



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

EPA Reg. Number:  
 55947-159

Date of Issuance:  
 JUL 27 1995

NOTICE OF PESTICIDE:  
 Registration  
 Reregistration  
 (under FIFRA, as amended)

Term of Issuance:  
 Conditional

Name of Pesticide Product:  
 Frontier 6.0  
 Herbicide

Name and Address of Registrant (include ZIP Code):

Sandoz Corp. Protection Corp.  
 1300 East Touhy Avenue  
 Des Plaines, IL 60018

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

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

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

This product is conditionally registered in accordance with FIFRA sec. 3(c)(7)(A) provided that you:

1. Submit a heritable translocation assay. Refer to our letter dated July 19, 1994 for EPA Registration No. 55947-140.
2. Submit the studies and testing specified in Attachment I Conditions for Registration For Soybean Use to our letter dated March 29, 1994 for EPA Registration No. 55947-140.
3. Comply with the conditions in Attachment I Conditions for Registration For Soybean Use to our letter dated March 29, 1994 for EPA Registration No. 55947-140 which outlines groundwater and surface water mitigation measures that must be undertaken by your company.
4. Make the following label changes listed below before you release the product for shipment:
  - a. Add the phrase, "EPA Reg. No. 55947-159".

Signature of Approving Official:

Date:

JUL 27 1995

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EPA Reg. No. 55947-159

b. On the front panel Keep Out of the Reach of Children must be in close proximity to the signal Word DANGER. Either delete the box or move it so that it does not separate the Signal Word from the Child Hazard statement.

c. On page 13 correct the spelling of "temporary".

5. Submit one (1) copy of your final printed labeling before you release the product for shipment. Refer to the A-79 enclosure for a further description of final printed labeling.

If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6(e). Your release for shipment of the product constitutes acceptance of these conditions.

Only a preliminary review of the acute toxicology data has been completed. Additional precautionary labeling may be required if our final review indicates such a need. Studies may need to be updated if found deficient.

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

James M. Stone  
Acting Product Manager (22)  
Fungicide-Herbicide Branch  
Registration Division (7505C)

Enclosure

# FRONTIER® Herbicide

FOR WEED CONTROL IN FIELD CORN, SEED CORN, POPCORN AND SOYBEANS

## ACTIVE INGREDIENTS:

Dimethenamid: 2-chloro-N-[(1-methyl-2-methoxy) ethyl]-N-(2,4-dimethyl-thien-3-yl)-acetamide.....79.4%

INERT INGREDIENTS:.....20.6%

TOTAL .....100.0%

FRONTIER contains 7.5 lbs. active ingredient per gallon.

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.)

See next page for additional precautionary statements and statement of practical treatment.

EPA No. 55947-140  
EPA Est. No. 55947-TX-1

Net Contents \_\_\_\_\_

SANDOZ AGRO, INC.  
1300 E. Touhy Avenue  
Des Plaines, IL 60018

ACCEPTED  
with COMMENTS  
In EPA Letter Dated:

NO 27 1995

the Federal Insecticide  
and Rodenticide Act  
is authorized for the pesticide  
registered under EPA Reg. No.

55947-159

**FRONTIER® Herbicide**

**FOR WEED CONTROL IN FIELD CORN, SEED CORN, POPCORN AND SOYBEANS**

**PRECAUTIONARY STATEMENTS**

**HAZARDS TO HUMANS (& DOMESTIC ANIMALS)**

**WARNING      AVISO**

Causes eye irritation. Do not get in eyes, on skin, or on clothing. Harmful if swallowed. Avoid breathing spray mist. May cause skin sensitization reactions in certain individuals.

In case of contact, wash skin with soap and water. For eyes, flush with water for 15 minutes and get medical attention if irritation persists.

**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 E on an EPA chemical resistance category section chart.

Applicators and other handlers must wear:

- o Long-sleeved shirt and long pants
- o Chemical-resistant gloves, such as Barrier laminate or Nitrile Rubber or Neoprene Rubber or Viton
- o Shoes plus socks
- o 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 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:

- o Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- o Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- o 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

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 BY DISPOSAL OF EQUIPMENT WASHWATERS OR RINSATE. DO NOT APPLY WHEN WEATHER CONDITIONS (GUSTY WINDS, HIGH TEMPERATURES, LOW HUMIDITY, AND WHEN A TEMPERATURE INVERSION EXISTS) FAVOR DRIFT FROM TREATED AREAS.

DIMETHENAMID HAS PROPERTIES THAT MAY RESULT IN GROUNDWATER CONTAMINATION. APPLICATION IN AREAS WHERE SOILS ARE PERMEABLE OR COARSE AND GROUNDWATER IS NEAR THE SURFACE COULD RESULT IN GROUNDWATER CONTAMINATION.

DIMETHENAMID HAS PROPERTIES THAT MAY RESULT IN SURFACE WATER CONTAMINATION VIA DISSOLVED RUNOFF AND RUNOFF EROSION. PRACTICES SHOULD BE FOLLOWED TO MINIMIZE THE POTENTIAL FOR DISSOLVED RUNOFF AND/OR RUNOFF EROSION.

