

62719-260

10/10/2001

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

COMPLIMENTARY COPY

OFFICE OF PREVENTION; PESTICIDES AND TOXIC SUBSTANCES

OCT 10 2001

Mr. J. Robert Peterson, Ph.D
Regulatory Manager
DOW AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268

Dear Mr. Peterson:

Subject: Subject: Reregistration
Label Revisions-Crossbow
EPA Registration No. 62719-260
Your Submission Dated June 14, 2001

The product labeling referred to above, submitted in connection with reregistration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended is acceptable, provided the required changes are made which are listed below.

- 1. In response to your objection to Item 6, requiring a groundwater statement as noted in the triclopyr RED, the Agency takes note of your objection but requires the following statement be incorporated into your label pending a determination that the groundwater statement is no longer needed for triclopyr.

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

- 2. Enclosed is a copy of your label stamped "Accepted with Comments".

Submit three (3) copies of your final printed labeling before you release the product for shipment.

Sincerely,

[Signature]
James A. Tompkins
Product Manager (25)
Herbicide Branch 7505C

RECEIVED
OCT 16 2001
REGISTRATION



Crossbow*

EPA Reg. No. 62719-260

Registration Notes:

Current label text based on EPA-accepted copy dated September 14, 1994, changes made in accordance with EPA correspondence dated, April 18, 1994, changes required by company name change effective January 1, 1998, and Notification coded "R1A / Crossbow / Notif. / 01-07-98"

- 1. Precautionary Statements:** (1) Revised Precautionary Statements, consistent with acute toxicity categories, EPA Label Review Manual, and 2,4-D Exposure Reduction Program; and (2) added "User Safety Requirements", "User Safety Recommendation" and "Engineering Controls" statements.

Acute Toxicity Category by Route of Exposure

Route of Exposure	Crossbow
Oral LD50	III
Dermal LD50	IV
Dermal Irritation	IV
Ocular Irritation	III
Inhalation	IV
Dermal Sensitization	non-sensitizer (1)

(1) **Editor's Note:** This product is labeled as a skin sensitizer for the following reason: The skin sensitization study for Turflon D (62719-67) was used by the EPA in determining the skin sensitization potential of Crossbow (which has the same formulation as Turflon D). Due to issues with the skin sensitization study for Turflon D (see letters from the EPA dated October 14, 1999 and March 21, 2000 as well as DAS response letter dated October 28, 1999 regarding review of 8-month acute toxicity data submission in response to the Triclopyr RED) the EPA has classified this product as a skin sensitizer.

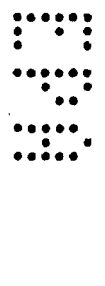
- 2. Directions for Use:** (1) Added Application Restrictions and Entry Restrictions required for occupational use; (2) added maximum use rate restrictions based on limits for triclopyr or 2,4-D; (3) revised haying/grazing restrictions per RED guidance; and (4) added "Spray Drift Advisory" language.

Additional Changes:

- 3.** Revised format for KOROC statement and signal word on base label in accordance with recent guidance from EPA labeling team. Signal word and KOROC statement need not be repeated within Precautionary statements when entire base label appears in a single label panel.
- 4.** Under "Approved Uses" placed "General Weed Control" section in front of "Woody Plant Control" section.

12June01 – Additional changes made to the proposed label in response to a letter dated May 9, 2001 from James A. Tompkins, EPA.

- 1.** Added Net Contents field to label.
- 2.** Revised First Aid statements in accordance with PR Notice 2001-1. Please note, the text recommended in the EPA letter for first aid treatment "If swallowed", was incorrect. Since Crossbow contains petroleum distillates, the correct first aid text for products containing petroleum distillates per PR-Notice 2001-1 was used.
- 3.** Added Note to Physician stating "This product may pose an aspiration pneumonia hazard. Contains petroleum distillates."
- 4.** Hazards to Humans and Domestic Animals: The statement "Harmful if Swallowed" is already in the label text. The additional statement "Prolonged or frequently repeated contact may cause allergic reaction in some individuals." was left in this section and not removed as proposed in the original amendment. **[Editor's Note:** See footnote under "Acute Toxicity Category by Route of Exposure" table in these registration notes.]



