

Mr. Thomas J. Parshley  
Novartis Crop Protection, Inc.  
P.O. Box 18300  
Greensboro, NC 27419-8300

AUG 27 1998

Dear Mr. Parshley:

Subject: Zoril Rapid 80™ Herbicide  
EPA Registration No. 100-348  
Evital 5G  
EPA Registration No. 100-340  
Applications and Letters Dated August 13, 1998, Request  
To Amend Registration To Revise Alfalfa Directions  
To Restrict Use To Certain States and Crop Rotation  
Restrictions

The proposed amendments to the subject pesticide product registrations have been reviewed and found acceptable under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, provided that you:

1. Revise the Precautionary Statements and the Statements of Practical Treatment to reflect the enclosed review of acute toxicity data that were submitted in response to the Norflurazon RED, 8 month Response. Please note that the appropriate statements are given for the subject two products.
2. Submit one (1) copy of your final printed label prior to releasing these products for shipment under the subject labeling.

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

A stamped copy of each of these labels is enclosed for your your records.

Sincerely yours,

Joanne I. Miller  
Product Manager (23)  
Herbicide Branch  
Registration Division (75150)

Enclosures (3)

CONCURRENCES

SYMBOL						
SURNAME						
DATE	Wilson: Diskette,	Metolachlor:	08-27-98			

Zorial Rapid 80®

HERBICIDE

For control of grass and broadleaf weeds in cotton, peanuts, soybeans, and alfalfa

Active Ingredient:

Norflurazon: 4-chloro-5-(methylamino)-2-( $\alpha,\alpha,\alpha$ -trifluoro-*m*-tolyl)-3-(2*H*)-pyridazinone.....78.6%\*

Inert Ingredients: 21.4%

Total 100.0%

\* Technical ingredient analysis by isomer specific method AM-0878-1. Previously 80% by method T-4295

**KEEP OUT OF REACH OF CHILDREN.**

**CAUTION**

See additional precautionary statements and directions for use on back of bag.

10 POUNDS  
NET WEIGHT

EPA Reg. No. 100-848

EPA Est. 55618-SC-001

NCP 203L1 (DRAFT)

**ACCEPTED  
with COMMENTS  
In EPA Letter Dated  
AUG 27 1998**

**Under the Federal Insecticide,  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.  
100-848**



**DIRECTIONS FOR USE**

Use pesticides properly. Read and follow label directions.

This labeling must be in the possession of the user at the time of the pesticide application.

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.

**FAILURE TO FOLLOW THE DIRECTIONS FOR USE AND PRECAUTIONS ON THIS LABEL MAY RESULT IN CROP INJURY, POOR WEED CONTROL, AND/OR ILLEGAL RESIDUES.**

Faint, illegible text or markings at the bottom right of the page.

**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:

- Coveralls
- Waterproof gloves
- Shoes plus socks

Zorial Rapid 80 is a preemergence herbicide for the control of certain grass, broadleaf and sedge weeds in cotton, peanuts, soybeans, and alfalfa (see specific use directions for each crop). Zorial Rapid 80 must be applied and incorporated by tillage, irrigation, or rainfall before weeds germinate. Susceptible weeds may emerge and turn white before dying.

**USE PRECAUTIONS**

1. Do not apply this product through any type of irrigation system.
2. Follow directions for each geographic region, soil type, and crop. Applications in geographic regions not specifically mentioned should follow directions for use for mid-South, Southeast, and TX (east of I-35).
3. Do not graze or feed cotton forage. Do not graze or harvest soybean forage or hay within 90 days of last Zorial Rapid 80 application.

### Multiple Applications

Multiple or sequential applications can be made in certain geographic areas, but the total quantity of Zorial Rapid 80 applied in a year must not exceed the broadcast rate in pounds per acre for a given soil type. Follow Special Directions for each geographic region, soil type, and crop.

Read mixing, application, and specific crop sections for additional recommendations and precautions.

### Mixing Instructions

Zorial Rapid 80 may be tank-mixed with other herbicides and liquid fertilizer. Herbicides that may be tank-mixed with Zorial Rapid 80 are listed in each crop section. All tank-mix products must be approved for use on the respective crop.

Predetermine the compatibility of labeled tank mixes under local conditions by mixing small proportional quantities in advance.

Herbicide Formulation	Amount of Herbicide to Add to One Pt. of Spray Carrier (Assuming Volume is 25 Gals. per Acre)	
	Rate Per Acre	Level Teaspoons
Dry	1 lb.	1.5
Liquid	1 pt.	0.5

If herbicide(s) do not ball-up or form flakes, sludge, gels, oily films, layers or other precipitates, then the tested spray mix is compatible. Incompatibility in any of the above described forms will occur within 5 minutes after mixing.