PHYSICAL OR CHEMICAL HAZARDS

DO NOT USE OR STORE NEAR HEAT OR OPEN FLAME.

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### DIRECTIONS FOR USE

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

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.

Exception: If the product is soil injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

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:

- o Coveralls
- o Chemical-resistant gloves, such as Barrier laminate or Nitrile Rubber or Neoprene Rubber or Viton
- o Shoes plus socks
- o Protective eyewear

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

**IMPORTANT:** Read the Limited Warranty and Liability and all applicable *Directions for Use* in this booklet before using this product.

<b>Order and Contents of Label Use Directions</b>
<b>GENERAL INFORMATION</b> <b>WEED SPECIES CONTROLLED</b> <b>USE METHODS AND TIMINGS</b> Preplant Surface Preplant Incorporated Preemergence Early Postemergence Split Applications
<b>CORN USE PROGRAMS</b> Use Rates in Field Corn, Seed Corn and Popcorn Tank Mixtures and Sequential Uses in Corn
<b>SOYBEAN USE PROGRAMS</b> Use Rates in Soybeans Tank Mixtures and Sequential Uses in Soybeans
<b>MIXING AND APPLICATION DIRECTIONS</b> Best Stewardship Practices Mixing Spray Solutions Ground or Aerial Applications Use of Spray Adjuvants Compatibility Testing Dry Bulk Fertilizer Applications
<b>ROTATIONAL CROPS</b>
<b>STORAGE AND CONTAINER DISPOSAL</b>
<b>LIMITED WARRANTY AND LIABILITY</b>

### **GENERAL INFORMATION**

Frontier is a selective preemergence herbicide for control of most annual grasses, certain annual broadleaf weeds and sedges in field corn, seed corn, popcorn, and soybeans. This product will provide most effective weed control when applied (by ground or aerial equipment), and subsequently incorporated into soil by rainfall, sprinkler irrigation, or mechanical tillage prior to weed seedling emergence from soil.

Frontier is recommended for preplant incorporated, preplant surface, preemergence or early postemergence treatment. Frontier application may be made using either water or fluid fertilizer as the spray carrier or it may be impregnated on and applied with dry bulk fertilizer. Sprayable fluid fertilizer as a carrier is not recommended for use after crop emergence.

Observe all precautionary statements and limitations on labeling of all products used in tank mixtures. Tank mix recommendations are for use only in states and on application sites where the tank mix product is registered.

Single or split applications of Frontier may not exceed a total of 25 fluid ounces per acre in one crop year.

Recommended use rates of this product vary by soil type. The most accurate indicator of appropriate use rate for Frontier is the Cation Exchange Capacity (CEC) of the soil to be treated. CEC values are available in standard soil testing procedures. If CEC values are not available, the recommended use rate of Frontier may be determined using the soil texture and organic matter. Soil texture groupings used in this label are coarse, medium and fine. Soil textures included in these groupings are as follows:

COARSE	MEDIUM	FINE
Sand <sup>1</sup> Loamy Sand Sandy Loam	Silt Silt Loam Loam Sandy Clay Loam	Sandy Clay Silty Clay Silty Clay Loam Clay Loam Clay

<sup>1</sup>Do not apply to coarse soil classified as sand with less than 3% organic matter (as determined by soil tests, if not known) and where depth to ground water is 30 feet or less.

Frontier use rates, by either soil CEC values or by soil texture and organic matter, are given in specific crop use sections of this label. When use rates are expressed in ranges use the lower end of the rate range for lower CEC values and use the higher end of the rate range for higher CEC values. If texture and organic matter are used to determine use rates, use the lower end of the rate range for coarse textured soils low in organic matter and the higher end of the rate range for fine textured soils high in organic matter.



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## WEED SPECIES CONTROLLED BY FRONTIER HERBICIDE

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Frontier herbicide applied at recommended rates and application timings will control many annual grass and broadleaf weeds.

### Annual Grasses

Barnyardgrass  
Broadleaf Signalgrass  
Crabgrass,  
    Smooth  
    Large  
Foxtail,  
    Giant  
    Green  
    Yellow  
Goosegrass  
Johnsongrass (seedling)\*  
Fall Panicum  
Red Rice  
Southwestern Cupgrass  
Witchgrass

### Sedge

Yellow Nutsedge\*  
Rice Flatsedge

### Annual Broadleaves

Carpetweed  
Common Purslane  
Florida Pusley  
Nightshade,\*  
    Black  
    Eastern Black  
    Hairy  
Palmer Amaranth  
Pigweed,  
    Prostrate  
    Redroot  
    Smooth  
    Tumble  
Spurge,  
    Nodding  
    Spotted  
Tall Waterhemp

\* For best control of these species use the highest recommended rate by soil type. If dry conditions exist near application or excessive rainfall occurs early in season, a postemergence herbicide and/or cultivation may be required to aid in control of these weeds.

