



62719-286

04/05/2001

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

APR 5 2001

OFFICE OF  
PREVENTION, PESTICIDES  
AND TOXIC SUBSTANCES

Rafael Herrera  
Dow AgroSciences  
9330 Zionsville Road  
Indianapolis, IN 46268-1054

Dear Mr. Herrera:

Subject: Revised Label  
Starane  
EPA Registration No 62719-286  
Your Submission Dated January 4, 2001

The amendment referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended is acceptable provided that you:

1. Make the labeling changes listed below before you release the product for shipment bearing the amended labeling:

a. The terms "General Use" and "Approved Uses" could be misleading. Modify the headings to read similar to the following:

Application Precautions and Restrictions:

Application Sites:

b. It is understood that on page 4 on the Label Booklet Cover the duplicate Agricultural Use Requirements referral box replaces the referral box on the Base Label (container) that is covered by the booklet.

c. On page 14 in footnote 2 the statement "A minimum of 2/3 pint/acre should be used for optimal control..." implies that more than 2/3 pints can be applied but the maximum application rate for kochia is 2/3 pints. Delete "minimum". Please note that if you intend to apply more than one application per season, specific application directions must be added to the labeling and our scientists will have to determine if current tolerances cover residues from two or more applications per season.

2. Submit one (1) copy of your final printed labeling before you release the product for shipment.

A stamped copy of the labeling is enclosed for your records.

If you have any questions concerning this letter, please contact Mr. James Stone at 703-305-7391.

Sincerely yours,

JS

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

Enclosure

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(Base Label):

(logo) Dow AgroSciences

# Starane\*

**ACCEPTED**  
with **COMMENTS**  
in EPA Letter Dated:

APR 5 2001

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act,  
as amended, for the pesticide  
registered under EPA Reg. No.  
62719-286

For selective postemergence control of annual and perennial broadleaf weeds and volunteer potatoes in small grains, fallow cropland, and on-farm non-cropland.

Active Ingredient(s):

fluroxypyr 1-methylheptyl (4-amino-3,5-dichloro-6-fluoro-2-pyridinyl)acetate	
fluroxypyr 1-methylheptyl ester: ((4-amino-3,5-dichloro-6-fluoro-2-pyridinyl)oxy)acetic acid, 1-methylheptyl ester	26.2%
Inert Ingredient(s)	73.8%
Total	100.0%

Contains petroleum distillates.

Acid Equivalent: fluroxypyr: (4-amino-3,5-dichloro-6-fluoro-2-pyridinyl)oxy)acetic acid - 18.2% - 1.5 lb/gal

### Keep Out of Reach of Children

## WARNING AVISO

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 Substantial But Temporary Eye Injury • Harmful If Swallowed Or Absorbed Through The Skin

Do not get in eyes or on clothing. Avoid contact with skin.

#### Personal Protective Equipment (PPE)

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

#### Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as Barrier Laminar or Viton
- Shoes plus socks
- Protective eyewear

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, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protections 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: Hold eyelids open and flush with a steady, gentle stream of water for 15 minutes. Get medical attention.~~

~~If On Skin: Wash with plenty of soap and water. Get medical attention.~~

~~If Swallowed: Call a doctor or get medical attention. Do not induce vomiting or give anything by mouth to an unconscious person. Drink promptly a large quantity of milk, egg whites, gelatin solution, or if these are not available, drink large quantities of water. Avoid alcohol.~~

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If swallowed: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

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

Note to Physician: May pose an aspiration pneumonia hazard. Probable mucosal damage may contraindicate the use of gastric lavage

## Environmental Hazards

This product is toxic to fish. Drift or runoff from treated areas may be hazardous to aquatic organisms and non-target plants. 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 cleaning equipment or disposing of equipment washwaters.

## Physical or Chemical Hazards

Do not use or store near heat or open flame.

## Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to the 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," "Inherent Risks of Use," and "Limitation of Remedies" inside at end of label booklet. If terms are unacceptable, return at once unopened.

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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.

