray Carrier**

Use only clean water or nitrogen solutions as a spray carrier. Suspension-type fertilizers containing clay will reduce the activity of SUREFIRE herbicide and therefore should not be used.

### **Tankmixes**

The addition of Banvel® or 2,4-D may aid in the suppression of perennial broadleaf weeds and annual broadleaf weeds that have made excessive growth before application. Weeds and grasses emerging after application will not be controlled. Refer to the Banvel or 2,4-D labels for directions, limitations and cautions.

For extended weed control during the fallow period, tank mix with a registered residual herbicide (examples: Glean®, Kerb®, AATREX®, Bladex®, etc.) or herbicide combinations. Refer to residual herbicide label(s) for directions, limitations, cautions, and for a list of weeds controlled by preemergence activity of the residual herbicide(s).

Add wettable powder herbicide(s) to spray tank first, mixing thoroughly in carrier. Then add liquid herbicide(s), SUREFIRE herbicide and nonionic surfactant (spreader). Constant agitation is recommended at all times.

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### **GENERAL PRECAUTIONS AND RESTRICTIONS**

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**READ ENTIRE LABEL. USE STRICTLY IN ACCORDANCE WITH DANGER STATEMENTS AND DIRECTIONS, AND WITH APPLICABLE STATE AND FEDERAL REGULATIONS. READ STATEMENT OF PRACTICAL TREATMENT AND PRECAUTIONARY STATEMENTS ON PAGES \_\_\_\_\_.**

**IMPORTANT:** The effect of swallowing SUREFIRE is far more severe than that which usually results from skin contact or inhalation of spray mist. This product should not cause injury if used according to label instructions. Follow the label **as if your life depends on it.**

**DO NOT USE AROUND HOME GARDENS, SCHOOLS, RECREATIONAL PARKS, GOLF COURSES, OR PLAYGROUNDS.**

DO NOT use dirty or muddy water for SUREFIRE dilution because SUREFIRE will be inactivated.

DO NOT combine SUREFIRE herbicide with liquid fertilizer solutions except as noted in the **General Information** section.

DO NOT combine with suspension-type liquid fertilizers because the activity of SUREFIRE will be reduced.

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**APPLICATION INSTRUCTIONS**


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**SPOT SPRAYING**

When only small areas are to be sprayed with labeled applications, it is advantageous to mix small quantities of SUREFIRE. To aid in mixing small quantities, the following table should be considered.

<b>If the Broadcast Rate Per Acre for Surefire is:</b>	<b>Add the Following Amount of SUREFIRE to 1 Gallon of Water:</b>
1 pt or ½ qt	3/8 fl oz
2 pt or 1 qt	3/4 fl oz
3 pt or 1-1/2 qt	1-1/8 fl oz

Always add 1/3 to 1/2 fluid ounce of a nonionic surfactant for each gallon of spray. When spot spraying in this manner, spray to thoroughly wet the foliage, but not to the point of runoff.

**PREPLANT OR PREEMERGENCE USES**

**Preplant or Preemergence Use - For Kill of Emerged Annual Broadleaf Weeds and Grasses and for Top Kill and Suppression of Perennials** - Apply when the weeds and grasses are succulent and growth is from 1" to 6" high (larger plants are less affected by this treatment). Note: To prevent injury to germinating crop seedlings, do not apply preplant or preemergence to soils lacking clay minerals, i.e., peat, muck, pure sand, or artificial planting media.

**Preplant or Preemergence use in CORN, COTTON, WHEAT** - Apply 1 to 2 qts. of SUREFIRE per sprayed acre as a band treatment over the crop row, or as a broadcast treatment, prior to, during, or after planting, but before emergence of the crop. **Aerial Application** - 5 to 10 gals. of water per acre. **Ground Application** - Use 10 to 60 gals. diluted spray. Add spreader (nonionic) at 16 to 32 fl. oz. per 100 gals. of diluted spray. Seedbeds should be formed as far ahead of planting and treatment as possible to permit maximum weed and grass emergence. Seeding should be done with a minimum amount of soil disturbance. Weeds and grasses emerging after application will not be controlled. Crop plants emerged at time of application will be killed.

**For Kill of Emerged Volunteer Barley (California Only) - Preplant in Cotton** - Apply 1/2 to 1 pt. SUREFIRE Herbicide per acre broadcast as a preplant treatment to preformed seedbeds. **Aerial Application** - Use 5 to 10 gals. water per acre. Add spreader (nonionic) at 16 to 32 fl. oz. per 100 gals. diluted spray.