If components are incompatible, the use of a compatibility agent approved for agricultural use on the respective crop is recommended. Rerun the above compatibility test with a suitable compatibility agent (1/4 teaspoon is equivalent to 2 pts./100 gals. of spray carrier).

Clean and calibrate the sprayer. Add Zorial Rapid 80 to the spray tank already filled with 1/4 the required volume of the water. This will eliminate or minimize foaming. Maintain agitation while filling and spraying. If a bypass line is used, discharge at the bottom of the tank to minimize foaming.

Do not allow Zorial Rapid 80 spray mixture to remain in the spray tank overnight because settling could occur and resuspension would be difficult.

Begin adding wettable powders, flowable liquids, emulsifiable concentrates, and surfactants after the spray tank is 3/4 full. Continue agitation during the addition of all the materials and while filling and spraying.

Products should be added to the spray tank in the following order:

1. Wettable powders and water-dispersible granules. Wettable powders should be premixed in a small amount of water. Water-dispersible granules should be added during filling. Allow both to disperse before other products are added. The order of addition is not important.
2. Flowable liquids
3. Emulsifiable concentrates
4. Surfactants

**Note:** In addition, Zorial Rapid 80 may not always be compatible with other formulations of dinitroaniline (DNA) herbicides. **Always** predetermine tank-mix compatibility by mixing small proportional quantities in a quart jar or other small container. If after vigorous shaking there are large flakes, gel, sludge, or other signs of incompatibility, do **not** spray the combination. Always follow the order of addition given in the **Mixing Instructions** section of this label.

**Application Equipment**

**Ground Application:** Apply the recommended rate of Zorial Rapid 80 in 10 or more gals. of water per acre. Apply accurately with a fixed-boom sprayer. Equip sprayer with fan-jet nozzle tips or equivalent for broadcast application. Use nozzle tips which provide uniform coverage for band applications. Use screen size 50-mesh or larger.

Be sure to calculate the correct amount of product per acre for band applications. Use the following formulas to determine the appropriate rate and volume per treated acre needed for band applications:

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \text{broadcast rate per treated acre} = \text{band rate per planted acre}$$

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \text{broadcast volume per treated acre} = \text{band volume per planted acre}$$

**Aerial Application:** Apply the recommended rate of Zorial Rapid 80 in 5 or more gals. of water per acre. To minimize drift, use Zorial Rapid 80 with a drift control agent such as Nalco-Trol®. Do not apply during periods of gusty winds or winds in excess of 5 mph. Aerial spray equipment, flying speed, and flying height should be carefully adjusted to provide a uniform application to the soil surface. Use markers to avoid overlapping and possible crop injury.

**Application Methods**

**Preplant Incorporated Application (PPI) and Preplant Applications (PPA) for cotton:** Apply Zorial Rapid 80 at the recommended rate prior to planting. Incorporate PPI applications within one week after application and not deeper than 2-3 inches.

**Preemergence Surface Applications (PRE) for cotton, soybeans, and peanuts:** Apply Zorial Rapid 80 at the recommended rate prior to the emergence of the crop and weeds. Do not apply when the crop is at or near emergence (soil cracking). Emerged weeds must be controlled by tillage prior to application or tank mixing with a postemergence herbicide, such as Gramoxone® or Roundup®.

**Split Application – The Zorial Split™ for cotton and soybeans:** First apply 1/2 of the Zorial Rapid 80 rate preplant incorporated, then apply the remaining 1/2 of the Zorial Rapid 80 rate preemergence surface as recommended above.

The soil surface should be free of clods and existing weeds prior to Zorial Rapid 80 application. Use tillage or a postemergence herbicide to control emerged weeds.

**Dry Bulk Fertilizer/Zorial Rapid 80 Blends for Use in Cotton**

Zorial Rapid 80 may be coated onto dry bulk granular fertilizers for fall or spring early preplant surface, preplant incorporated, or preemergence applications. Coating may be conducted by either an in-plant bulk system or the on-board system. Individuals or agents selling Zorial Rapid 80 in dry bulk fertilizer blends are responsible for following all state and local regulations regarding fertilizer/herbicide blending. Rate recommendations, restrictions, and weeds controlled are the same as for the sprayable product.

Slurry the desired amount of Zorial Rapid 80 in an adequate amount of water (3 pts. water per lb. of Zorial Rapid 80 ) required to uniformly cover the fertilizer particle. Apply slurry to fertilizer, using any closed rotary-drum mixer or other commonly used dry fertilizer blender. Spray nozzles must be positioned to provide uniform coverage of Zorial Rapid 80 onto fertilizer during mixing.

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 systems.