**ADDITIONAL WEED SPECIES PARTIALLY CONTROLLED.** Frontier will provide partial control or suppression of woolly cupgrass, wild proso millet, shattercane, sandbur, Texas Panicum, Florida beggarweed, common lambsquarters, and common ragweed. Control of these species will generally not be commercially acceptable. To complement control Frontier should be used in tank mixtures or sequential applications with other herbicides that provide additional control of these weed species.

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## **FRONTIER HERBICIDE USE METHODS AND TIMINGS**

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Frontier may be applied preplant surface, preplant incorporated, preemergence or early postemergence to field corn, seed corn, popcorn, and soybeans. Frontier may be used in either a single or split application program. Best weed control will result when applied (by ground or aerial equipment), and subsequently incorporated into soil by rainfall, sprinkler irrigation, or mechanical tillage prior to weed seedling emergence from soil.

### **PREPLANT SURFACE APPLICATIONS**

For use in minimum tillage or no-tillage production systems, application of Frontier alone or in tank mixtures may be made up to 45 days before planting. When making early preplant applications (15 to 45 days prior to planting) use the highest rate recommended for the specific soil type. Early preplant applications are not recommended for use on coarse textured soils or in areas where average annual rainfall (or rainfall + irrigation) typically exceeds 40 inches. Early preplant applications may be applied as part of a split application program where the second application is made after planting (use 2/3 of Frontier rate early followed by 1/3 of rate after planting). A split application is recommended when initial application is made more than 30 days prior to planting. Tank mixtures with postemergence herbicides such as Roundup® or Gramoxone Extra® may be used when weeds are present at the time of application.

### **PREPLANT INCORPORATED APPLICATIONS**

Apply Frontier and incorporate into the upper (1-2 inch) soil surface up to two weeks before planting. Use a harrow, rolling cultivator, finishing disk, or other implement capable of giving uniform shallow incorporation. Avoid deeper incorporation or reduced weed control and/or crop injury may result.

### **PREEMERGENCE SURFACE APPLICATIONS**

Broadcast treatment uniformly to the soil surface after planting and before crop emergence. Rainfall, sprinkler irrigation, or shallow mechanical incorporation after application is required to move this product into the upper soil surface where weed seeds germinate. If adequate rainfall or irrigation does not occur and weed seedling emergence begins, a shallow cultivation or rotary hoeing will improve performance.

### **EARLY POSTEMERGENCE APPLICATIONS**

Frontier may be used in early postemergence (up to 8 inch tall corn or up to third trifoliolate leaf stage of soybeans) applications. Application must be made prior to weed seedling emergence or in a tank mixture with products that control the emerged weeds. Note restrictions and use directions on tank mix product labels.

### **SPLIT APPLICATIONS**

Frontier may be used in split application programs where applications are made as part of the methods described above. If applications are less than two weeks apart, the total Frontier rate used must not exceed the maximum rate given for each specific soil type. If applications are two weeks or more apart, a total Frontier use rate of up to 25 fluid ounces per acre per year may be used on any soil type.

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### **FRONTIER HERBICIDE FIELD CORN, SEED CORN AND POPCORN USE PROGRAMS**

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Frontier may be used as a preplant surface applied, preplant incorporated, preemergence or early postemergence (up to 8 inch tall corn) treatment to corn. A single or split application program may be used. Corn, as used in this label, refers to field corn (grown for grain, silage or seed) and popcorn. Before application to seed corn or popcorn, first verify with your local seed company (supplier) the Frontier selectivity on your inbred line or popcorn variety. This precaution will help avoid potential injury to sensitive varieties.

Do not apply this product to sweet corn.

Corn may be grazed or fed to livestock at 40 or more days after application of Frontier Herbicide.

**FRONTIER USE RATES IN FIELD CORN, SEED CORN AND POPCORN**

**Recommended broadcast use rates for Frontier when used in tank mix combinations and/or sequential applications with other herbicides in field corn are given in the following tables<sup>1</sup>. Cation exchange capacity (CEC) of soil is the preferred method for determining use rate. If CEC is not known, select use rate based on soil texture and organic matter content. If Frontier is used alone, used in early preplant applications, and/or used on soils with heavy surface plant residue add 2 to 4 fl oz per acre to the rates given in the following tables. Do not exceed 25 fl oz per acre per crop year.**

USE RATE DETERMINED BY CATION EXCHANGE CAPACITY (CEC) OF SOIL					
Cation Exchange Capacity (CEC) of Soil	< 5	5-9	10-14	15-20	> 20
Frontier Use Rate (fl oz per acre)	13	14-18	18-22	22-24	25

USE RATE DETERMINED BY SOIL TEXTURE AND ORGANIC MATTER CONTENT		
Soil Texture	Frontier Use Rate (fl oz per acre)	
	Organic Matter Content	
	Less than 3%	3% or more <sup>2</sup>
Coarse	13 to 16	16 to 20
Medium	16 to 20	20 to 24
Fine	18 to 22	22 to 25

<sup>1</sup> See tank mix descriptions below for the recommended use rate ranges of other herbicides used in combination with Frontier. Refer to tank mix section of companion product labels for actual use rate by soil type, weed species and weed or crop growth stage.

<sup>2</sup> On all soils with greater than 8% organic matter, use 25 fl oz per acre of Frontier.