**DORMANT USE**

**PEPPERMINT:** For Suppression of Weeds Such as Italian Ryegrass, Prickly Lettuce, Groundsel, Chickweed, Downy Brome and Bluegrasses During the Dormant Season - Apply 1-1/2 to 3 pts. SUREFIRE per acre as a broadcast spray in 10 to 65 gals. spray mix. Use the higher rate with heavier weed infestations. Add spreader (nonionic) at 16 fl. oz. per 100 gals. spray mix. Apply when peppermint or spearmint is dormant and before spring growth begins. Do not apply to weeds which are greater than 6" tall. Do not apply more than 3 pts. per acre per dormant season as injury or excessive residues may result. **For Improved Contact Activity and Residual Control of Italian Rye grass, Prickly Lettuce and Groundsel - Add 1 to 2 lbs. of Sinbar® (Terbacil) Weed Killer as a tankmix.** Use the higher tankmix rate with heavier weed infestations. Apply tankmix treatment no more than once per season. Use a minimum of 25 gals. spray mix per acre. Refer to the Sinbar label for specific recommendations and cautions.

**DIRECTED SPRAYS**

**ORCHARDS, VINEYARDS, WINDBREAK, SHADE AND ORNAMENTAL TREES:** For Kill of Annual Broadleaf Weeds and Grasses and For Top Kill and Suppression of Perennials in the Interspaces and Around the Base of Trees and Vines: Apples, Bananas, Citrus, Grapes, Macadamia Nuts, Olives, Papayas, Peaches, Pears, Pecans, Walnuts and other Trees such as Arborvitae, Ash, Elm, Fir, Oak and Pine - Apply as a directed spray at 1 to 2 qts. SUREFIRE per sprayed acre in 10 to 150 gals. water (use 10 to 50 gals. water for pecans) to thoroughly cover the weeds and grasses. Add spreader (nonionic) at 16 to 32 fl. oz. per 100 gals. Apply when the weeds and grasses are succulent and the new growth is from 1 to 6 inches high. For mature woody weeds, green suckers, late-germinating weeds and grasses and for perennials, retreatment or spot treatment may be necessary.

**CAUTION:** Do not allow spray to contact green stems, fruit or foliage because injury may result. Do not spray under windy conditions and use a shield for young trees or vines. Do not allow animals to graze on treated areas. Do not apply when nuts or olives to be harvested are on the ground. For Pistachios, do not harvest within 7 days of treatment and do not exceed two applications after shells split. For olives, do not harvest within 13 days of treatment and do not exceed 4 applications per season.

**GRAPES AND WALNUTS (California Only); ORANGES (California and Florida Only); APPLES, PEACHES, PEARS:** Tank mix with PRINCEP® 80W Simazine Weed Killer - For Top Kill and Residual Control of Annual Broadleaf Weeds and Grasses and for Suppression of Perennial Weeds - For Broadcast application, apply 1 to 2 qts. SUREFIRE per acre and PRINCEP 80W at the following rates per acre:

Crop	Rate PRINCEP 80W Per Sprayed Acre	Precautions
Almonds and Peaches (California Only)	1-1/4 - 2-1/2 lbs. in 2-4 ft. band on each side of tree row. 1- 1/4 lbs. provides residual control of burclover, common chickweed, wild mustard and shepherd's-purse.	Do not treat trees established less than 3 years. Do not treat Mission variety of almonds. Do not apply to almond trees propagated on plum root stalks. Do not replant almonds or peaches in treated soil. Do not apply on gravelly sand or loamy sand soil or on soil with less than 1% organic matter. Do not treat areas where water will accumulate.
Apples Pears  Walnuts (California Only)  Peaches (Arkansas, Louisiana, Missouri, Oklahoma, Texas and states East of the Mississippi River)	2-1/2 - 5 lbs    2-5 lbs.	Do not apply to sandy soil. Leveling and furrowing operations after application will lessen effectiveness of weed control.  Do not apply to sandy or gravelly soil.
Grapes (California Only)	2-1/2 - 6 lbs.	Do not use in vineyards established less than 3 years.
Oranges (California Only) Except Imperial, Coachella and Palo Verde Valleys (Florida Only) - Bedded	2-1/2 - 5 lbs.  4 lbs.	Do not use in nurseries. To avoid possible injury, do not apply to trees under stress from freeze damage for one year following the freeze.