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

Formula to determine herbicide used per ton of fertilizer:

$$\begin{array}{l}
 \text{lbs. of} \\
 \text{product/acre} \underline{\hspace{2cm}} \\
 \text{lbs. of fertilizer per acre}
 \end{array}
 \times 2000 = \begin{array}{l}
 \text{lbs. of herbicide} \\
 \text{per ton of} \\
 \text{fertilizer}
 \end{array}$$



**Geographic Information**

The following geographic regions are described in this label:

**Mid-South, Southeast, and TX (East of I-35), which includes the states of AL, AR, FL, GA, LA, MS, MO (boot heel only), NC, SC, TN, and TX (east of Interstate I-35).**

Zorial Rapid 80 can be applied preplant incorporated, preemergence surface, or as a split application (when allowed in specific use directions) in areas with 35 inches or more annual rainfall. In areas with less than 35 inches rainfall, apply only as preplant incorporated or split application (when allowed in specific use directions), unless irrigation is available for incorporation. Zorial Rapid 80 may be used in conventional or conservation (i.e., no-till, reduced till) tillage systems. *(See special directions for conservation tillage below.)*

**TX (West of I-35), Southwest OK, and NM which includes the States of NM, OK (west of Interstate I-35 and south of Interstate I-40), and TX (west of Interstate I-35).**

*Precaution: Zorial Rapid 80 may not be used in conventional or conservation tillage cotton systems in areas with more than 65% sand. Zorial Rapid 80 should only be applied as a preemergence application as part of a program in sequence with Prowk®, or in combination with Caparok® 4L.*

**AZ (includes all areas within state boundaries)**

*Precaution: Zorial Rapid 80 may be applied only as a **preplant incorporated** application. Shallow incorporation is required. When cotton is irrigated up, do not exceed 0.60 lbs./A preplant incorporated when applied prior to listing and irrigate every other furrow. Do not exceed 0.60 lbs./A on soils with 65% or more sand. Do not apply by air in AZ.*

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## Weeds Controlled

Zorial Rapid 80 at recommended rates is effective for

Controlling the following weeds:

Common Name	Scientific Name
Anoda, Spurred (Cottonweed)	<i>Anoda cristata</i>
Barnyardgrass	<i>Echinochloa crus-galli</i>
Bluegrass, Annual	<i>Poa annua</i>
Brome, Downy	<i>Bromus tectorum</i>
Carpetweed	<i>Mullugo verticillata</i>
Cheat	<i>Bromus secalinus</i>
Chickweed	<i>Stellaria media</i>
Crabgrass	<i>Digitaria</i> spp.
Croton, Tropic	<i>Croton glandulosus</i>
Flixweed	<i>Descurania sophia</i>
Foxtails	<i>Setaria</i> spp.
Goosegrass*	<i>Eleusine indica</i>
Johnsongrass (seedling)	<i>Sorghum halepense</i>
Junglerice	<i>Echinochloa colona</i>
Mustards	<i>Brassica</i> spp.
<i>Panicum</i> spp.	<i>Panicum</i> spp.
Pigweeds	<i>Amaranthus</i> spp.
Purslane	<i>Portulaca oleracea</i>
Pusley, Florida	<i>Richardia scabra</i>
Rescuegrass	<i>Bromus catharticus</i>
Ryegrass, Italian (Annual Ryegrass)	<i>Lolium multiflorum</i>
Shepherdspurse	<i>Capsella bursa-pastoris</i>
Sida, Prickly	<i>Sida spinosa</i>
Signalgrass	<i>Brachiaria platyphylla</i>
Velvetleaf	<i>Abutilon theophrasti</i>

\*Including dinitroaniline (DNA)-tolerant goosegrass

Suppressing the following weeds:

Common Name	Scientific Name
Beggarweed, Florida	<i>Desmodium tortuosum</i>
Bermudagrass	<i>Cynodan dactylon</i>
Cocklebur, Common	<i>Xanthium strumarium</i>
Fiddleneck	<i>Amsinckia intermedia</i>
Groundsel	<i>Senecio vulgaris</i>
Henbit	<i>Lamium amplexicaule</i>
Johnsongrass (rhizome)	<i>Sorghum halepense</i>
Kochia	<i>Kochia scoparia</i>
Mallow, Venice	<i>Hibiscus trionum</i>
Malva	<i>Malva spp.</i>
Morningglory	<i>Ipomoea spp.</i>
Nutsedge, Yellow	<i>Cyperus esculentus</i>
Nutsedge, Purple	<i>Cyperus rotundus</i>
Ragweed, Common	<i>Ambrosia artemisiifolia</i>
Sage, Lanceleaf (Mintweed)	<i>Salvia retroflexa</i>
Sandbur	<i>Cenchrus spp.</i>
Senna, Coffee	<i>Cassia occidentalis</i>
Sesbania, Hemp	<i>Sesbania exaltata</i>
Sicklepod	<i>Cassia obtusifolia</i>
Smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>
Sowthistle	<i>Sonchus oleracea</i>
Spurge, Spotted	<i>Euphorbia maculata</i>
Thistle, Russian	<i>Salsola iberica</i>

**Crop Safety**

If the cotton, peanut, or soybean plant is stressed during early development, application of Zorial Rapid 80 at the label rate may result in temporary bleaching or chlorosis of the leaves from which the plant will recover. Do not apply in areas with poor drainage.

