

PM 23

10182-141
NOTIFICATION

Page 1 of 22

Please read instructions on reverse before completing form.

Form Approved. OMB No. 2070-0060. Approval expires 05-31-98



United States
Environmental Protection Agency
Washington, DC 20460

☐ Registration
☐ Amendment
☒ Other

OPP Identifier Number
243848

Application for Pesticide - Section I

1. Company/Product Number 10182-141	2. EPA Product Manager Joanne Miller	3. Proposed Classification <input checked="" type="checkbox"/> None <input type="checkbox"/> Restricted
4. Company/Product (Name) TORNADO Herbicide	PM# 23	
5. Name and Address of Applicant (Include ZIP Code) Saundra O'Bryan, Regulatory Product Manager Zeneca Ag Products 1800 Concord Pike, PO Box 15458 Wilmington, DE 19850-5458 <input type="checkbox"/> Check if this is a new address		6. Expedited Review. In accordance with FIFRA Section 3(c)(3) (b)(i), my product is similar or identical in composition and labeling to: EPA Reg. No. _____ Product Name _____

Section - II

<input type="checkbox"/> Amendment - Explain below.	<input type="checkbox"/> Final printed labels in response to Agency letter dated _____
<input type="checkbox"/> Resubmission in response to Agency letter dated _____	<input type="checkbox"/> "Me Too" Application.
<input checked="" type="checkbox"/> Notification - Explain below.	<input type="checkbox"/> Other - Explain below.

Explanation: Use additional page(s) if necessary. (For section I and Section II.)
Notify the Agency of the following revisions on the TORNADO Herbicide label;
- the addition of information on Weed Resistance; Spray volume defined; the revision of the General Use Precautions statement; the modification of 10 month interval rotational crops; the addition of the description of use with rhizome johnsongrass; general statements for tankmix and sequential and the addition of Butyrac to tankmix products. See enclosed highlighted label for before and after language.

Section - III

1. Material This Product Will Be Packaged In:				2. Type of Container	
Child-Resistant Packaging <input type="checkbox"/> Yes* <input type="checkbox"/> No	Unit Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	Water Soluble Packaging <input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Glass <input type="checkbox"/> Paper <input type="checkbox"/> Other (Specify) _____		
* Certification must be submitted		If "Yes" Unit Packaging wgt. _____ No. per container _____	If "Yes" Package wgt. _____ No. per container _____		
3. Location of Net Contents Information <input type="checkbox"/> Label <input type="checkbox"/> Container		4. Size(s) Retail Container		5. Location of Label Directions <input type="checkbox"/> On Label <input type="checkbox"/> On Labeling accompanying product	
6. Manner in Which Label is Affixed to Product <input type="checkbox"/> Lithograph <input type="checkbox"/> Paper glued <input type="checkbox"/> Stenciled				<input type="checkbox"/> Other _____	

Section - IV

1. Contact Point (Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)			
Name Saundra O'Bryan	Title Regulatory Product Manager	Telephone No. (Include Area Code) 302-886-8789	
Certification I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.			6. Date Application Received (Stamped)
2. Signature 		3. Title Regulatory Product Manager	
4. Typed Name Saundra O'Bryan		5. Date August 25, 1995	

TORNADO® Herbicide

Annual Grass and Broadleaf Weed Herbicide for Soybeans

COMPLETE DIRECTIONS FOR 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 ZENECA or Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold ZENECA and Seller harmless for any claims relating to such factors.

ZENECA 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 ZENECA, and Buyer and User assume the risk of any such use. ZENECA 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 ZENECA 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 ZENECA 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 ZENECA OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

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TORNADO Booklet
TORN141B.RSE - RS-8395

ZENECA 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 ZENECA.

Made in U.S.A.
ZENECA Ag Products
ZENECA Inc.
Wilmington, DE 19897

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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.)