- 5. Hazards to Humans and Domestic Animals: Removed the statement "Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them." which had been added as part of the original amendment.
- 6. Environmental Hazards: The requested first paragraph is contained in the label but was updated with minor edits to match text requested in the May 9, 2001 EPA correspondence. The second paragraph regarding ground water has not been added pending EPA review of public comments to the RED submitted by Dow AgroSciences in 1999.
- 7. Physical and Chemical Hazards: The word Combustible has been left off of this label since it is not required per 40 CFR 156.10, under Physical or Chemical Hazards, Table 2 - Nonpressurized Containers.
- 8. Storage and Disposal: Changed the subheading from "Storage" to now read "Pesticide Storage".
- 9. General Use Precautions and Restrictions: Added the following WPS exclusionary statement "For use on plants in non-crop and non-timber areas only. Not for use on crops, timber, or other plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes."
- 10. General Use Precautions and Restrictions, Grazing Lactating Dairy Animals: Revised the third sentence in this section from the proposed text "Grazed areas of non-cropland and forestry sites may be treated if they comprise no more than 25% of the total grazable area" to now read "Grazed areas of non-cropland and forestry sites may be spot treated if they comprise no more than 10% of the total grazable area."
- 11. Spray Drift Management, Swath Adjustment: Revised the first sentence by replacing the word "downward" with the word "downwind" so the sentence now reads "When applications are made with a crosswind, the swath will be displaced downwind."
- 12. Revised the heading "Approved Uses" to now read "Application Instructions" and revised the text in the first bullet point under the "Maximum Use Rates" heading. Therefore, in the first bullet point, the phrase "per acre per year" was replaced with the following phrase "per acre per growing season on range and pasture sites, including rights of way, fence rows or any area where grazing and harvesting is allowed." Note: the EPA requested text "per acre and only one application per growing season . . ." was not added since product is not restricted to only one application per growing season.
- 13. Spray Drift Management: As requested, made minor revisions to the first paragraph of this section so that it now reads "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."
- 14. The specification for maximum rate of application of 8 lbs/ae/a/year is in the label under Application Directions, Maximum Use Rates.
- 15. Referral statements to Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies were revised per EPA correspondence from Joanne I. Miller dated August 31, 2000 and Dow AgroSciences response to Donald R. Stubbs dated November 20, 2000.

In addition to the changes listed above, the following changes were also made to this label:

- 1. Active Ingredients: Corrected active ingredient from "triclopyr" to now read "triclopyr BEE" (followed by full chemical name) to be consistent with current, EPA-approved Confidential Statement of Formula.
- 2. Mixing Directions, Application Directions: Since Crossbow mixed with water creates an emulsion and not a solution, any inappropriate use of the term "solution" in these sections has been changed to read "mixture".

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40916

(Base label):

(Logo) Dow AgroSciences

Crossbow*

Low Volatile Weed and Brush Herbicide

For the control of most kinds of unwanted trees and brush, as well as annual and perennial broadleaf weeds on rangeland, permanent grass pastures, conservation reserve program (CRP) acres, fence rows, non-irrigation ditchbanks, roadsides, other non-crop areas and industrial sites

Active Ingredient(s):

2,4-dichlorophenoxyacetic acid, butoxyethyl ester†	34.4%
triclopyr BEE: 3,5,6-trichloro-2-pyridinyloxyacetic acid, butoxyethyl ester	16.5%
Inert Ingredients	49.1%
Total	100.0%

Contains Petroleum Distillates

Acid Equivalents: 2,4-dichlorophenoxyacetic acid - 23.7% - 2 lb/gal
triclopyr - 11.9% - 1 lb/gal

†Isomer Specific by AOAC Method No. 978.05 (15th Ed.)

**ACCEPTED
with COMMENTS
in EPA Letter Dated:
OCT 10 2001**

Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 62719-260

Keep Out of Reach of Children

CAUTION PRECAUCION

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

Precautionary Statements

Hazards to Humans and Domestic Animals

Causes Moderate Eye Irritation • Harmful If Swallowed • Prolonged Or Frequently Repeated Skin Contact May Cause Allergic Skin Reactions In Some Individuals

Avoid contact with eyes or clothing. When mixing, loading or applying this product or repairing or cleaning equipment, wear long-sleeved shirt, long pants, socks, shoes, chemical-resistant gloves and eye protection (face shield or safety glasses).