**Replacement and Rotational Crops**

For 16 months following the last Zorial Rapid 80 application, treated acreage must only be rotated to cotton, soybeans, or peanuts. Visual symptoms of injury (loss of pigment [whitening] in the leaf veins) and stand reduction may occur in rotational crops of soybeans or peanuts in TX (west of I-35), southwest OK, and NM planted within 16 months following the last Zorial Rapid 80 application. In AZ, treated acreage must only be rotated to cotton.

Peanuts can be planted as a replacement crop (e.g., following hail damage) 30 days after the last Zorial Rapid 80 application. Soybeans can be planted as a replacement crop 45 days after the last Zorial Rapid 80 application. In areas of the mid-South, Southeast, and TX (east of I-35), a light reworking of the soil is recommended to remove existing plant material and maintain herbicidal activity. Zorial Rapid 80 treated acreage may be planted to a cover crop to control soil erosion. Cover crops should be plowed under and not grazed or harvested for 16 months following the last application of Zorial Rapid 80. Small grain cover crops should be broadcast planted rather than drilled to reduce risk of injury.

If replanting to cotton, peanuts, or soybeans is necessary, a light reworking of the topsoil will retain the herbicidal activity of Zorial Rapid 80 . In AZ replanting will mean irrigating up, so irrigation must be every other furrow.

**SPECIFIC COTTON DIRECTIONS**

Zorial Rapid 80 can be used for weed control in all cotton producing states, except CA.

The specific Directions for Use of Zorial Rapid 80 are given below for each geographic region of use (see Replacement and Rotational Crops for description of geographic regions). Select the rate of Zorial Rapid 80 to be used based on soil texture and application type within each geographic region from the sections listed below. Follow the **Special Directions** sections for specific recommendations and precautions.

Do not graze or feed cotton forage.

**Special Directions for the Mid-South, Southeast, and TX (East of I-35)**

**Cotton Broadcast Rates in Lbs. of Zorial Rapid 80 Per Acre\***

Soil Texture	PPI	PRE	Split PPI/PRE
clay loam, silty clay loam, silty clay, clay	2.5	2.5	1.25/1.25
loam, silt loam, silt, sandy clay loam, sandy clay	1.9	1.9	0.95/0.95
Coastal Plains soils (Southeastern states)	1.25***	1.9**	0.95**/0.95**
sand, loamy sand, sandy loam	1.25	1.25	0.625/0.625

\* Rates shown are for broadcast or treated acres. Be sure to adjust amount of product per planted acre if using a band application (see the **Application Equipment** section).

\*\* Higher recommended rates are listed for improved control on coarse textured Coastal Plains soils of Southeastern states.

\*\*\* Do not use rates higher than 1.25 lbs. PPI on coarse-textured Coastal Plains soils of the Southeast.





**Special Directions for AZ**

Zorial Rapid 80 may be applied as a preplant incorporated (PPI) herbicide for added suppression of nutsedge and morningglory when used in tank mixtures with Caparol® herbicide. A banded preplant incorporated application can be made. Be sure to adjust the amount of product per planted acre when using a band application (see the **Application Equipment** section). In AZ, apply Zorial Rapid 80 preplant incorporated only.

**Broadcast Rates in Lbs. of Zorial Rapid 80 Per Acre**

Soil Texture	PPI
<b>FINE</b> clay loam, silty clay loam, silty clay, clay	1.25
<b>MEDIUM</b> loam, silty loam, silt. sandy clay loam, sandy clay	0.95
<b>COARSE</b> sand, loamy sand, sandy loam	0.625

Do not exceed 0.60 lbs./A on soils with 65% or more sand. Shallow incorporation to a depth of 1-2 inches is required. Seed placement must be below incorporation zone.

Cotton irrigated up should receive irrigation in every other furrow following planting to avoid crop injury.

Cotton replanted following Zorial Rapid 80 application should receive irrigation in every other furrow only.

Zorial Rapid 80 can be tank-mixed with Caparol 4L, Treflan, or Prowl as part of a PPI program. Follow labels of tank-mix herbicide for specific rate recommendations, timing, and use precautions.