ACTIVE INGREDIENTS:**Fluazifop-P-butyl**

butyl (R)-2-[4[[5-(trifluoromethyl)-2-pyridinyl]oxy]phenoxy] propanoate 8.30%

Sodium salt of fomesafen

5-2[chloro-4-(trifluoromethyl)phenoxy]N-(methylsulfonyl)-2-nitrobenzamide 11.59%

INERT INGREDIENTS 80.11%

TOTAL 100.00%

Contains 0.75 lbs. (+) isomer of fluazifop-P-butyl and the equivalent of 11.0% fomesafen or 1 lb. fomesafen active ingredient per gallon.

EPA Reg. No. 10182-141

STATEMENT OF PRACTICAL TREATMENT

IF IN EYES: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

IF ON SKIN: Wash with plenty of soap and water. Get medical attention if irritation persists.

FOR 24-HOUR EMERGENCY MEDICAL ASSISTANCE, CALL 1-800-F-A-S-T-M-E-D (327-8633).

FOR CHEMICAL EMERGENCY: Spill, leak, fire, exposure, or accident call CHEMTREC 1-800-424-9300.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

WARNING

This product contains fomesafen which has been determined to cause tumors in laboratory animals (mice). Risks can be reduced by closely following use directions and precautions and by wearing the protective clothing specified elsewhere on this label.

CAUSES SUBSTANTIAL, BUT TEMPORARY, EYE INJURY. HARMFUL IF ABSORBED THROUGH SKIN OR INHALED. MAY CAUSE ALLERGIC SKIN RESPONSE.

Do not get in eyes or skin or clothing. Avoid breathing vapors or spray mist.

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 C on an EPA chemical resistance category selection chart.

Applicators and other handlers (other than mixers and loaders) must wear:

- Long-sleeved shirt and long pants.
- Chemical-resistant gloves, such as Barrier Laminate or Butyl Rubber or Nitrile Rubber or Neoprene Rubber or Polyvinyl Chloride (PVC) or Viton.
- Shoes plus socks.
- Protective eyewear.

Mixers and Loaders must wear:

- Long-sleeved shirt and long pants.
- Chemical-resistant gloves, such as Barrier Laminate or Butyl Rubber or Nitrile Rubber or Neoprene Rubber or Polyvinyl Chloride (PVC) or Viton.
- Shoes plus socks.
- Protective eyewear.
- Chemical-resistant apron when 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.

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

This product is toxic to fish. 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 disposing of equipment washwaters. Do not apply when weather conditions favor drift from target area.

DIRECTIONS FOR USE

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

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

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

AGRICULTURAL USE REQUIREMENTS

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

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

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 Butyl Rubber or Nitrile Rubber or Neoprene Rubber or Polyvinyl Chloride (PVC) or Viton.
- Shoes plus socks.
- Protective eyewear.

STORAGE AND DISPOSAL

PROHIBITIONS: Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited. Do not reuse empty container.

STORAGE: Store above 32°F in original containers only. If product freezes, return to room temperature and agitate to reconstitute. Keep container closed when not in use. Do not store near food or feed. In case of spill or leak on floor or paved surfaces, soak up with sand, earth or synthetic absorbent. Remove to chemical waste area.

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 Containers: Triple rinse (or equivalent). Then offer for recycling or reconditioning or puncture and dispose of in a sanitary landfill or by other procedures approved by state and local authorities.

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

Glass Containers: Triple rinse (or equivalent). Then dispose of in a sanitary landfill or by other approved state and local procedures.

FOR BULK AND MINI-BULK CONTAINERS:

Container Disposal: Reseal container and offer for reconditioning, or triple rinse (or equivalent) and offer for recycling or reconditioning, or clean in accordance with manufacturer's instructions.

Container Precautions: Before refilling, inspect thoroughly for damage, such as cracks, punctures, bulges, dents, abrasions and damaged or worn thread on closure devices.