**FRONTIER TANK MIXTURES AND SEQUENTIAL USE PROGRAMS IN CORN**

Frontier may be applied prior to, in tank mix with, or following the use of one or more of the following herbicides: Accent<sup>®</sup>, atrazine, Banvel<sup>®</sup>, Beacon<sup>®</sup>, Bladex<sup>®</sup>, Clarity<sup>®</sup>, Eradicane<sup>®</sup>, Extrazine<sup>®</sup> II, Gramoxone<sup>®</sup> Extra, Marksman<sup>®</sup>, Princep<sup>®</sup>, Prowl<sup>®</sup>, Pursuit<sup>®</sup>, Roundup<sup>®</sup>, or 2,4-D. Frontier use rates for sequential or tank mix treatments are presented in the above label section, Frontier Use Rates in Field Corn, Seed Corn and Popcorn.

When using tank mix or sequential applications with Frontier, always read the companion product label(s) to determine specific use rates by soil types, weed species, and weed or crop growth stage. In addition, follow precautions and restrictions including state and local use restrictions that may apply to specific products.

When tank mixed, follow additional use directions given in this table.

<p><u>FRONTIER plus</u>  <u>BANVEL(0.5 to 1 pt/A)</u>                      or  <u>CLARITY (8 to 16 fl oz/A)</u>                      or  <u>MARKSMAN (2 to 3.5 pt/A).</u></p>	<p>Application may be made preplant surface or preemergence in minimum or no tillage corn in all soil types. Preemergence applications may be used in all tillage systems where corn is grown on soils with CEC greater than 15, or medium and fine textured soils with 2.5% or more organic matter (For best performance make application just prior to corn emergence). Early postemergence (up to 8 inch tall corn) applications may be made on all soil types. This treatment must be combined with a herbicide that provides postemergence control of grass weeds with 2 or more leaves at the time of application.</p>
<p><u>FRONTIER plus</u>  <u>ATRAZINE (0.75 to 2 lb ai/A)</u></p>	<p>Application may be made preplant surface, preplant incorporated, preemergence or early postemergence (up to 8 inch tall corn). This treatment must be combined with a herbicide that provides postemergence control of weeds if they are greater than 1.5 inches tall at the time of application. Crop oil concentrate may be added to this mixture to aid in control of emerged weeds. Do not add crop oil concentrate if this mixture is combined with other herbicides for early postemergence applications.</p>
<p><u>FRONTIER plus</u>  <u>BLADEX (1.25 to 3 lb ai/A)</u>                      or  <u>EXTRAZINE II (1.25 to 3 lb ai/A)</u></p>	<p>Application may be made preplant surface, preplant incorporated, or preemergence to corn. This mixture is not recommended for use on soils with CEC less than 5 or on sand or loamy sand soils with organic matter less than 1%.</p>
<p><u>FRONTIER plus</u>  <u>PROWL 3.3 EC (1.8 to 3.6 pt/A)</u></p>	<p>Application may be made preemergence to early postemergence (up to 3 inch tall corn) but before weeds are greater than 1 inch tall.</p>
<p><u>FRONTIER plus</u>  <u>PRINCEP (1 to 3 lb ai/A)</u></p>	<p>Application may be made preplant surface, preplant incorporated or preemergence to corn.</p>
<p><u>FRONTIER plus</u>  <u>PURSUIT 2.0 SL (4 fl oz/A)</u>                      or  <u>PURSUIT 70DG (1.4 oz/A)</u></p>	<p><u>Use only on Pursuit resistant (IR) or tolerant (IT) varieties.</u>                      Application may be made preplant surface, preplant incorporated, preemergence or early postemergence (up to 3 inch weeds).</p>
<p><u>FRONTIER plus</u></p>	<p>Application may be made preplant incorporated to corn. When</p>