In AZ, treated acreage must only be rotated to cotton.

Do not use on glandless cotton varieties.

Failure to observe these directions may result in temporary whitening of cotton or stand thinning.

**Zorial Rapid 80 Combinations in Cotton**

Zorial Rapid 80 tank-mix or overlay combinations approved for cotton are Bladex®, fluometuron (Cotoran®, Meturon®), Gramoxone, Lorox®, Prowl, Roundup, trifluralin (Treflan, Trilin®), and Caparol. Read and follow the **Mixing Instructions** section. Follow labels of tank-mix herbicide for specific rate recommendations, timing, and use precautions.

**Zorial Rapid 80 + Caparol 4L Tank Mix**

Special preemergence tank mix for improved suppression of Annual Morningglory, Lanceleaf Sage, Prairie Sunflower, Annual Black Nightshade, and Nutsedge.

**Areas of TX (West of I-35), Southwest OK, and NM**

Observe all precautions listed under **Special Directions for Areas of TX (West of I-35), Southwest OK, and NM**. Do not use Zorial Rapid 80 tank mix as a PPI or split application.

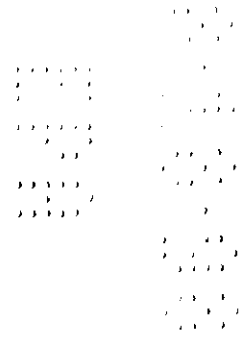
**Zorial Rapid 80 Broadcast Tank Mix Rate per Treated Acre\***

Soil Texture	Zorial Rapid 80 (lbs./A)	+	Caparol 4L** (pts./A)
<b>FINE</b> clay loam, silty clay loam, silty clay, clay	0.6 - 1.0	+	2.4
<b>MEDIUM</b> loam, silt loam, silt, sandy clay loam, sandy clay	0.6 - 1.0	+	2.4
<b>COARSE</b> sand, loamy sand, sandy loam	Do not use		

\* Applications must be made on a 10 to 14-inch band for Zorial Rapid 80 rates above 0.6 lb./A. The 0.6 lb./A rate may be applied as a banded or broadcast application. Rates shown are for tank mix broadcast (treated) acres. Be sure to adjust amount of product per planted acre when using a band application (see the **Application Equipment** section).

\*\*Do Not Use Zorial Rapid 80 tank mix with Caparol 4L on soils containing more than 50% sand.

These combinations may be tank-mixed with Prowl and applied preemergence or applied as a sequential overlay following a trifluralin or Prowl application. Shallow incorporation with finger tines on the planter (scratch incorporation) at planting is recommended for all banded preemergence Zorial Rapid 80 tank-mix combinations.



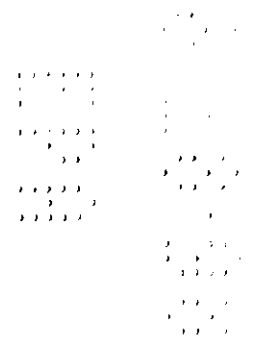
**Areas of the Mid-South, Southeast, TX (East of I-35), and AZ**

Zorial Rapid 80 may also be tank-mixed with Caparol in areas of the mid-South, Southeast, TX (east of I-35), and AZ. **Note:** Caparol has special restrictions as regards soil type. Carefully read and observe all the directions for use, precautions, and limitations on the Caparol label.

**Special Directions for Conservation Tillage Programs**

Zorial Rapid 80 may be used in conservation tillage programs such as no till, minimum till, or reduced till. The following additional directions should be followed to avoid crop injury and obtain optimum weed control with Zorial Rapid 80 in conservation tillage programs:

1. Do not use in TX (west of I-35), southwest OK, and NM in conservation tillage programs where the soil is greater than 65% sand.
2. Use a postemergence herbicide, such as Gramoxone or Roundup prior to application of Zorial Rapid 80 or tank-mix Zorial Rapid 80 with these products to control emerged weeds.
3. Any cover crop must be killed, using an appropriate postemergence herbicide prior to planting. Poor weed control may result if the cover crop is incompletely killed or excessive plant debris is present when Zorial Rapid 80 is applied.
4. Cotton seed should be planted at least 1 inch deep using a planter having a bubble or ripple-type coulter with a straight leading edge and press wheel (a fluted coulter should not be used). The seed must be covered with at least 1 inch of soil following the planter press wheel. Avoid situations where water will pond over the seed row. Crop injury will occur if seed is not adequately covered with soil or water ponds over the seed row.





**SPECIFIC SOYBEAN DIRECTIONS**

Zorial Rapid 80 can be used for weed control in soybeans in the states of AL, AR, FL, GA, KY, LA, MS, MO, NC, OK, SC, TN, TX, and VA.