REFILL ONLY WITH TORNADO®. The contents of this container cannot be completely removed by cleaning. Refilling with materials other than TORNADO herbicide will result in contamination and may weaken container. After filling and before transporting, check for leaks. Do not refill or transport damaged or leaking container.

CONTAINER IS NOT SAFE FOR FOOD, FEED OR DRINKING WATER.

GENERAL INFORMATION

Read all label directions before using.

TORNADO herbicide is a selective early postemergence herbicide for control of ~~annual~~ grass and broadleaf weeds in soybeans.

TORNADO herbicide has systemic activity moving from the treated foliage into the shoots, roots, rhizomes, stolons, and growing points (meristematic regions) of treated grass weeds and contact activity for broadleaf weeds. Thorough coverage of all weed plant foliage is important for good activity. Optimum weed control is achieved when young actively growing weeds are treated that are not under stress from moisture, temperature, low soil fertility, mechanical or chemical injury.

Control Symptoms: Growth of treated grass weeds stops soon after application. Symptoms include loss of vigor, yellowing and/or reddening, and eventual death to the treated grass plant. Symptoms on grass weeds are generally observed within one week, depending on species and environmental conditions.

Symptoms on broadleaf weeds occur within 3 days and appear as browning and crinkling.

Soybean plants are tolerant to TORNADO herbicide when it is applied at the recommended rate. There may be slight bronzing, crinkling or spotting of soybean leaves but soybeans soon outgrow these effects and develop normally.

Information on Weed Resistance

Naturally occurring biotypes of certain grass species with resistance to this herbicide and related products (same mode of action) are known to exist. Selection of resistant biotypes through repeated use of these herbicides may result in control failures.

If poor performance cannot be attributed to adverse weather conditions or improper application methods, a resistant biotype may be present. In such a case, additional treatments with this herbicide or related products is not recommended. Consult your local company representative or agricultural advisor for assistance.

APPLICATION DIRECTIONS

Timing - Best control of susceptible weeds is obtained when TORNADO herbicide is applied to actively growing young weeds before they exceed the recommended growth stages shown on this label. Refer to the weed tables for specific recommendations on weed growth stages. Generally, the application should occur 10 to 21 days after soybean emergence.

Spray Additives - Only spray additives cleared for use on growing crops under 40 CFR 180.1001 may be used in spray mixture.

ALWAYS ADD ONE OF THE FOLLOWING:

Crop Oil Concentrate - Add a nonphytotoxic crop oil concentrate at 0.5-1% (1 quart per 25 gallons) of the finished spray volume for ground sprays. For aerial applications, add 1 pint of crop oil concentrate per acre. Crop oil concentrate can improve weed control but may slightly reduce crop tolerance.

Nonionic Surfactant - Add nonionic surfactant containing at least 75% surface active agent, at 0.25 - 0.5% (1/2 - 1 pint per 25 gallons) of the finished spray volume for ground sprays. For aerial applications, add 1/2 pint nonionic surfactant per acre.

Other Adjuvants - Adjuvants other than COC or NIS may be used providing the product meets the following criteria:

1. Contains only EPA exempt ingredients.
2. Is nonphytotoxic to the target crop.
3. Is compatible in mixture. (May be established through a jar test).
4. Is supported locally for use with TORNADO on the target crop through proven field trials and through university and extension recommendations.

Always refer to the product label and follow recommendations concerning rates, target crops, environmental effect such as drought or weed stress, and use in tankmix with other labeled pesticides.

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In addition to crop oil concentrate or nonionic surfactant, diammonium phosphate (aqueous ammonium polyphosphate) commonly sold as a solution (10-34-0) can be added to the spray mixture. This water soluble material should be used at a rate of 2 pints per acre.

Diammonium phosphate should not be used as a substitute for crop oil concentrate or nonionic surfactant in the spray mixture. Liquid nitrogen fertilizer (28% or similar) can also be added to spray mixture. Liquid nitrogen fertilizers are completely water soluble and should be used at a rate of one gallon per acre. Liquid nitrogen fertilizers should not be used as a substitute for crop oil concentrate or nonionic surfactant in the spray mixture.