EPA Reg. No. 62719-286

EPA Est. 00000-XX-00

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

**Herbicide**

**Net Contents XXX**

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(Label Booklet Cover):

(logo) Dow AgroSciences

# Starane\*

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fluroxypyr 1-methylheptyl ester: ((4-amino-3,5-dichloro-6-fluoro-2-pyridinyl)oxy)acetic acid, 1-methylheptyl ester	26.2%
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Total	100.0%

Contains petroleum distillates.

Acid Equivalent: fluroxypyr: ((4-amino-3,5-dichloro-6-fluoro-2-pyridinyl)oxy)acetic acid - 18.2% - 1.5 lb/gal

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### Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. Refer to the 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," "Inherent Risks of Use," and "Limitation of Remedies" inside at end of label booklet. If terms are unacceptable, return at once unopened.**

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EPA Reg. No. 62719-286

EPA Est. 00000-XX-00

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

## Herbicide

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**Net Contents XXX**

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(Page 1 through end):

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## Precautionary Statements

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### Hazards to Humans and Domestic Animals

## WARNING

**Causes Substantial But Temporary Eye Injury • Harmful If Swallowed Or Absorbed Through The Skin**

**Do not get in eyes or on clothing. Avoid contact with skin.**

### Personal Protective Equipment (PPE)

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#### Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as Barrier Laminate or Viton
- Shoes plus socks
- Protective eyewear

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**If On Skin:** Wash with plenty of soap and water. Get medical attention.

**If Swallowed:** Call a doctor or get medical attention. Do not induce vomiting or give anything by mouth to an unconscious person. Drink promptly a large quantity of milk, egg whites, gelatin solution, or if these are not available, drink large quantities of water. Avoid alcohol.

**Note to Physician:** May pose an aspiration pneumonia hazard. Probable mucosal damage may contraindicate the use of gastric lavage.

**If in eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**If on skin or clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.



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If swallowed: Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

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

Note to Physician: May pose an aspiration pneumonia hazard. Probable mucosal damage may contraindicate the use of gastric lavage

### **Environmental Hazards**

This product is toxic to fish. Drift or runoff from treated areas may be hazardous to aquatic organisms and non-target plants. 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 cleaning equipment or disposing of equipment washwaters.

### **Physical or Chemical Hazards**

**Do not use or store near heat or open flame.**

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### **Directions for Use**

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It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read all Directions for Use carefully before applying.

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

### **Agricultural Use Requirements**

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

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

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

- Coveralls
- Chemical-resistant gloves such as Barrier Laminate or Viton
- Shoes plus socks
- Protective eyewear

### **Non-Agricultural Use Requirements**

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for Agricultural Pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

**Entry Restrictions for Non-WPS Uses:** When applied to on-farm non-cropland, keep unprotected persons out of treated areas until sprays have dried.

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### Storage and Disposal

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

**Storage:** Store above 10°F or warm and agitate before use.

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

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

### General Information

Starane\* herbicide is a selective postemergence product for control of annual and perennial broadleaf weeds and volunteer potatoes in wheat, barley, or oats not under seeded with a legume, fallow cropland, and on-farm non-cropland.

### General Use Precautions

- Do not apply Starane directly to, or otherwise permit it to come in direct contact with, susceptible crops or desirable plants including, but not limited to, alfalfa, canola, cotton, lettuce, edible beans, lentils, mustard, peas, potatoes, radishes, soybeans, sugar beets, sunflowers, tomatoes, or tobacco.
- Avoid applications where proximity of susceptible crops or other desirable plants is likely to result in exposure to spray or spray drift.
- Do not contaminate irrigation ditches or water used for domestic purposes.
- **Maximum Application Rate:** Do not apply more than 1 1/3 pints per acre of Starane per growing season.
- **Plant-back Restriction:** If replanting is required, only wheat, barley or oats may be planted in treated fields within 120 days following application of Starane.
- **Chemigation:** Do not apply this product through any type of irrigation system.

### Management of Kochia Biotypes:

Research has suggested that many biotypes of kochia can occur within a single field. While kochia biotypes can vary in their susceptibility to Starane, all will be suppressed or controlled by the 2/3 pint per acre labeled rate. Application of Starane at rates below the 2/3-pint per acre rate can result in a shift to more tolerant biotypes within a field.