Soybeans should be planted to a depth of 1-2 inches and soil firmly packed above and around the seed bed.

Do not use in sand, loamy sand, or sandy loam soils, except in the Coastal Plains area of the Southeast. (Do not use PPI or split treatments for soybeans in the Coastal Plains area.) In other areas, do not use the PPI treatment for soybeans, unless as part of the split application treatment. Do not use in soybeans in TX (west of I-35) or southwest OK, or NM.

Do not graze or harvest soybean forage or hay within 90 days of last Zorial Rapid 80 application.

**Soybean Broadcast Rates in Lbs. of Zorial Rapid 80/Acre\***

Soil Texture	PRE	Split PPI/PRE
clay loam, silty clay loam, silty clay, clay	2.5	1.25/1.25
loam, silt loam, silt, sandy clay loam, sandy clay	1.9	0.95/0.95
Coastal Plains soils (Southeastern states)	1.25	Do not use

\* Rates shown are for broadcast or treated acres. Be sure to adjust amount of product per planted acre if using a band application (see the **Application Equipment** section).

Tank-mix or overlay combinations may provide improved control of hard to control broadleaf weeds. See the **Combination** sections for specific recommendations.

**Zorial Rapid 80 Combinations in Soybeans**

Approved Zorial Rapid 80 tank-mix or overlay combinations for soybeans include acifluorfen (Blazer®, Tackle®), alachlor (Lasso®), Basagran®, Canopy®, Classic®, Dual®, Gramoxone, Lorox, metribuzin (Lexone®, Sencor®), Prowl, Roundup, Scepter®, Storm®, and trifluralin (Treflan, Trilin). See tank-mix product label for recommended rate, application timing, and precautions. Read and follow the **Mixing Instructions** section.

Special recommendations for certain Zorial Rapid 80 combinations are as follows:

**Zorial Rapid 80 + Scepter or Canopy – Preemergence Tank Mix**

These combinations can be used alone, PRE, or as part of the split application. They are especially recommended for improved control of cocklebur, annual morningglories, hemp sesbania, sicklepod, smartweeds, and common ragweed.

Apply a tank mix of Zorial Rapid 80 + Scepter or Canopy preemergence at the rate per treated acre listed in the following table. Refer to respective Scepter or Canopy label for specific directions, rates, and restrictions.

**Broadcast Product Use Rates**

Soil Texture	Zorial Rapid 80 lbs./Acre	Scepter pts./A	Canopy ounces/Acre
Mississippi Delta only (fine-textured soil)	1.25 - 1.50* - 1.90		See Scepter or Canopy for specific rates
clay loam, silty clay loam, silty clay, clay	1.25 - 1.50* - 1.90		
loam, silt loam, silt, sandy clay loam, sandy clay	1.25 - 1.50		
Coastal Plains soils (coarse-textured soils – SE)	1.25		

\* optimum rate

**Zorial Rapid 80 Preemergence + Scepter or Classic – Postemergence Overlay**

Postemergence overlay treatments of Classic or Scepter following Zorial Rapid 80 preemergence are recommended for increased control of problem broadleaf weeds, such as cocklebur and annual morningglories. Apply Zorial Rapid 80 preemergence or, as a split application, at the combination rates listed above. Apply Scepter or Classic at the proper rate and postemergence timing as directed by its respective use directions. Refer to overlay product label for specific use directions and restrictions.

**Zorial Rapid 80 + Sencor or Lexone – Preemergence Tank Mix**

This combination is recommended for improved control of hemp sesbania, common ragweed, Venice mallow, and other broadleaf weeds.

Apply a tank mix of Zorial Rapid 80 + Sencor or Lexone preemergence surface at the rates per acre (broadcast) recommended in the following table. These rates represent optimum Zorial Rapid 80 rates and 1/2 of the normal metribuzin rate. Use the metribuzin use rates (grower use rates) most applicable to local soil type and growing conditions.

Soil Texture	Zorial Rapid 80 lbs./A	Sencor® DF/Lexone® DF lbs./A		
		less than 2% OM	2 - 4% OM	over 4% OM
Mississippi Delta only (fine-textured soil)	1.25 - 1.50* - 1.90	0.50 - 1.0	0.58 - 1.17	0.665 - 1.33
clay loam, silty clay loam, silty clay, clay	1.25 - 1.50* - 1.90	0.33 - 0.83	0.425 - 1.0	0.50 - 1.17
loam, silt loam, silt, sandy clay loam, sandy clay	1.25 - 1.50	0.25 - 0.66	0.33 - 0.83	0.425 - 1.0
Coastal Plains soils (coarse-textured soils - SE)	1.25	Do not use	0.25 - 0.50	0.33 - 0.66

\* optimum rate

When using Sencor® 4 or Lexone® 4L, convert to equivalent rates. The amount of Sencor DF or Lexone DF equals 2/3 the amount of Sencor 4 or Lexone 4L. For example, one pt. of Sencor 4 or Lexone 4L equals 2/3 lb. of Sencor DF or Lexone DF.