MIXING - Fill a clean sprayer tank 1/2 full with clean water. Begin agitation and add the recommended rate of TORNADO. Add the appropriate amount of nonionic surfactant or crop oil concentrate to be used. Finish filling the tank with water to the needed volume. Allow the spray mixture to agitate and recycle 5-10 minutes before application.

GROUND APPLICATION: Use sufficient spray volume and pressure to ensure complete coverage of the target weeds. ~~A minimum of 10 gallons per acre of spray mixture should be used with spray pressures of 40 to 60 psi at the nozzle tip. A spray volume of 10-20 gallons per acre at 30-60 psi at the nozzle tip is recommended.~~ When weed foliage is dense, use 60 psi and a minimum of 20 gallons per acre to ensure coverage of weed foliage.

Use only hollow cone or flat fan nozzles. The sprayer must be calibrated to provide the proper volume and rate per acre. In addition, the boom and nozzle height must be adjusted to provide complete coverage of all weeds.

DO NOT USE FLOOD TYPE OR OTHER SPRAY NOZZLE TIPS WHICH DELIVER COARSE, LARGE DROPLET SPRAYS.

DO NOT APPLY TORNADO WITH RECIRCULATING SPRAYERS, ROPEWICK APPLICATORS, CONTROLLED DROPLET APPLICATORS (CDA) OR ANY SIMILAR DEVICE.

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

BAND APPLICATION - Adjust band application equipment to provide thorough weed coverage. Best coverage is obtained by using a minimum of two nozzles, one directed to each side of the planted row. A single nozzle directed over the top of the row will not provide adequate coverage and is not recommended. Cultivation of untreated areas may be needed following band applications. When making band applications and cultivating in the same operation, position nozzles in advance of the cultivation device. This will reduce dust in the spray area. Dust can intercept the spray, reducing weed coverage resulting in less than adequate weed control.

Calculate the amount of herbicide and water volume needed for band treatment by the following formulas:

$$\frac{\text{Band width in inches}}{\text{row width in inches}} \times \text{broadcast rate per acre} = \text{Band herbicide rate per acre}$$

$$\frac{\text{Band width in inches}}{\text{row width in inches}} \times \text{broadcast volume per acre} = \text{Band water volume per acre}$$

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AERIAL APPLICATION - Use sufficient spray volume and pressure to ensure complete coverage of the target weeds. A minimum of 5 gallons per acre of spray mixture should be applied with a maximum of 40 PSI pressure. When broadleaf weed or grass foliage is dense, use a minimum of 10 gallons per acre to ensure coverage of weed foliage. Add 1 pint/A of crop oil concentrate or 1/2 pint/A nonionic surfactant in the spray mixture.

When making aerial applications, care should be taken to avoid drift to crops other than soybeans or to other non-target areas. Do not spray when conditions are favorable for drift or when wind velocity exceeds 10 mph.

CULTIVATION - Cultivation within 7 days prior to or within 7 days after application is not recommended as weeds may be put under stress reducing weed control. Timely cultivation ~~1-3~~ weeks after applying TORNADO may assist weed control.

GENERAL USE PRECAUTIONS

TORNADO herbicide can be applied only in the states or part of states included in Region 1 and Region 2. See the TORNADO regional use map for a list of states included in Region 1 and Region 2.

In Region 1, TORNADO herbicide may be applied to soybeans once per growing season. Make only one application of TORNADO herbicide, or other fomesafen containing product, per growing season.

In Region 2, TORNADO herbicide may be applied to soybeans in alternate years. In the year of application, make only one application of TORNADO herbicide per growing season. Do not apply TORNADO herbicide, or other fomesafen containing product, to any field in Region 2 more than once every two years.

Apply TORNADO herbicide before soybeans bloom.