<p><b>Eradicane 6.7E</b> (2-6 pt/A)</p>	<p>applied with water or sprayable fluid fertilizer, incorporate into top 2-3 inches of soil within 4 hours of application. Use 16-25 fl oz/A FRONTIER plus 2-3 pt/A Eradicane for improved weed control in dry soil conditions. Use 10-16 fl oz/A FRONTIER plus 3-6 pt/A Eradicane for control of additional weed species listed on the Eradicane label.</p>
<p><b>FRONTIER plus</b> <b>GRAMOXONE EXTRA (1.5 to 3.0 pt/A)</b> or <b>ROUNDUP</b> <b>(GLYPHOSATE - 0.5 to 4.0 lb ai/A)</b></p>	<p>Application may be made preplant surface or preemergence to control emerged weeds in minimum or no tillage corn.</p> <p>Applications must be made prior to corn emergence. To improve control of emerged broadleaf weeds, herbicides such as Banvel and/or 2,4-D should be added to this mixture.</p>
<p><b>FRONTIER plus</b> <b>2,4-D Amine or Ester</b> <b>(1/4 to 1/2 lb ai/A)</b></p>	<p>Application may be made preplant surface or preemergence to control emerged broadleaf weeds in minimum or no-tillage corn.</p>
<p><b>FRONTIER plus</b> <b>ACCENT 75WDG(1/4 to 2/3 oz/A)</b> or <b>BEACON 75 WDG (0.76 oz/A)</b></p>	<p>Frontier at reduced use rates: 8 to 12 fl oz per acre - on soils with CEC less than 10 (coarse soils or medium and fine textured soils with less than 3% organic matter), or 12 to 16 fl oz per acre - on soils with CEC of 10 or more (medium or fine textured soils with 3% or more organic matter) may be used in these mixtures. Always add non-ionic surfactant at 0.25% v/v, and in addition, if application is made in dry growing conditions, include 4% v/v liquid fertilizer (28, 30 or 32 % UAN) with these mixtures. Addition of Banvel, Clarity or Marksman to this mixture will provide burndown and residual control of broadleaf weeds. Other herbicides are not recommended for use with these mixtures.</p> <p>Tank mixes with Accent may be applied from emergence up to 8 inch tall corn when weeds are emerged and actively growing. Reduced rates (1/4 to 1/3 oz per acre) of Accent may be used in this mixture for control of foxtail, barnyardgrass, fall panicum or seedling Johnsongrass when all are less than 3 inches tall.</p> <p>Tank mixes with Beacon may be applied when corn is 4 to 8 inches tall and weeds are emerged and actively growing. Use this tank mix only where Beacon is labeled for control of emerged grass species that are present.</p>

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## FRONTIER HERBICIDE SOYBEAN USE PROGRAMS

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Frontier may be used as a preplant surface applied, preplant incorporated, preemergence or early postemergence (up to third true leaf stage) treatment to soybeans. A single or split application program may be used.

Do not graze or feed forage, hay or straw to livestock.

If extreme conditions of high rainfall and extended periods of water saturated soil occur during soybean germination or early seedling development, Frontier use may result in temporary growth suppression. Temporary soybean burn and stunting may occur if application of Frontier, spray adjuvants and tank mixed herbicides are applied to emerged soybeans up through the unifoliate stage. These suppressions have not results in reduced soybean yield potential.

**FRONTIER USE RATES IN SOYBEANS**

**Recommended use rates for Frontier when used in tank mix combinations and/or sequential applications with other herbicides in soybeans are given in the following tables<sup>1</sup>. Cation exchange capacity (CEC) of soil is the preferred method for determining use rate. If CEC is not known, select use rate based on soil texture and organic matter content. If Frontier is used in early preplant applications and/or used on soils with heavy surface plant residue add 2-4 fl oz per acre to the rates given in the following table. Do not exceed 25 fl oz per acre per crop year.**

USE RATE DETERMINED BY CATION EXCHANGE CAPACITY (CEC) OF SOIL					
Cation Exchange Capacity (CEC) of Soil	< 5 <sup>2</sup>	5-9	10-14	15-20	> 20
Frontier Use Rate (fl oz per acre)	13	14-18	18-22	22-24	25

USE RATE DETERMINED BY SOIL TEXTURE AND ORGANIC MATTER CONTENT		
Soil Texture	Frontier Use Rate(fl oz per acre)	
	Organic Matter	
	Less than 3%	3% or more <sup>3</sup>
Coarse <sup>2</sup>	13 to 16	16 to 20
Medium	16 to 20	20 to 24
Fine	18 to 22	22 to 25

<sup>1</sup> See tank mix descriptions below for the recommended use rate ranges of the specific product used in combination with Frontier. Refer to tank mix section of companion product label for actual use rate by soil type or weed growth stage.

<sup>2</sup> Preplant incorporated treatments are not recommended on soils with CEC values less than 5 (or coarse soils with less than 1.5% organic matter).

<sup>3</sup> On all soils with greater than 8% organic matter, use 25 fl oz per acre of Frontier.



### **FRONTIER TANK MIXTURES AND SEQUENTIAL USE PROGRAMS IN SOYBEANS**

Frontier use rates for herbicide combination programs and specific tank mixtures are presented in the above label section, Frontier Use Rates in Soybeans.

Frontier herbicide may be applied prior to, in tank mix with, or following use of one or more of the following herbicides in soybeans: Canopy<sup>®</sup>, Command<sup>®</sup>, Gemini<sup>®</sup>, Gramoxone Extra<sup>®</sup>, linuron (Lorox<sup>®</sup> and others), metribuzin (Lexone<sup>®</sup> or Sencor<sup>®</sup>), Lorox Plus<sup>®</sup>, Preview<sup>®</sup>, Prowl<sup>®</sup>, Pursuit<sup>®</sup>, glyphosate (Roundup<sup>®</sup>), Scepter<sup>®</sup>, Sonalan<sup>®</sup>, trifluralin (Treflan<sup>®</sup> and others) or 2,4-D (early preplant only). In addition, Frontier or Frontier combinations preemergence may be used prior to herbicides registered for postemergence grass or broadleaf weed control in soybeans, such as Assure<sup>®</sup>II, Basagran<sup>®</sup>, Classic<sup>®</sup>, Fusilade<sup>®</sup>, Galaxy<sup>®</sup>, Pinnacle<sup>®</sup>, Poast<sup>®</sup>, Storm<sup>®</sup>, and others.