**Best Resistance Management Practice:** Extensive populations of dicamba tolerant kochia have been identified in certain small grain and corn production regions (such as Chouteau, Fergus, Liberty, Toole, and Treasure counties in the state of Montana). In these areas, Starane is recommended at a minimum rate of 2/3 pint per acre for optimal control of dicamba tolerant kochia. In addition, Starane should be rotated with products that do not contain dicamba to minimize selection pressure. Use of these practices will preserve the utility of Starane for control of dicamba tolerant kochia biotypes.

### Precautions for Avoiding Spray Drift

Spray drift, even very small quantities of the spray that may not be visible, may severely injure susceptible crops whether dormant or actively growing. When applying Starane, use low-pressure equipment capable of producing sprays of uniform droplet size with a minimum of fine spray droplets. Under adverse weather conditions, fine spray droplets that do not settle rapidly onto target vegetation may be carried a considerable distance from the treatment area. A drift control or spray thickening agent may be used with this product to improve spray deposition and minimize the potential for spray drift. If used, follow all use recommendations and precautions on the product label.

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**Ground Applications:** To minimize spray drift, apply Starane in a total spray volume of 8 or more gallons per acre using spray equipment designed to produce large-droplet, low pressure sprays. Refer to the spray equipment manufacturer's recommendations for detailed information on nozzle types, arrangement, spacing and operating height and pressure. Spot treatments should be applied only with a calibrated boom to prevent over application. Operate equipment at spray pressures no greater than is necessary to produce a uniform spray pattern. Operate the spray boom no higher than is necessary to produce a uniformly overlapping pattern between spray nozzles. Do not apply with hollow cone-type insecticide nozzles or other nozzles that produce a fine-droplet spray.

**Aerial Application:** Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high potential for temperature inversion. Spray drift from aerial application can be minimized by applying a coarse spray at spray boom pressure no greater than 30 psi; by using straight-stream nozzles directed straight back; and by using a spray boom no longer than 3/4 the rotor or wing span of the aircraft. Spray pattern and droplet size distribution can be evaluated by applying sprays containing a water-soluble dye marker or appropriate drift control agents over a paper tape (adding machine tape). Mechanical flagging devices may also be used.

**Do not apply under conditions of a low level air temperature inversion.** A temperature inversion is characterized by little or no wind and lower air temperature near the ground than at higher levels. The behavior of smoke generated by an aircraft mounted device or continuous smoke column released at or near site of application will indicate the direction and velocity of air movement. A temperature inversion is indicated by layering of smoke at some level above the ground and little or no lateral movement.

### Spray Drift Management

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

1. The distance of the outer most nozzles on the boom must not exceed  $\frac{3}{4}$  the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees. Where states have more stringent regulations, they should be observed.

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

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

#### Controlling Droplet Size:

**Volume-**Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows product larger droplets.

**Pressure-**Use the lower spray pressures recommended for the nozzle. Higher pressure reduces droplet size and does not improve canopy penetration. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.

**Number of nozzles-**Use the minimum number of nozzles that provide uniform coverage.

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**Nozzle Orientation**-Orienting nozzles so that the spray is released backwards, parallel to the airstream will produce larger droplets than other orientations. Significant deflection from the horizontal will reduce droplet size and increase drift potential.

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

**Boom Length**-For some use patterns, reducing the effective boom length to less than  $\frac{3}{4}$  of the wingspan or rotor length may further reduce drift without reducing swath width.

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

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

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

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

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

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

#### Sprayer Cleanup

To avoid injury to or exposure of nontarget crops, thoroughly clean and drain spray equipment used to apply Starane after use. Cleaning should occur as soon as possible after application of Starane. Spray equipment should be cleaned after use with Starane by the following procedure:

1. Drain any remaining Starane from the spray tank and dispose of according to label disposal instructions.
2. Hose down the interior surfaces of the tank. Flush tank, hoses, boom, and nozzles with clean water for 10 minutes. Fill the tank with water and recirculate for 15 minutes. Spray part of the mixture

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through the hoses, boom, and nozzles and drain the tank. All rinse water must be disposed of in compliance with local, state, and federal guidelines.

3. Remove the nozzles and screens and clean separately.
4. If the spray equipment will be used on crops other than those labeled for Starane, repeat steps 1 and 2 and thoroughly wash the outside of spray tank and the boom.