A maximum of 1 quart (0.25 lb. active fomesafen + 0.188 lb. active fluazifop-P-butyl) per acre of TORNADO herbicide may be applied. In the year of application, however, make only one application per growing season.

~~Apply to actively growing weeds. Avoid applying TORNADO to weeds or soybeans which are under stress from moisture, temperature, low soil fertility, mechanical or chemical injury, as reduced weed control and/or increased crop injury may result.~~

~~Applications of TORNADO herbicide when crop and weeds are under stress from cold temperature, when maximum day temperature is below 70°F, or when soil temperature is below 60°F, or when weeds are stressed due to low soil fertility, moisture stress, or mechanical, or chemical injury may result in reduced weed control since the weeds may not be actively growing.~~

~~TORNADO herbicide should not be applied to soybeans which have been under stress conditions such as drought, hail damage, flooding or herbicide injury as increased crop injury may result.~~

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For mixed weed populations, apply when the first weed species reaches the recommended growth stage for treatment.

Where irrigation is used as part of normal cropping practice, best results are usually obtained when TORNADO herbicide is applied within 7 days after irrigation.

Thoroughly clean spray tank with water and a commercial tank cleaner before and after each use.

TORNADO herbicide should not be mixed with fertilizers or pesticides unless specifically recommended on this label or on other approved ZENECA supplemental labeling.

TORNADO herbicide requires a 4-hour rain-free period for best results. ~~Do not apply if rain is threatening.~~

~~Following soybean harvest, plow or till (moldboard or disk plow) the soil in the fall or spring to minimize the possibility of injury to rotational crops.~~

Avoid overlapping spray swaths.

Avoid drift to all other crops and nontarget areas. Crops other than soybeans may be severely injured by drift.

Do not graze treated areas or harvest for forage or hay.

ROTATIONAL CROP RESTRICTIONS

The following rotational crops may be planted after applying TORNADO herbicide at recommended rates in soybeans:

<u>Crops To Be Planted</u>	<u>Minimum Rotational Interval (Months After Last TORNADO Application)</u>
Small grains such as wheat, barley, rye	4
Alliaria, beans & peas , corn, cotton, peanuts, rice, sorghum	10
To avoid crop injury do not plant sunflowers, sugar beets, sorghum or any other crop within	18

Do not graze rotated small grain crops or harvest for livestock forage or straw. In the event of a crop loss due to weather conditions soybeans can be replanted.

TORNADO USE REGIONS

Region 1: Includes the following states where TORNADO may be applied:

Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas (counties of Austin, Brazoria, Chambers, Colorado, Fort Bend, Galveston, Hardin, Harris, Jefferson, Liberty, Matagorda, Orange, Waller, Wharton).

Region 2: Includes the following states where TORNADO may be applied:

Connecticut, Delaware, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia.

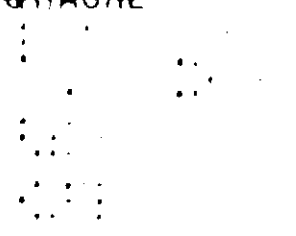
BROADLEAF WEEDS CONTROLLED WITH TORNADO IN SOYBEANS AT 1 QT/ACRE^{ab}

RATES AND WEED GROWTH STAGES

TORNADO USE RATE - 1 QUART/ACRE ^{a,b}	
WEEDS CONTROLLED ^c	MAXIMUM GROWTH STAGE (NO. OF LEAVES)
BROADLEAF WEEDS	
Carpetweed	6" diameter
Crotalaria, Showy	4
Cucumber, Volunteer	4
Jimsonweed	4
Ladysthumb	2
Lambsquarters, Common	2 (Suppression Only)
Morningglory	
Entireleaf var. integriuscula	2 (Suppression Only)
Ivyleaf var. hederacea	2 (Suppression Only)
Purple Moonflower	2
Smallwhite (pitted)	2
Tall (Common)	2 (Suppression Only)
Mustard, Wild	4
Nightshade, Black	4
Pigweed, Redroot	4
Pigweed, Smooth	4
Purslane, Common	6" diameter
Ragweed, Common	
Ragweed, Giant	2 (Suppression Only)
Smartweed, Pennsylvania	4
Venice Mallow	4
Yellow Rocket	4