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. After each day of use, clothing or PPE must not be reused until it has been cleaned.

Engineering Controls

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

User Safety Recommendations

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REGISTRATION

Users should:

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

First Aid

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

If 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. You may also contact 1-800-992-5994 for emergency medical treatment information.

Note to Physician: This product may pose an aspiration pneumonia hazard. Contains petroleum distillates.

Environmental Hazards

This product is toxic to fish. Drift or runoff may adversely affect fish and nontarget 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.

Mixing and Loading: Most cases of groundwater contamination involving phenoxy herbicides such as 2,4-D have been associated with mixing/loading and disposal sites. Caution should be exercised when handling 2,4-D pesticides at such sites to prevent contamination of groundwater supplies. Use of closed systems for mixing or transferring this pesticide will reduce the probability of spills. Placement of the mixing/loading equipment on an impervious pad to contain spills will help prevent groundwater contamination.

Physical or Chemical Hazards

Do not use or store near heat or open flame.

Refer to label booklet for additional precautionary information and Directions for Use.

Notice: Read the entire label. Use only according to label directions. Before using this product, read "Warranty Disclaimer," "Inherent Risks of Use," and "Limitation of Remedies" at end of label booklet. If terms are unacceptable, return at once unopened.

In case of emergency endangering health or the environment involving this product, call 1-800-992-5994. If you wish to obtain additional product information, visit our web site at www.dowagro.com.

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

EPA Reg. No. 62719-260

EPA Est. 464-MI-1

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

Specialty Herbicide

Net Contents XXX

60916

(Datapack cover):

(Logo) Dow AgroSciences

Crossbow*

Low Volatile Weed and Brush Herbicide

For the control of most kinds of unwanted trees and brush, as well as annual and perennial broadleaf weeds on rangeland, permanent grass pastures, conservation reserve program (CRP) acres, fence rows, non-irrigation ditchbanks, roadsides, other non-crop areas and industrial sites

Active Ingredient(s):

2,4-dichlorophenoxyacetic acid, butoxyethyl ester†	34.4%
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Acid Equivalents: 2,4-dichlorophenoxyacetic acid - 23.7% - 2 lb/gal
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Specialty Herbicide**Net Contents XXX**

70116

(Page 1 through end):

Precautionary Statements

Hazards to Humans and Domestic Animals**CAUTION**

Causes Moderate Eye Irritation • Harmful If Swallowed • Prolonged Or Frequently Repeated Skin Contact May Cause Allergic Skin Reactions In Some Individuals

Avoid contact with eyes or clothing. When mixing, loading or applying this product or repairing or cleaning equipment, wear long-sleeved shirt, long pants, socks, shoes, chemical-resistant gloves and eye protection (face shield or safety glasses).

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. After each day of use, clothing or PPE must not be reused until it has been cleaned.

Engineering Controls

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

User Safety Recommendations

Users should:

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

First Aid

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

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

Note to Physician: This product may pose an aspiration pneumonia hazard. Contains petroleum distillates.

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Environmental Hazards

This product is toxic to fish. Drift or runoff may adversely affect fish and nontarget 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.

Mixing and Loading: Most cases of groundwater contamination involving phenoxy herbicides such as 2,4-D have been associated with mixing/loading and disposal sites. Caution should be exercised when handling 2,4-D pesticides at such sites to prevent contamination of groundwater supplies. Use of closed systems for mixing or transferring this pesticide will reduce the probability of spills. Placement of the mixing/loading equipment on an impervious pad to contain spills will help prevent groundwater contamination.

Physical or Chemical Hazards

Do not use or store near heat or open flame.

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.

Storage and Disposal

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

Pesticide Storage: Store above 10°F or agitate before use.

Pesticide Disposal: Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal law and may contaminate groundwater. 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.

Plastic Container Disposal: Do not reuse container. Triple rinse (or equivalent). Puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Consult federal, state, or local disposal authorities for approved alternative procedures.