## Mixing Instructions

### Starane Alone

Fill spray tank with water equal to 1/2 to 3/4 of the required spray volume. Add the required amount of Starane, then finish filling the tank. Provide sufficient agitation during mixing and application to maintain a uniform emulsion.

### Tank Mixing

This product may be applied in tank mix combination with labeled rates of other products provided (1) the tank mix product is labeled for the timing and method of application for the use site to be treated; and (2) tank mixing is not prohibited by the label of the tank mix product.

### 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. Do not tank mix with another pesticide product that contains the same active ingredient as this product unless the label of either tank mix partner specifies the maximum dosages that may be used.
- 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 adequately cleaned.
- Always perform a (jar) test to ensure the compatibility of products to be used in tank mixture.

**Tank Mix Compatibility Testing:** A jar test is recommended prior to tank mixing to ensure compatibility of Starane and other pesticides, fertilizers or carriers. 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, jels, oily films or layers, or other precipitates, it is not compatible and the tank mix combination should not be used.

### Tank Mixing Instructions

Fill spray tank with water to 1/4 to 1/3 of the required spray volume. Start agitation. Add different formulation types in the order indicated, allowing time for complete mixing and dispersion after addition of each.

1. Add dry flowables; wettable powders; aqueous suspensions, flowables or liquids.
2. Maintain agitation and fill spray tank to 3/4 of total spray volume and then add Starane and other emulsifiable concentrates and any solutions.

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.

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### Application Directions

**Application Timing:**

Apply to actively growing weeds. Extreme growing conditions such as drought or near freezing temperatures prior to, at and following time of application may reduce weed control and increase the risk of crop injury at all stages of growth. **Only weeds that are emerged at the time of application will be affected.** Foliage that is wet at the time of application may decrease control. Applications of Starane are rain-fast within 1 hour after application.

**Effect of Temperature on Herbicidal Activity:** Herbicidal activity of Starane is influenced by weather conditions. Optimum activity requires active plant growth. The temperature range for optimum herbicidal activity is 55°F to 75°F. Reduced activity will occur when temperatures are below 45°F or above 85°F. Frost before application (3 days) or shortly after (3 days) may reduce weed control and crop tolerance.

**Application Rates:**

Generally, application rates at the lower end of the recommended rate range will be satisfactory for young, succulent growth of sensitive weed species. For less sensitive species, perennials, and under conditions where control is more difficult (plant stress conditions such as drought or extreme temperatures, dense weed stands and/or larger weeds) the higher rates within the rate range will be needed. Weeds growing in the absence of crop competition generally require higher rates to obtain satisfactory control or suppression.

**Spray Coverage:**

Apply in 3 or more gallons per acre by air or in 8 or more gallons per acre by ground equipment. Do not exceed 40 gallons per acre total spray volume. Use sufficient spray volume to provide thorough coverage and a uniform spray pattern. Inadequate spray volume and coverage may result in decreased weed control. As canopy and weed density increase, spray volume should be increased to obtain equivalent weed control. Use larger nozzle tips or decrease spraying speed to increase spray volume rather than increasing boom pressure. Refer to manufacturer's recommendations for information on relationships between spray volume, and nozzle size and arrangement.

**Adjuvants:** Generally, this product does not require the use of an adjuvant to achieve satisfactory weed control. However, the addition of an adjuvant may optimize herbicidal activity when applications are made (a) at lower use rates or lower carrier volumes, (b) under conditions of cool temperature, low relative humidity or drought, or (c) to small, heavily pubescent kochia.

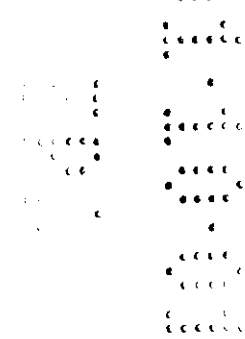
**Spot Treatments:** To prevent misapplication, spot treatments should be applied with a calibrated boom or with hand sprayers according to directions provided below.