Use the low rate of PRINCEP 80W on coarse-textured soils and low organic matter soils. Use the high rate on fine-textured soils and high organic matter soils. Apply as a tankmix in 50 to 200 gals. of water per acre to the orchard floor, avoiding contact with fruit, foliage or stems. Add spreader (nonionic) at 16 to 32 fl. oz. per 100 gals diluted spray. Apply when weeds and grasses are succulent and the new growth is from 1 to 6 inches tall. For band applications or spot applications around trees, reduce the broadcast rate and the amount of water in proportion to the area actually sprayed.

Make only one application per year. Apply in orchards where trees have been established one year or more. Do not spray under windy conditions and use a shield for young trees. Do not apply to almonds and walnuts when nuts are on the ground during the harvest period. Do not allow animals to graze treated areas.

Refer to the PRINCEP 80W Simazine label for general information, caution, and warning statements.

**PINEAPPLES:** For Kill of Annual Broadleaf Weeds and Grasses and Top Kill and Suppression of Perennials - Apply as a directed spray using 1 to 2 qts. SUREFIRE in 100 to 200 gals. water per sprayed acre to thoroughly cover the weeds and grasses. Add spreader (nonionic) at 16 to 32 fl. oz. per 100 gals. Apply when weeds and grasses are succulent and new growth is from 1 to 6 inches high. Retreatment may be necessary on more mature weeds. Do not apply within 20 days of harvest, and do not exceed 3 applications per season.

**BERRIES** (Blackberries, Blueberries, Boysenberries, Currant, Elderberry, Gooseberry, Huckleberry, Loganberry, Raspberries): For Kill of Annual Broadleaf Weeds and Grasses and for Top Kill and Suppression of Perennial Weeds in the Interspaces and Around the Base of Bushes - Apply as a coarse directed spray at 1 to 2 qts. SUREFIRE per sprayed acre in 50 to 200 gals. water to thoroughly wet the weeds and grasses. Add spreader (nonionic) at 16 to 32 fl. oz. per 100 gals. water. Apply before emergence of new canes or shoots since injury to those canes or shoots can result. Apply as a coarse spray to avoid drift injury from fine-spray mist.

**GRAIN SORGHUM:** Postemergence Directed Spray - For Kill of Emerged Crabgrass and Pigweed 3 Inches or Less in Height - 1 to 2 pts. SUREFIRE in 20 to 40 gals. water per sprayed acre. Use higher gallonage of water for larger weeds. For band applications, 1 pt. SUREFIRE will cover 2 land or crop acres when a 20-inch band is treated in 40-inch rows. Treat when grain sorghum is naturally standing 12 inches tall or more. Add spreader (nonionic) at 1 qt. per 100 gals. of spray. Do not exceed 30 psi; high pressure contributes to spray drift. Do not apply within 48 (grain) and 20 (forage) days of harvest.

For best results, apply SUREFIRE at 1 pt. per sprayed acre to grass and weeds less than 2 inches tall. Grass and weeds 2 to 3 inches tall should be sprayed with 2 pts. of SUREFIRE per sprayed acre. Use precision application equipment with spray nozzles mounted on skid shoes, oiling shoes, fenders, or cultivators with gauge wheels and adjusted so that only the lower 3 inches or less of the sorghum stalk is sprayed.

For best coverage on single rows, use 4 flat-fan nozzles per row, 2 nozzles on each side of the row. The 2 forward nozzles should point forward and downward, and rear nozzles should point to the rear and downward. For double row sorghum use one skid between the two rows with one nozzle spraying backward and downward.

Some sheath and lower-leaf spotting and desiccation will occur. Basal spotting does not penetrate beneath outer sheath. Degree of injury is related to precision of application and wind velocity. Do not spray under windy conditions. Do not harvest for forage, fodder, silage or hay before the soft dough stage of the grain. Do not make more than 2 postemergence-directed applications per season or exceed a total of 8 pints of SUREFIRE per season.