ANNUAL GRASS WEEDS CONTROLLED WITH TORNADO IN SOYBEANS AT 1 QT/ACRE

Weed Growth Stages



TORNADO USE RATE - 1 QUART/ACRE		
WEEDS CONTROLLED ^c	MAXIMUM HEIGHT (INCHES)	MAXIMUM GROWTH STAGE (NO. OF LEAVES) ^e
ANNUAL GRASSES		
Barnyardgrass	2-3	3
Broadleaf signalgrass	2-4	5
Crabgrass		
Large crabgrass	1-2	4
Smooth crabgrass	1-2	4
Southern crabgrass	1-2	4
Tropical crabgrass	1-2	4
Downy Brome	2-6	4
Fall panicum	2-6	6
Field Sandbur	2-4	4
Foxtails		
Giant foxtail	2-6	4
Green foxtail	2-4	4
Yellow foxtail	2-4	4
Goosegrass	2-4	6
Italian Ryegrass	2-4	4
Itchgrass	4-24	6
Johnsongrass, Seedling	2-8	4
Junglerice	2-3	3
Shattercane	6-12	8
Sorghum	6-12	8
Southern sandbur	2-6	6
Texas panicum	2-8	6-12
Volunteer cereals		
V Barley	2-6	6
V Corn	12-24	10
V Milo	6-12	4
V Oats	2-6	6
V Rye	2-6	6

TORNADO USE RATE - 1 QUART/ACRE		
WEEDS CONTROLLED ^c	MAXIMUM HEIGHT (INCHES)	MAXIMUM GROWTH STAGE (NO. OF LEAVES) ^e
V. Wheat	2-6	6
Wild Oats	2-6	6
Wild Proso Millet	4-8	6
Witchgrass	2-4	6
Wooly cupgrass	2-4	6

- ^a In Region 1, make only one application of TORNADO herbicide, or other fomesafen containing product, per growing season.
In Region 2, do not apply TORNADO herbicide, or other fomesafen containing product, to any field more than once every two years.
- ^b It is necessary to use 0.25-0.5% nonionic surfactant or 0.5% to 1% crop oil concentrate for ground applications. For aerial applications, use 1 pint of crop oil concentrate or ½ pint nonionic surfactant per acre.
- ^c Scientific names for weeds are listed in the Appendix (Page _____).

TORNADO can be used for the control of rhizome johnsongrass (height 8-18 inches) and bermudagrass (runner length 4-8 inches) and should be used at a rate of 1.6 quarts per acre. In case a second application needs to be made, use FUSILADE DX at a rate of 8 oz per acre and apply before johnsongrass reaches a height of 12 inches or before bermudagrass reaches a runner length of 8 inches.

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TANKMIX AND SEQUENTIAL APPLICATIONS FOR SOYBEANS

TORNADO can be used sequentially or in tankmix with one or more of the following products: Basagran[®], Butyrac[®], Pinnacle[®], or REFLEX[®].

Under certain conditions, the mixture of TORNADO with one of the above mentioned broadleaf herbicides may cause a reduction in activity of any postemergence grass herbicide in the mixture.

For sequential applications allow 2-3 days after the application of the grass herbicide before applying TORNADO or TORNADO mixtures. In case TORNADO or the TORNADO mixture is applied first apply the grass herbicide when the grass weeds begin to develop new leaves (generally around 7 days).

Always read and follow the restrictions and limitations for all products whether used alone, sequentially or in a tankmix. The most restrictive labelling of any product used applies.