**Hand-Held Sprayers:** Hand-held or backpack sprayers may be used for spot applications of Starane if care is taken to apply the spray uniformly and at a rate equivalent to a broadcast application. Application rates in the table are based an area of 1,000 sq ft. The amount of Starane (fl oz or ml) in the table should be mixed with 1 gallon or more of water and applied to an area of 1,000 sq ft. To calculate the amount of product required for larger areas, multiply the table value (fl oz or ml) by the area to be treated in "thousands" of square feet, e.g., if the area to be treated is 3,500 sq ft, multiply the table value by 3.5 (calc. 3,500 ÷ 1,000 = 3.5). An area of 1000 sq ft is approximately 10.5 X 10.5 yards (strides) in size.

Amount of Starane to Equal Specified Broadcast Rate (Mix with 1 Gallon or More of Water and Apply to 1,000 sq ft)		
2/3 pt/acre	1 pt/acre	1 1/3
0.25 fl oz (7.25 ml)	0.37 fl oz (11 ml)	0.5 (14.5 ml)

†1 fl oz = 29.6 (30) ml

### Weeds Controlled or Suppressed



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(Numbers in parentheses (-) refer to footnotes below.)

<b>Weeds Controlled</b>	<b>Weeds Suppressed<sup>2</sup>(2)</b>
bedstraw (cleavers)	<u>bindweed, field</u>
chickweed	<u>buckwheat, wild</u>
<u>clover, white</u>	<u>canola, volunteer</u>
cocklebur	<u>common mallow</u>
coffeeweed	field bindweed
<u>common ragweed</u>	field pennycress
<u>common purslane</u>	field horsetail
<u>flax, volunteer</u>	knotweed
grape species	<u>mallow, common</u>
hemp dogbane	maretail
kochia <sup>1</sup> (1)	marshelder
<u>mallow, Venice</u>	mustard
morningglory	nightshade species
prickly lettuce	<u>pennycress, field</u>
puncturevine	<u>potato, volunteer</u>
<u>purslane, common</u>	Russian thistle
<u>ragweed, common</u>	volunteer canola
sunflower	volunteer potato
velvetleaf	wild buckwheat
<del>venice mallow</del>	
volunteer flax	
white clover	

<sup>1</sup>1. Includes herbicide tolerant or resistant biotypes.

<sup>2</sup>2. **Suppression** is expressed as a reduction in weed competition (reduction population or vigor) as compared to untreated areas. The degree of weed control and duration of effect may vary with weed size, density, application rate, coverage, and growing conditions before, during and after treatment.

**Approved Uses**

**Crop Uses**

**Wheat - Barley - Oats**

Apply as a broadcast postemergence treatment to actively growing wheat, barley or oats, from the 2 leaf crop growth stage up to and including flag leaf emergence (Zadoks scale 39) for control of ~~kochia, including herbicide tolerant biotypes, and other broadleaf weeds~~. Apply when weeds are actively growing, but before weeds are 8 inches tall or vining. For control of volunteer potatoes, apply before potato plants are 8 inches tall. Only weeds emerged at the time of treatment will be controlled. Extreme growing conditions such as drought or near freezing temperatures prior to, at, and following time of application may reduce weed control and increase the risk of crop injury at all stages of growth. Do not use if cereal crop is underseeded with a legume.

**Spot Application:** Spot applications may be made, however, to prevent over-application spot treatments should be applied at rates and spray volumes equivalent to broadcast application. See instructions for "Spot Application" in "Application Directions" section.

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**Broadcast Application Rates:**

<b>Key Weeds Controlled<sup>†</sup></b>	<b>Application Rate (pint/acre)</b>
kochia <sup>**</sup> , bedstraw, common ragweed, hemp dogbane, prickly lettuce, puncturevine, volunteer flax, white clover	2/3
<b>Weeds Suppressed</b>	
common mallow, field bindweed, field pennycress, field horsetail, knotweed, mareetail, mustard, nightshade species, wild buckwheat	2/3 - 1 1/3
Volunteer Potatoes	1 1/3

<sup>†</sup>See "Weeds Controlled or Suppressed" section for a complete listing of weeds controlled or suppressed.

<sup>\*\*</sup>Includes herbicide tolerant or resistant biotypes.

(Numbers in parentheses (-) refer to footnotes following table.)