Refer to the Sencor or Lexone labels for further directions and precautions.

**SPECIFIC PEANUT DIRECTIONS**

Zorial Rapid 80 can be used for weed control in peanuts in the states of AL, FL, GA, MS, NC, NM, OK, SC, TX, and VA.

Zorial Rapid 80 will control certain grass and broadleaf weeds when applied preemergence at planting (see the Weeds Controlled section). Only one application per crop is allowed in peanuts and this application must be made at planting.

For use only in the states of AL, FL, GA, MA, NC, NM, OK, SC, TX, and VA on runner type or Virginia-type peanut cultivars, including 'Florunner', 'GK-7', 'GA-Runner', 'Southern Runner', 'NC 7', 'VA 93B', 'NC 9', 'NC-V11', 'VA-C 92R', 'AgraTech VC-1', and 'NC 10C'.

Do not use Zorial Rapid 80 in other states or on spanish peanut cultivars. Crop tolerance of cultivars not listed on this label may not be acceptable.

**Rate Selection**

**Broadcast Rate**

East of the Mississippi River	1.5 lbs. of Zorial Rapid 80 per treated acre (Apply preemergence only)
West of the Mississippi River	0.5 lb. of Zorial Rapid 80 per treated acre (Apply preemergence only)

Use the higher recommended rate when Zorial Rapid 80 is used alone or on finer textured soils, or where populations of susceptible weeds are very heavy. Use of rates higher than 0.5 lb. Zorial Rapid 80 west of the Mississippi River will result in crop injury and is not recommended.

Apply as a preemergence surface application immediately after planting and before weeds or crop emerge.

**Use Precautions**

- Do not use on peanuts that were treated preplant incorporated with Vernam®, as crop injury will result. Do not apply Zorial Rapid 80 when peanuts are near cracking, at cracking, or emerged, as crop injury may result. Make only one application per year.
- Crop injury may result from the use of Zorial Rapid 80 following Dual when used on very coarse-textured soils, such as sand.
- Delaying applications of postemergence herbicides, such as Starfire®, may be advisable if severe crop whitening is observed (greater than 50%). Do not apply in areas with poor drainage.

Temporary whitening of the peanut leaves may occur. If the peanut plant is not stressed by adverse environmental factors or diseases, this whitening generally dissipates within 4-6 weeks after planting. Early season whitening of peanuts from Zorial Rapid 80 does not result in significant crop stunting, stand reduction, or yield loss, if the plants are not stressed by environmental conditions, improper cultural practices, or diseases. High levels of seedling disease, adverse environmental stress, or improper application may result in increased levels of crop whitening or injury.

**Sequential Applications/Tank Mixes in Peanuts**

Read and follow all label directions for other herbicides listed below used in either sequential applications or as tank-mix partners with Zorial Rapid 80 for specific rate recommendations, application timing, and precautions.

Application of Zorial Rapid 80 to freshly tilled soil will give optimum weed control with crop safety. However, if weeds are emerged at the time of application, use a suitable burndown agent, such as Starfire (paraquat), to control emerged weeds. The burndown herbicide may be applied prior to or tank-mixed with the Zorial Rapid 80 treatment.

Zorial Rapid 80 is especially useful for control of Florida beggarweed when in weed control programs that utilize cultivation or both preemergence and postemergence herbicides.

Zorial Rapid 80 can be applied as a sequential overlay treatment following a preplant incorporated application of Balan®, Sonalan®, Prowl, or Dual. Do not apply Zorial Rapid 80 to peanuts that have been treated with Vernam because of increased potential for crop injury. Zorial Rapid 80 tank mixes with Lasso and Dual will increase preemergence control of the "difficult to control species," such as Florida beggarweed and yellow nutsedge, and will broaden the spectrum of species controlled. Zorial Rapid 80 may be applied as a preemergence tank mix with Lasso and/or Dual.

Under most conditions, a burndown application of Starfire (or tank mixes of Starfire and Basagran and/or 2,4-DB) applied early postemergence will improve residual control of Florida beggarweed obtained with Zorial Rapid 80 by removing Florida beggarweeds that germinated or emerged prior to the activation of Zorial Rapid 80. Sequential applications of Classic, Pursuit®, and Butoxone® (2,4-DB) may be used following Zorial Rapid 80 to control tolerant weeds.