Metal Container Disposal: Do not reuse container. Triple rinse (or equivalent). Puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. Consult federal, state, or local disposal authorities for approved alternative procedures.

General Information

Crossbow herbicide is recommended for control of most species of unwanted woody plants, as well as annual and perennial broadleaf weeds, growing on rangeland, permanent grass pastures, CRP, fence rows, non-irrigation ditchbanks, roadsides, other non-crop areas, and industrial sites.

General Use Precautions and Restrictions

For use on plants in non-crop and non-timber areas only. Not for use on crops, timber, or other plants being grown for sale or other commercial use, or for commercial seed production, or for research purposes.

Apply this product only as specified on this label.

Be sure that use of this product conforms to all applicable regulations.

Application Restrictions: 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.

Entry Restrictions: Do not allow worker entry into areas until sprays have dried, unless applicator and other handler PPE is worn.

In Arizona: The state of Arizona has not approved Crossbow for use on plants grown for commercial production; specifically forests grown for commercial timber production, or on designated grazing areas.

This product may not be applied to forage that is to be cut and sold for commercial purposes.

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

Foliar sprays should be applied during warm weather when brush and weeds are actively growing. Application under drought conditions may provide less than desirable results. Use low spray pressures to minimize spray drift. **Apply Crossbow in a manner to avoid contacting nearby susceptible crops or other desirable plants and to avoid contaminating water intended for irrigation or domestic use. Read and follow all use precautions given on this label.**

Do not use on bentgrass. Do not use on newly seeded grasses until grass has established a good root system and is tillering.

Do not reseed pastures within a minimum of three weeks after treatment.

Do not spray pastures containing desirable broadleaf forbs, especially legumes such as clover, unless injury or loss of such plants can be tolerated. However, the stand and growth of established grasses usually is improved, particularly when rainfall is adequate and grazing is deferred.

Do not apply Crossbow directly to, or otherwise permit it to come into direct contact with cotton, grapes, tobacco, vegetable crops, citrus, flowers, fruit or ornamental trees, or other desirable broadleaf plants and do not permit spray mists containing it to drift onto them.

Under conditions which are conducive to evaporation (high temperatures and humidity), vapors from this product may injure susceptible crops growing nearby. Excessive amounts of this herbicide in the soil may temporarily inhibit seed germination and plant growth.

Grazing and Haying Restrictions

Except for lactating dairy animals, there are no grazing restrictions following application of this product.

Grazing Lactating Dairy Animals: Do not allow lactating dairy animals to graze treated areas until the next growing season following application of this product.

Do not harvest hay for 14 days after application.

Grazed areas of non-cropland and forestry sites may be spot treated if they comprise no more than 10% of the total grazable area.

Slaughter Restrictions: During the season of application, withdraw livestock from grazing treated grass at least 3 days before slaughter.

Avoid Injurious Spray Drift

Applications should be made only when hazards from spray drift are at a minimum. Very small quantities of spray, which may not be visible may seriously injure susceptible plants. Do not spray when wind is blowing toward susceptible crops or ornamental plants near enough to be injured. Spray drift can be reduced by adding a spray thickening agent such as Nalco-Trol or its equivalent to the spray mixture. If a spray thickening agent is used, follow all use recommendations and precautions on the product label.

With ground broadcast equipment, drift can be reduced by keeping the spray boom as low as possible; by applying no less than 20 gallons of spray per acre; by keeping the operating spray pressures at the lower end of the manufacturer's recommended pressures for the specific nozzle type used (low pressure nozzles are available from spray equipment manufacturers); and by spraying when the wind velocity is low (follow state regulations). Avoid calm conditions which may be conducive to air inversions. In hand-gun applications, select the minimum spray pressure that will provide adequate plant coverage (without forming a mist). The use of a mistblower is not recommended.

With aerial applications, use a drift control system such as Microfoil or Thru-Valve booms, or use Nalco-Trol or Arborchem 38-F drift control additive or equivalent. Keep spray pressures low enough to provide coarse spray droplets. Do not use a thickening agent with the Microfoil or the Thru-Valve booms, or other systems that cannot accommodate thick sprays.