When using tank mix or sequential applications with Frontier, always read the companion product label(s) to determine specific use rates by soil types, weed species, and weed or crop growth stage. In addition, follow precautions and restrictions including state and local use restrictions that may apply to specific products.

<b>FRONTIER Herbicide may be tank mixed with or applied sequentially in one or more of the following herbicide combination programs.</b>	
<p><b>FRONTIER plus</b>  <b>CANOPY 75 WDG (6 to 12 oz/A)</b>                      or  <b>GEMINI 60 WDG (12 to 24 oz/A)</b>                      or  <b>LOROX PLUS 60 WDG (12 to 18 oz/A)</b>                      or  <b>PREVIEW 75 WDG (6 to 9 oz/A)</b></p>	<p>Applications may be made preplant surface or preemergence to soybeans with any of these combinations. In addition, tank mixes with Canopy, Preview, Pursuit, Scepter or metribuzin may be applied preplant incorporated. Applications with Pursuit or Scepter may be made early postemergence, up through the third trifoliolate stage of soybeans. Use spray adjuvants recommended in the tank mix product label. FRONTIER may be applied at reduced rates of 12 - 16 fl oz/A when used in postemergence tank mixtures with Pursuit 2 SL (4 fl oz/A) or Pursuit 70DG (1.4 oz/A). Make applications when weeds are actively growing and before they are greater than 3 inches tall.</p> <p>In minimum or no-tillage systems either Gramoxone Extra or Roundup (glyphosate) may be added to preplant surface or preemergence applications for the control of emerged weeds. Applications must be made prior to soybean emergence.</p>
<p><b>FRONTIER plus</b>                      Linuron  <b>LOROX 50 DF (1 to 3 lb/A)</b>                      or  <b>LOROX 4L (1 to 3 pt/A)</b></p>	
<p><b>FRONTIER plus</b>                      Metribuzin  <b>LEXONE or SENCOR 75 DF (0.33 to 1 lb/A)</b>  <b>LEXONE 4L or SENCOR 4 (0.5 TO 1.5 pt/A)</b></p>	
<p><b>FRONTIER plus</b>  <b>PURSUIT 2.0 SL (4 fl oz/A)</b>                      or  <b>PURSUIT 70DG (1.4 oz/A)</b>                      or  <b>SCEPTER 1.5 SL (0.33 to 0.67 pt/A)</b>                      or  <b>SCEPTER 70WG (1.4 to 2 oz/A)</b></p>	
<p><b>FRONTIER PLUS</b>  <b>PROWL 3.3 EC (1.2 to 3 pt/A)</b>                      or                      Trifluralin  <b>TREFLAN 4 EC (1 to 3 pt/A)</b>                      or  <b>SONALAN 3 EC (1.5 to 3.5 pt/A)</b>                      and/or  <b>COMMAND 4 EC (1 to 2 pt/A)</b></p>	<p>Frontier may be used in tank mix with or applied sequentially after the use of these products. If tank mixed, applications with trifluralin or Sonalan and/or Command must be mechanically incorporated into the soil. Use thorough incorporation in upper 2 inches of soil. Tank mixes with Prowl may be applied either incorporated or used preemergence within 2 days after soybean planting. Canopy, Lexone, Preview, Pursuit, Scepter or Sencor may be added to these combinations for improved control or control of additional weed species.</p>

**MIXING AND APPLICATION DIRECTIONS**

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## **BEST STEWARDSHIP PRACTICES**

Frontier Herbicide provides effective preemergent weed control in corn and soybeans when properly applied. Best stewardship practices in all mixing, loading, and application operations not only maximize weed control, but also protect ground and surface waters and minimize off-target movement.

### **GROUND AND SURFACE WATERS PROTECTION**

1) Point source contamination - To prevent point source contamination, do not mix or load this or any other pesticide product within 50 feet of wells (including abandoned wells and drainage wells), sink holes, perennial or intermittent streams and rivers, and natural or impounded lakes and reservoirs. This setback does not apply to properly capped or plugged abandoned wells and does not apply to impervious pad or properly diked mixing/loading areas as described below.

Mixing, loading, rinsing, or washing operations performed within 50 feet of a well are allowed only when conducted on an impervious pad constructed to withstand the weight of the heaviest load that may be on or move across the pad. The pad must be self-contained to prevent surface water flow over or from the pad. The pad capacity must be maintained at 110% that of the largest pesticide container or application equipment used on the pad and have sufficient capacity to contain all product spills, equipment or container leaks, equipment wash waters, and rainwater that may fall on the pad. The containment capacity does not apply to vehicles delivering pesticide shipments to the mixing/loading site. States may have in effect additional requirements regarding wellhead setbacks and operational containment.

Care must be taken when using this product to prevent: a) back siphoning into wells, b) spills or c) improper disposal of excess pesticide, spray mixtures or rinsates. Check valves or antisiphoning devices must be used on all mixing equipment.