**FIELD CORN:** Postemergence Directed Spray - For Control of Emerged Annual Broadleaf Weeds and Annual Grasses Less than 4 Inches Tall. Apply 1 pt. SUREFIRE Herbicide per acre in 10 to 40 gals. of spray mix. Apply when corn plants are at least 10 inches tall. Corn plants shorter than 10 inches may be injured and not recover. Corn height measured from soil surface to top of whorl. Apply with directed spray application equipment. Arrange nozzles to spray no higher than the lower 3 inches of corn stalks to provide for maximum contact of weeds, with minimum contact of corn plants to prevent excessive sheath and lower-leaf spotting and desiccation. For corn greater than 20 inches tall, arrange the nozzles to spray no higher than the lower 1/3 of the corn stalks. To avoid excessive phytotoxicity, use a shielded sprayer with skids or wheels on the spray boom to maintain spray height. Corn foliage sprayed will be injured, but the crop will recover and develop normally. Add 1 qt. of spreader (nonionic) per 100 gals. of spray. Do not mix with liquid fertilizer.

**CORN:** For use in the USDA Witchweed eradication program to kill grassy weeds. Apply 1 qt. SUREFIRE in 10 to 20 gals. spray per acre. Add spreader (nonionic) at 16 fl. oz. per 100 gals. spray mix. Apply as a spray directed onto the grassy weeds at the base of the corn stalks in the hills or row. Initiate sprays in early July and repeat in early August if regrowth of grassy weeds occurs. For corn greater than 20 inches tall, arrange the nozzles to spray no higher than the lower 1/3 of the corn stalks. To avoid excessive phytotoxicity, use a shielded sprayer with skids or wheels on the spray boom to maintain spray height. Corn foliage sprayed will be injured, but the crop will recover and develop normally.

**SUGARCANE:** Directed Spray - For Kill of Emerged Annual Broadleaf Weeds and Grasses and for Top Kill of Perennials - Apply as a shielded or directed spray when weeds are 2 to 6 inches high. Avoid contact with cane foliage to prevent serious leaf burn and reduced yields. Make a second and final application, if necessary, when new weed growth is 2 to 6 inches high. Add spreader (nonionic) at 16 fl. oz. per 100 gals. spray mix. Do not graze treated areas or feed treated forage to livestock.

Florida Only - Apply 1 qt. in 50 to 100 gals. of water per acre. For optimum results, apply early in the season (March-April) when weeds are small. Do not apply after June 1st because cane growth may be stunted and yields reduced.

Hawaii Only - Apply 1 qt. SUREFIRE in 20 to 200 gals. of water per acre. Do not apply after cane rows have closed in.

Louisiana Only - Apply 1/2 to 1 qt. SUREFIRE in 20 to 200 gals. of water per acre. For tiller control, apply when tillers are less than 18" high. Use the higher rate of SUREFIRE with heavier weed infestations or tiller growth. Do not apply within 30 days of harvest.

**FALLOWLAND APPLICATION IN WHEAT/BARLEY/MILO/CORN:  
FALLOW ROTATION SYSTEMS:**

For control of most emerged annual broadleaf weeds and grasses during the fallow period(s). Apply SUREFIRE as a broadcast spray to weeds 1 to 6 inches tall. Weeds taller than 6 inches may not be controlled. As density of stubble, crop residues, or weeds increases, spray gallonage should be increased within the recommended range for complete coverage. Weeds and grasses emerging after applications, and regrowth from perennial weeds will not be controlled.

Rate/Acre of SUREFIRE	Nonionic Surfactant Per 100 gals Spray Mixture	Total Spray/Acre
1.5-2 pints	1-3 pints	Ground: 10-30 gals Air: 3-10 gals

**NONCROP USES**

**NONCROP AREAS (Public Airports, Electric Transformer Stations and Substations, Pipeline Pumping Stations, Around Commercial Buildings, Storage Yards and Other Installations, Fence Lines, and Similar Noncrop Areas):** For the Control of Annual Broadleaf Weeds and Grasses (such as Burclover, Chickweed, Filaree, Groundsel, Nettle, Pigweed, Plantain, Puncturevine, Purslane, Red Clover, Shepherd's-purse, Thistle, Wild Mustard, Wild Radish, Wild Oats, Bluegrass, Cheatgrass, Crabgrass) and Top Kill and Suppression of Perennial Weeds (such as Bermudagrass, Johnsongrass, and Morningglory) - 1 qt SUREFIRE per acre. Apply for full coverage and thorough weed contact (10 to 100 gals. diluted spray per acre). Best results are obtained when applications are made to young, succulent weeds and grasses. Mature, woody weeds are less susceptible. Repeat as needed. Add spreader (nonionic) at 16 oz. per 100 gals. SUREFIRE is compatible with many residual herbicides. Avoid spray contact with foliage or fruit of food crops and ornamentals.



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