Spray Drift Management

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

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

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

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

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

Aerial Drift Reduction Advisory

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

Controlling Droplet Size:

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produced 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 $\frac{3}{4}$ of the wingspan or rotor length may further reduce drift without reducing swath width.

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

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

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

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

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

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

Mixing Directions

Crossbow in water forms an emulsion (not a solution), and separation may occur unless the spray mixture is agitated continuously.

Water Spray: Fill the spray tank about half full with clean water. Then add the Crossbow and complete filling the tank with agitation running. Mix thoroughly and continue moderate agitation while spraying.

Size of Sprayer (Gallons)	Amount of Crossbow Required for Spray Mixture		
	1%	1.5%	4%
1	1 1/3 fl oz	2 fl oz	5 1/3 fl oz
3	4 fl oz	6 fl oz	1 pt
5	6 2/3 fl oz	10 fl oz	1 2/3 pt
50	2 qt	3 qt	2 gal
100	1gal	1.5 gal	4 gal

Application Instructions

Maximum Use Rates:

- On rangeland and permanent pastures, apply no more than 1 gallon (1 lb ae triclopyr + 2 lb ae 2,4-D) per acre per growing season on range and pasture sites, including rights of way, fence rows or any area where grazing or harvesting is allowed.
- On non-cropland, apply no more than 8 gallons (8 lb ae triclopyr + 16 lb ae 2,4-D) per acre per year.

General Weed Control (See Table)

Broadcast Treatment (Ground Equipment and Helicopter): Use up to 1 1/2 gallons of Crossbow per acre in enough water to deliver 10 to 30 gallons of total spray per acre. Apply when weeds are actively growing. Best time for treatment of biennial and winter annual weeds is when the plants are in the rosette stage. Treat when plants are actively growing. Re-treatment of hard-to-control weeds such as field bindweed, chicory, dogfennel, goldenrod, horsenettle, kudzu, milkweed, perennial sowthistle, leafy spurge, and Canada thistle may be necessary. See recommendations regarding the use of drift control additives as listed in the "General Use Precautions" section under "Avoid injurious spray drift".

Spot Treatment: To control broadleaf weeds in small areas with a hand sprayer, use 4 to 6 fl. oz. of Crossbow in 3 gallons of water and spray to thoroughly wet all foliage.

General Weed Control

High-Volume Foliar Treatment or Spot Treatment			
1% Mixture	1% Mixture	1 to 1.5% Mixture	1.5% Mixture
Foliar Broadcast Applications			
1 qt/acre	2 qt/acre	2 - 4 qt/acre	4 qt/acre
blueweed (B) buttercup, annual (A) horsetweed, (marestail) (A) lambsquarters, common (A) mustard, wild (A) ragweed, common (A) spurge, thyme-leaf (A)	bedstraw, annual (A) bluebur (A) burdock (B) clover, white sweet (B) clover, bur (A) cocklebur (A) croton, wooly (A) dogbane, hemp (P) (TG) ironweed, tall (P) lettuce, wild (A,WA) mustard, tansy (WA) radish, wild (A) ragwort, tansy (B) shepherd's purse (WA)	amaranth, spiny (A) buttercup, tall (P) chickweed, mouseear (P) clover, white (P) dandelion (P) dock, curly (P) galinsoga, hairy (A) goatsbeard (A,B) henbit (B,WA) ironweed, western (P) ivy, ground (P) kochia (A) lespedeza (A) oxalis (P) pennycress, field (WA) pepperweed, field (A,B) pigweed, redroot (A) plantain, broadleaf (P) plantain, narrow-leaf (P) purslane, annual (A) sneezeweed, bitter (A) sowthistle, annual (A) sunflower (A) thistle, Russian (A) vetch (P) violet, wild (P) wormwood, biennial (B) yellow rocket (P,B)	bindweed, field (P) (TG) carrot, wild (B) chicory (P) suppression cinquefoil (A,B,P) dogfennel (P) suppression fleabane, annual (A,B) goldenrod (P) (TG) horsenettle (P) kudzu (P) (TG) marshelder (A) milkweed (P) suppression pepperweed, perennial (P) pokeweed (P) sesbania, hemp (A) sowthistle, perennial (P) TG) spurge, leafy (P) (TG) thistle, bull (B) thistle, Canada (P) (TG) thistle, musk (nodding) (B) yarrow (P)

(A) Annual (B) Biennial (WA) Winter Annual (P) Perennial
(TG) Top growth control only. Repeat treatment may be necessary.