2) Movement dissolved in runoff or through soil - Do not apply under conditions which favor runoff. Do not apply to impervious substrates such as paved or highly compacted surfaces or frozen soils.

Groundwater contamination may occur in areas where soils are permeable or coarse and groundwater is near the surface. To minimize the possibility of groundwater contamination, carefully follow application rate recommendations as affected by soil type in the general information section of this label. Do not apply to coarse soils classified as sand with less than 3% organic matter (as determined by soil tests, if not known) and where depth to ground water is 30 feet or less.

3) Movement by water erosion of treated soil - Do not apply or incorporate this product through any type of irrigation equipment nor by flood or furrow irrigation. Ensure treated areas have received at least one-half inch rainfall before using tailwater for subsequent irrigation of other fields.

### **NON-TARGET AREA PROTECTION**

1) Spray Drift - High or gusty winds, high temperatures, low humidity and temperature inversions increase the likelihood of spray drift from intended targets. Do not apply when these conditions exist. To minimize spray drift:

- Make application when conditions are favorable for even spray deposition (approximately 3-10 mph) on the soil surface. Do not apply when wind or wind gusts exceed 15 mph.
- Use as low pressure, properly calibrated, application equipment as possible to produce large spray droplets and sufficient spray volume to ensure adequate coverage. Do not use nozzles producing a mist droplet spray.
- Keep ground driven spray boom as low as possible above the target surface.

2) Wind erosion of treated soil - Avoid treating powdery dry or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.

#### MIXING OF SPRAY SOLUTIONS

Frontier is a concentrated liquid herbicide that can be mixed for application in water, sprayable fluid fertilizer, or it may be impregnated on dry bulk fertilizer. When herbicide tank mixtures or mixtures with sprayable fluid fertilizer are to be used, a compatibility test should be conducted prior to tank mixing (SEE COMPATIBILITY TEST section in this label).

When loading a spray tank for application of Frontier (alone or in tank mixtures with other products) use the following order for mixing:

1. Thoroughly clean spray tank prior to use.
2. Fill sprayer tank one-half full of either water or sprayable fluid fertilizer.
3. Start sprayer agitation system and continue agitating throughout mixing and application.
4. If compatibility test indicated the need for addition of a compatibility agent, add the amount recommended on the label of the selected compatibility agent.
5. If tank mixing with wettable powder or dry flowable products, make a slurry of these products with water and add slowly to spray tank.
6. If tank mixing with a flowable formulation, add this product slowly to spray tank.
7. Add Frontier herbicide to spray tank.
8. If tank mixing with emulsifiable concentrates or soluble liquid products add these products to spray tank.
9. If tank mixing with Gramoxone Extra or Roundup add these products as remainder of spray tank is filled with carrier.
10. If adding spray adjuvants, add them after all other products have been mixed.

#### GROUND or AERIAL APPLICATIONS

Apply the recommended rates of Frontier in 2 or more gallons of spray solution per acre. Actual minimum spray volume per acre is determined by spray equipment used for application. Application must be made in adequate volume to provide accurate and uniform distribution of spray particles over treated area and to avoid drift of spray particles to non-target areas. In addition, when Frontier is used in tank mixtures, spray volume used must be no less than the minimum volume required by the tank mix product. Use nozzle screens no finer than 50 mesh when spraying tank mixtures with wettable powder or flowable formulations.

Frontier may be applied as a band treatment. Use rates within the treated area of the band must not exceed the use rates given for broadcast application. Use the formula below to determine the appropriate amount of product and volume of carrier needed per acre of field.

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast Rate per acre} = \text{Band Rate per acre}$$

$$\frac{\text{Band width in inches}}{\text{Row width in inches}} \times \text{Broadcast Volume per acre} = \text{Band Volume per acre}$$

### USE OF SPRAY ADJUVANTS

Frontier is a preemergence herbicide for which spray adjuvants have little or no influence on performance. However, several herbicides used in tank mixtures with Frontier require use of adjuvants to aid in the burndown of emerged weeds. Use only those adjuvants cleared for agricultural crop use. Surfactants and/or low rate fertilizer (28%, 30% or 32% UAN or ammonium sulfate) adjuvants may be used with tank mixes applied preplant, preemergence or early postemergence to the crop. Crop oil concentrates may be used prior to crop emergence but are not recommended after crop emergence unless specified for a particular tank mixture.

### COMPATIBILITY TESTING

A compatibility test is recommended for applications with liquid fertilizer. Before mixing products in the spray tank, small amounts of all products can be mixed in proportionate quantities to determine compatibilities. The amounts of carrier and products in this compatibility test are based on a spray volume of 25 gallons per acre. Make appropriate changes in amounts for your specific spray volume.

To conduct this test begin by adding one pint of the liquid fertilizer solution to a one quart container. Then add, in sequence as given above, 1/2 level teaspoons per pound use rate for dry formulated products and 1/2 teaspoon per pint (16 fluid ounces) use rate of liquid formulated products. Agitate materials by covering and gently shaking container for 5 to 10 seconds between each product addition.