TANKMIX APPLICATION

Fill the spray tank with half the amount of required water and add the recommended amounts of TORNADO, the selected tankmix herbicide, and proper rate of approved adjuvant while the agitator is running and then add the remaining quantity of water. Allow the spray mixture to agitate and recycle 5-10 minutes before application.

NOTE: Tankmix applications can result in increases in crop injury as compared to either product used alone.

NOTE: Tankmix applications sometimes have resulted in reduced grass weed control. A tankmix application is not recommended if perennial grass weeds are the predominant grasses to be controlled. If grass regrowth occurs following an application of the tankmix or an additional flush of grasses emerges, make an application of FUSILADE DX herbicide to actively growing grass weeds according to label recommendations.

~~TORNADO HERBICIDE/BASAGRAN[®] POSTEMERGENCE HERBICIDE~~

~~Postemergence Control of Grass and Broadleaf Weeds~~

~~TORNADO herbicide and Basagran herbicide may be used together in a postemergence program for broad-spectrum weed control in soybeans.~~

~~TORNADO herbicide and Basagran herbicide may be applied sequentially or in tankmix. The growth stage of weeds at the time of application will determine which method of application will provide the most satisfactory results. Both TORNADO and Basagran herbicides should be applied to actively growing weeds. Read and observe all applicable label directions and limitations for both TORNADO herbicide and Basagran herbicide before using. Always read~~

~~and follow the restrictions and limitations for all products whether used alone or in a tankmix. The most restrictive labeling of any product used applies in tankmixes.~~

~~METHOD 1: Sequential Application~~

~~TORNADO Herbicide Followed by Basagran Herbicide~~

~~Apply TORNADO herbicide and an approved spray additive at the recommended rate and growth stage for the grass and broadleaf weeds being treated according to label recommendations. To allow adequate time for the systemic activity of TORNADO to translocate to the meristematic regions of the grass plants, delay application of Basagran for at least 24 hours following the TORNADO herbicide application. Basagran can then be applied to susceptible broadleaf weeds following the Basagran herbicide label recommendations.~~

~~METHOD 2: Sequential Application~~

~~Basagran Herbicide Followed by TORNADO herbicide~~

~~Apply Basagran herbicide at the recommended rate and growth stage for susceptible broadleaf weeds following the Basagran herbicide label recommendations. Delay application of TORNADO for at least 24 hours following the Basagran herbicide application. TORNADO must be applied to actively growing weeds for best results. Apply TORNADO herbicide and an approved adjuvant at the recommended rate and growth stage for the grass and broadleaf weeds being treated according to label recommendations.~~

~~METHOD 3: Tankmix Applications~~

~~TORNADO Herbicide and Basagran Herbicide~~

~~A tankmix of TORNADO herbicide and Basagran herbicide may be applied using a 1 Qt/Acre rate of TORNADO. Basagran should be added to the mixture at the recommended rates for growth stages described on the Basagran herbicide label. Use a nonionic surfactant or crop oil concentrate in the spray mixture.~~

~~A minimum of 15 gallons per acre of spray mixture should be used with spray pressures of 40 to 60 psi at the nozzle tip. When foliage is dense, use 60 psi and a minimum of 20 gallons per acre to ensure coverage of weed foliage. Load the spray tank with half the amount of required water and add the recommended amounts of TORNADO herbicide, Basagran herbicide and crop oil concentrate while the agitator is running and then add the remaining quantity of water. Do not make more than one application of this tankmix per season.~~

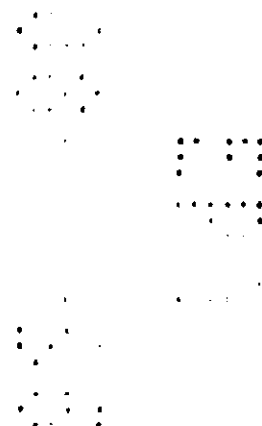
~~METHOD 4: Tankmix Applications~~

~~TORNADO Herbicide and Pinnacle[™] herbicide~~

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~~A tankmix of TORNADO herbicide and Pinnacle herbicide may be applied using 1 Qt/Acre of TORNADO. Apply Pinnacle at the recommended rate and growth stage for susceptible broadleaf weeds following the Pinnacle label recommendation.~~