Note: Best time for treatment of biennial and winter annuals is when plants are in the rosette stage.

Use in Liquid Nitrogen Fertilizer: Crossbow may be combined with liquid nitrogen fertilizer suitable for foliar application to accomplish weeding and feeding of grass pastures in one operation. Use Crossbow in

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accordance with recommendations for grass pastures as given on this label. Use liquid fertilizer at rates recommended by supplier or Extension Service Specialist. Test for mixing compatibility using desired procedure and spray mix proportions in clear glass jar before mixing in spray tank. A compatibility aid such as Unite or Compex may be needed in some situations. **Compatibility is best with straight liquid nitrogen fertilizer solutions. Mixing with N-P-K solutions or suspensions may not be satisfactory even with the addition of compatibility aid.** Premixing Crossbow with 1 to 4 parts water may help in difficult situations.

Fill the spray tank about half full with the liquid fertilizer, then add the herbicide with agitation and complete filling the tank with fertilizer. Apply immediately and continue agitation in the spray tank during application. **Do not store spray mixture.** Application during very cold weather (near freezing) is not advisable.

Note: Do not use spray equipment for other applications to land planted, or to be planted to susceptible crops or desirable plants, unless it has been determined that all phytotoxic herbicide residue has been removed by thorough cleaning of the equipment.

Conservation Reserve Program (CRP) For Established Permanent Grass Stands

Use Crossbow on CRP acres only when the perennial grasses are established. Conditions that stress grasses, such as drought, will increase potential for injury to the grasses.

Restrictions: When applying to CRP lands, follow all applicable state and federal regulations. Follow the most severe grazing restriction imposed by the pesticide label or by the USDA Acreage Conservation Reserve Program. After that time period, follow local (CRP) guidelines regarding cropping and haying restrictions. Do not use Crossbow if legumes are a desired cover crop during CRP. Do not use on bentgrass or newly seeded grass.

Broadcast Application (Ground or Aerial): Apply 1 to 2 quarts of Crossbow for small weed control or up to 1.5 gallons of Crossbow for deep-rooted perennial and susceptible woody species control using enough water to deliver 10 or more gallons of total spray volume per acre.

Follow precautions and recommendations outlined under Foliar Low-Volume Broadcast Applications.

For basal and dormant brush treatments, follow application directions listed in "Woody Plant Control".

Woody Plant Control

Easy-To-Control Species: 1.5 gal/acre broadcast application or 1 to 1.5% mixtures for high-volume foliar applications.

alder	cottonwood	sassafras
ash	dogwood	(top growth)
beech	elderberry	scotch broom
birch	hawthorn	sumac
blackberry	honeysuckle	sycamore
black locust	maples (except	tamarack
boneset	bigleaf and vine†)	wax myrtle
cascara	multiflora rose	(top growth)
<i>Ceanothus</i> spp.	poison ivy	white oak
cherry (except	poison oak	wild grape
black)		willow

†basal or dormant stem application only

Harder-To-Control Species: High-volume applications, 1.5% mixture, conventional basal or dormant stem applications are recommended. A broadcast rate of 2 gal/acre will increase the degree of control of these species..

buckbrush (<i>Symphoricarpos</i> spp.) (suppression)	pine (suppression)
common persimmon (suppression)	Russian olive
elm (except winged elm)	salmonberry (suppression)
hazel	sweetgum
honeylocust (suppression)	trumpet creeper (suppression)
	Virginia creeper (suppression)

High Volume Foliar Applications Through Handguns: Using a power or hand pressured spray-gun, apply a foliar wetting spray containing 1 to 1 1/2 gallons of this product in sufficient water to make 100 gallons of total spray mix. See mixing chart under "Mixing Directions" for preparing small amounts of this 1 to 1.5% spray mix.

Spray to give thorough coverage of the foliage, wetting all leaves and green stems to the drip point. Depending on the plant size and foliage density, the total amount of required spray is usually 100 to 200 gallons per sprayed acre.