If herbicide(s) do not ball-up or form flakes, gels, sludge, oily film or layers, or other precipitates, then the tested spray mix is compatible. Incompatibility in any of the above described forms will normally occur within 5 minutes after mixing. If components are incompatible, the use of a compatibility agent is recommended.

Rerun the above compatibility test with a suitable compatibility agent (1/4 teaspoon in test is equivalent to a use rate of 2 pints per 100 gallons of spray volume). If the mixture is then compatible, use the compatibility agent as directed on its label. If the mixture is still incompatible, the liquid fertilizer and herbicide(s) should not be mixed for use in the same spray tank.

### DRY BULK FERTILIZER APPLICATIONS

Frontier may be impregnated or coated onto dry bulk granular fertilizer carriers for preplant surface, preplant incorporated or preemergence applications. Impregnation or coating may be conducted by either the in-plant bulk system or the on-board system. When impregnated onto some dry fertilizer blends, Frontier may exhibit a strong odor. Perform mixing operation in well-ventilated areas. Frontier may also be applied in herbicide tank mixtures where the tank mix companion product is also registered for these application systems. Individuals or agents selling Frontier in these application systems are responsible for following all state and local regulations regarding fertilizer/herbicide blending.

Addition of a drying agent may be necessary if the fertilizer/herbicide blend is too wet for uniform application due to high humidity, high urea concentration, and/or low fertilizer use rate. Slowly add the drying agent to the blend until a flowable mixture is obtained. Drying agents are not recommended for use with on-board impregnation systems.

Under some conditions fertilizer impregnated with Frontier may clog air tubes or deflector plates on pneumatic application systems. Mineral oil may be added to Frontier before blending with fertilizer to reduce plugging. Do not use drying agents when mineral oil is used. To avoid separation of Frontier and mineral oil mixes in cold temperatures either keep mixture heated or agitated prior to blending with fertilizer. Mineral oil may be used at in-plant blending stations or on-board injection systems.

Apply 200 to 750 pounds of fertilizer/herbicide blend per acre. Application must be made uniformly to the soil to prevent possible crop injury and offer satisfactory weed control. Impregnated fertilizer spread at half rate and overlapped to obtain a full rate will offer a more uniform distribution. A shallow (1-2 inch) incorporation is desirable for improved weed control. Deeper incorporation may result in unsatisfactory weed control.

Formula to determine herbicide rate(s):

$$\frac{\text{Fluid Ounces or Pounds Herbicide/Acre}}{\text{Pounds of Fertilizer/Acre}} \times 2000 = \frac{\text{Fluid Ounces or Pounds}}{\text{Ton of Fertilizer}} \text{ of Herbicide Per}$$

2/2

**INCOMPATIBLE MIXTURES - DO NOT** impregnate Frontier or Frontier mixes on ammonium nitrate, potassium nitrate, or sodium nitrate fertilizers or fertilizer blends. Single superphosphate (0-20-0) and triple superphosphate (0-46-0) may be impregnated only with Frontier alone.

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## **ROTATIONAL CROPS**

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If the corn or soybean crop treated with Frontier is lost to adverse weather or for other reasons, the area treated may be replanted to corn or soybeans immediately. If the original Frontier treatment was broadcast do not make a second application of Frontier. If the original application was banded and the second crop is planted in the row middles a second band application may be applied. Fall seeded cereal crops may be planted at 4 or more months after a spring application of Frontier. There are no rotational crop restrictions in the Spring following the previous year's application of Frontier.

Frontier used in tank mixtures: Refer to the labels of tank mix products for additional rotation crop information and restrictions.

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## **STORAGE AND CONTAINER DISPOSAL**

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### Prohibitions

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

### Storage

Store in original container away from fertilizer, feed, or foodstuffs and separated from other pesticides. Heated storage is required in bulk systems, recommended in mini-bulk systems and not required for 2 X 2.5 gallon package size.

### Pesticide Disposal

Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

### Plastic Containers

Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If containers are burned, do not inhale smoke.



**BULK STORAGE AND DISPOSAL ALTERNATE LANGUAGE**  
**To be printed on labeling for bulk use only**

**AGITATE BEFORE USE**

**STORAGE AND DISPOSAL**

**PROHIBITIONS**

Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. This product may not be mixed, loaded, or used within 50 feet of all wells including abandoned wells, drainage wells, and sinkholes.

**STORAGE**

Ground water contamination may be reduced by diking and flooring of permanent liquid bulk storage sites with an impermeable material.

**PESTICIDE DISPOSAL**

Pesticide spray mixture or rinsate that cannot be used according to label instructions must be disposed of according to Federal and local procedures under Subtitle C or the Resource Conservation and Recovery Act.

**BULK TANK MAINTENANCE**

Follow clean-out directions in the Dealer Bulk Handling Guide for FRONTIER Herbicide listed under Bulk Storage Tank Requirements.

**GENERAL**

Consult Federal, State, or local disposal authorities for approved alternative procedures, such as limited burning.

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**LIMITED WARRANTY AND LIABILITY**

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**NOTICE:** Read this Limitation of Warranty and Limitation of 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.

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 weather

conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Sandoz or seller. All such risks shall be assumed by buyer or user.

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