<b>Weed Size or Species (1)</b>	<b>Application Rate (pint/acre)</b>
Susceptible broadleaf weed seedlings less than 4 inches tall (2)	1/2
Susceptible broadleaf weed seedlings less than 8 inches tall or vining	2/3
Volunteer potatoes	1 1/3

1. See "Weeds Controlled or Suppressed" section for a complete listing of weeds controlled or suppressed.
2. The 1/2 pint/acre rate will generally provide satisfactory control of kochia seedlings less than 4 inches tall (including ALS resistant biotypes). However, when conditions for control are less favorable, such as under drought or cool temperatures, the 2/3 pint/acre rate will provide more consistent control of kochia seedlings 1 to 4 inches tall. Control of small kochia with reduced rates will be more consistent if kochia is at least 1 inch tall. A minimum of 2/3 pint/acre should be used for optimal control of dicamba tolerant kochia populations (see "Management of Kochia Biotypes" in the General Information section of this label).

**Restrictions:**

- Do not allow livestock to graze treated areas or harvest treated forage within 7 days of application.
- Do not make more than one application per growing season.
- **Preharvest Interval:** Do not apply closer than 14 days before cutting of hay or 40 days before harvesting of grain and straw.

**Fallow Cropland**

Apply as a single broadcast treatment by ground or aerial equipment to control susceptible broadleaf weeds. Apply when weeds are actively growing, but before kochia is 8 inches tall and before wild buckwheat is vining. Starane may be applied alone or in tank-mix combination with other herbicides (See tank mixing precautions in "Mixing Instructions" section).



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**Broadcast Application Rates:**

<b>Key Weeds Controlled<sup>†</sup></b>	<b>Application Rate (pint/acre)</b>
kochia <sup>**</sup> , bedstraw, common ragweed, hemp dogbane, prickly lettuce, puncturevine, volunteer flax, white clover	2/3 - 1 1/3
<b>Weeds Suppressed</b>	
common mallow, field bindweed, field pennycress, field horsetail, knotweed, mareetail, mustard, nightshade species, wild buckwheat	

<sup>†</sup> See "Weeds Controlled or Suppressed" section for a complete listing of weeds controlled or suppressed.

<sup>\*\*</sup> Includes herbicide tolerant or resistant biotypes.

<b>Weed Size or Species<sup>†</sup></b>	<b>Application Rate (pint/acre)</b>
Susceptible broadleaf weed seedlings less than 8 inches tall or vining	2/3 - 1 1/3
Volunteer potatoes	

<sup>†</sup> See "Weeds Controlled or Suppressed" section for a complete listing of weeds controlled or suppressed.

Control may be reduced if weeds are under stress from drought or extreme temperatures. Use lower rates to control light to moderate infestations and under good growth conditions. Use higher rates for moderate to heavy infestations and to compensate for less than ideal growth conditions.

**On-Farm Non-Cropland**

Apply as a single broadcast treatment or spot treatment to control susceptible broadleaf weeds in on-farm non-cropland areas such as fencerows, building perimeters, around irrigation equipment and on-farm private roadways. Apply at the rate of 2/3 to 1 1/3 pints per acre when weeds are small and actively growing, but before weeds are 8 inches tall or vining. Spot treatments should be applied at rates and spray volumes equivalent to broadcast application. See instructions for "Spot Application" in "Application Directions" section. See "Weeds Controlled or Suppressed" section for a complete listing of weeds controlled or suppressed.

**CRP Acres**

**Do not use on CRP acres that are underseeded with desirable legumes, clovers, or other sensitive broadleaf plants.**

Starane may be applied to Conservation Reserve Program (CRP) acres. For best results, apply as a single broadcast treatment by ground or aerial equipment to control susceptible broadleaf weeds. Apply at the rate of 2/3 to 1 1/3 pints per acre when weeds are small and actively growing, but before weeds are 8 inches tall or vining. Spot treatments should be applied at rates and spray volumes equivalent to broadcast application. See instructions for "Spot Application" in "Application Directions" section. See "Weeds Controlled or Suppressed" section for a complete listing of weeds controlled or suppressed.

**Restriction:** Grazing or haying of treated CRP acres is prohibited.

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