For best results, applications should be made when woody plants are actively growing. This is most likely to occur for a period after full leaf in the spring to early summer when moisture and temperature are favorable. For multiflora rose control, the best time for treatment may be expected during the early to mid-flowering stage.

The required spray volume will increase substantially if the brush exceeds 5 feet in height. Brush over 8 feet tall is difficult to treat efficiently. Large brush or trees may be controlled better by basal or mechanical methods.

Foliar Broadcast Sprays (Ground Equipment and Helicopter): Apply 1.5 to 4 gallons of this product in enough water to deliver 10 to 30 gallons total spray per acre. Use a boom type or other broadcast spray equipment that provides uniform spray coverage over the top of the foliage and make applications when plants are growing well. The favorable period for treatment is most likely to occur after full leaf in the spring and continue into early summer, depending on soil moisture and other conditions. Follow-up treatment with foliar high-volume or basal type treatments may be needed, especially if treating under less favorable conditions.

Aerial Application (Helicopter only): Use Nalco-Trol or equivalent drift control additive as recommended by the manufacturer of the Microfoil boom, Thru-Valve boom, or equivalent drift control system. Thickened sprays prepared by using high viscosity invert systems or other drift reducing systems may be utilized if they control spray drift as well as Nalco-Trol or the above mentioned booms. If a spray thickening agent is used, follow all recommendations and precautions on the product label. Do not use a thickening agent with the Microfoil or Thru-Valve booms or other systems that cannot accommodate thick sprays.

Dormant Stem Applications: To control susceptible woody species such as multiflora rose and blackberry, mix 1 to 4 gallons of this product in diesel oil, No. 1 or No. 2 fuel oil or kerosene to make 100 gallons of spray and apply to thoroughly wet upper and lower stems including the root collar and any ground sprouts. Treat at any time when the brush is dormant and the bark is dry. Best results have been obtained with late winter to early spring applications. Do not treat when snow or water prevent spraying to the ground line. For the most susceptible woody species such as blackberries, substitute other diluents or oils only in accordance to manufacturer's recommendations. Apply mixture to thoroughly wet upper and lower stems as described above. The more tolerant species may require total oil carrier for better control. Brush over 8 feet in height is difficult to treat efficiently. Basal or mechanical methods may be better suited for control of large trees.

Conventional Basal Bark and Stump Applications: For control of susceptible woody plants and to prevent or control regrowth from cut stumps, mix 4 gallons of this product in diesel oil, No. 1 or No. 2 fuel

oil or kerosene to make 100 gallons of spray mixture. Spray the basal parts of brush or trees to a height of 15 to 20 inches from the ground. Thoroughly wet all the basal bark area including crown buds and ground sprouts. Spray runoff should visibly wet the ground at the base of the stems or trunks. Basal and cut stump applications can be made at any time of the year except when snow or water prevent spraying to the ground line. Best results have been obtained with winter to early spring applications. Basal treatments are less effective on trees with diameters larger than 6 to 8 inches. For better regrowth control, cut the larger trees and treat the stumps. Treat stumps the same as the trunks and also treat the freshly cut surface. The cambium layer just inside the bark is the most important area of the cut surface to treat.

Thinline Basal Applications: For the control of small multiflora rose, apply a horizontal thin line of undiluted herbicide across all the stems at a height where the stems are less than 1/2 inch in diameter and have thinner bark to penetrate. For bushes with large numbers of stems (over 3 or 4), coverage may be difficult. Basal bark or dormant stem applications may be more effective. Treat when the bark is dry and rain is not forecasted. Best time for multiflora rose control using this application method is during early spring to early summer, when the plants are just about breaking dormancy to actively growing. Apply approximately 20 ml undiluted product per bush. Wherever a stem over 1/2 inch in diameter is treated, it should be completely ringed with herbicide to obtain best results. Additional herbicide is likely to be needed for adequate coverage of these larger stems in a bush or clump.

Old stems with thickened bark require more herbicide than young stems with thin bark. Where regrowth is treated, better root kill may result if resprouts are treated after they are one year old and the bark has lost its green color, but before sprouts reach one inch in diameter.

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