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APPENDIX

Scientific names are listed for annual grass and broadleaf weeds referred to in the TORNADO label. ~~Specific weed control recommendations can be found in specific rate tables~~

COMMON NAME	SCIENTIFIC NAME
BROADLEAF WEEDS	
Carpetweed	<i>Mollugo verticillata</i>
Crotalaria, Showy	<i>Crotalaria spectabilis</i>
Cucumber, Volunteer	<i>Cucumis sativas</i>
Jimsonweed	<i>Datura stramonium</i>
Ladysthumb	<i>Polygonum persicaria</i>
Lambsquarters, Common	<i>Chenopodium album</i>
Morningglory	
Entireleaf	<i>Ipomoea hederacea</i> , var. <i>integriuscula</i>
Ivyleaf	<i>Ipomoea hederacea</i> , var. <i>hederacea</i>
Purple Moonflower	<i>Ipomoea turbinata</i>
Smallwhite (pitted)	<i>Ipomoea lacunosa</i>
Tall (Common)	<i>Ipomoea purpurea</i>
Mustard, Wild	<i>Brassica kaber</i>
Nightshade, Black	<i>Solanum nigrum</i>
Pigweed, Redroot	<i>Amaranthus retroflexus</i>
Pigweed, Smooth	<i>Amaranthus hybridus</i>
Purslane, Common	<i>Portulaca oleracea</i>
Ragweed, Common	<i>Ambrosia artemisiifolia</i>
Ragweed, Giant	<i>Ambrosia trifida</i>
Smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>
Venice Mallow	<i>Hibiscus trionum</i>
Yellow Rocket	<i>Barbarea vulgaris</i>
ANNUAL GRASS WEEDS	
Barnyardgrass	<i>Echinochloa crus-galli</i>
Broadleaf signalgrass	<i>Brachiaria platyphylla</i>
Crabgrass	
Large	<i>Digitaria sanguinalis</i>
Smooth	<i>Digitaria ischaemum</i>

COMMON NAME	SCIENTIFIC NAME
Southern	<i>Digitaria ciliaris</i>
Tropical	<i>Digitaria bicornis</i>
Downy Brome	<i>Bromus tectorum</i>
Fall Panicum	<i>Panicum dichotomiflorum</i>
Field Sandbur	<i>Cenchrus incertus</i>
Foxtails	
Giant	<i>Setaria faberi</i>
Green	<i>Setaria viridis</i>
Yellow	<i>Setaria lutescens</i>
Goosegrass	<i>Eleusine indica</i>
Italian Ryegrass	<i>Lolium multiflorum</i>
Itchgrass	<i>Rottboellia exaltata</i>
Johnsongrass, seedling	<i>Sorghum halepense</i>
Junglerice	<i>Echinochloa colonum</i>
Shattercane	<i>Sorghum bicolor</i>
Sorghum	<i>Sorghum alnum</i>
Southern sandbur	<i>Cenchrus echinatus</i>
Texas panicum	<i>Panicum texanum</i>
Volunteer Cereals	
V. Barley	<i>Hordeum vulgare</i>
V. Corn	<i>Zea mays</i>
V. Milo	<i>Sorghum bicolor</i>
V. Oats	<i>Avena sativa</i>
V. Rye	<i>Secale cereale</i>
V. Wheat	<i>Triticum aestivum</i>
Wild Oats	<i>Avena fatua</i>
Wild Proso Millet	<i>Panicum miliaceum</i>
Witchgrass	<i>Panicum capillare</i>
Woolly cupgrass	<i>Eriochloa villosa</i>

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