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**SPECIFIC ALFALFA DIRECTIONS**

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Zorial Rapid 80 can be used for weed control in alfalfa in the states of AL, AR, AZ, CA, FL, GA, ID, LA, MS, NC, NM, NV, OK, OR, SC, TN, TX, WA, and the portions of CO, KS, and MO south of I-70.

**Use Precautions**

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

Zorial Rapid 80 is only recommended for preemergent weed control in established alfalfa; do not apply to seedling alfalfa until it has emerged and been actively growing for 5 months.

Do not apply Zorial Rapid 80 within 28 days of harvest.

Soil disturbances, such as rodent burrowing and fire ant mounding, may result in temporary bleaching or reduced growth in alfalfa treated with Zorial Rapid 80.

Do not apply to alfalfa planted with small grain or grass companion cover, unless injury to the companion crop is acceptable. Alfalfa seed germinating after Zorial Rapid 80 is activated in the soil will not become established.

**Application Timing and Rates**

Zorial Rapid 80 may be applied to healthy stands of established alfalfa at 1.25 lbs./A, do not apply to seedling alfalfa until it has emerged and been actively growing for 5 months. An additional 1.25 lbs./A may be applied later in the first crop year to extend late season weed control.

Application in each of the following crop years may be made at 1.25-2.5 lbs./A, depending upon weed pressure, soil texture, and cultural practices:

- Use the lower rate on coarse soils (sand, loamy sand, sandy loam) and when low populations of easily controlled annual weeds are expected.
- Use the higher rate on medium- to fine-textured soils (sandy clay through clay) and when heavier weed pressure is expected. The 2.5 lb. maximum annual rate may be applied in a single application or in split applications.

Do not apply more than 2.5 lbs./A per crop year.

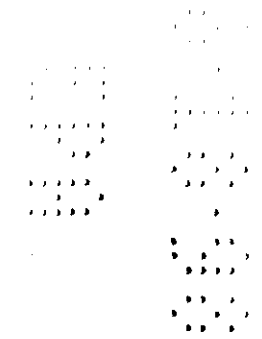
Incorporation by rainfall, irrigation, or tillage (for example, by spring tine, disk, or spike tooth harrow) is necessary to activate Zorial Rapid 80 in soil before weed seeds germinate and emerge. A minimum of 1/2-1 inch rainfall or irrigation is necessary to incorporate Zorial Rapid 80.

Application may be made during dormancy, as long as soil is not frozen, or in actively growing stands. On non-dormant alfalfa, application should always follow mowing and removal of hay to ensure spray reaches the soil surface. In non-irrigated areas which have less than 15 inches annual moisture (rainfall and snow combined) or less than 4 inches spring rainfall, fall or winter applications are recommended. Fall or winter applications are necessary for control of winter annual weeds.

Zorial Rapid 80 will not control emerged weeds. Established weeds or weeds that emerge before activation may be controlled with postemergent herbicides that bear labeling for use in the culture of alfalfa.

**Tank Mixes**

Zorial Rapid 80 may be tank-mixed with any of the following products that bear labeling for use on alfalfa. Read and follow directions for use, precautionary statements, and rates of application of these tank-mix partners.



Trademark	Active Ingredient
Butyrac®	2,4-DB
Gramoxone	paraquat
Pursuit	imazethapyr
Velpar®	hexazinone
Sinbar®	terbacil
Lexone, Sencor	metribuzin
Treflan, Trilin	trifluralin
Eptam®	EPTC
Poast®	sethoxydim
Kerb®	pronamide
Karmex®	diuron

**Rotational Crop Restrictions**

Soils with less than 65% sand in AZ and CA and all soils in AL, AR, FL, GA, LA, MS, NC, NM, OK, SC, TN, TX and the portions of CO, KS, and MO south of I-70 treated with Zorial Rapid 80 may only be rotated to cotton, soybean, peanut, or asparagus within 16 months after application. Soybean and peanut may show pigment loss (bleaching in leaf veins) and/or stand reduction in TX (west of I-35), southwest OK and NM if planted within 16 months following the last Zorial Rapid 80 application.

Soils with 65% sand or more in AZ and CA and all soils in ID, NV, OR, and WA treated with Zorial Rapid 80 may only be rotated to cotton, soybean, peanut or asparagus within 16 months with a minimum of two summer periods after application. Additionally, intended rotational crops must be bioassayed prior to planting. Rotational crops may be planted when no signs of phytotoxicity (bleaching or pigment loss in leaf veins) are observed in bioassay plantings for 4 months following emergence.

Alfalfa stands treated with Zorial Rapid 80 should be irrigated as in normal production the year prior to rotation in CA, AZ, eastern OR, and eastern WA.

**STORAGE AND DISPOSAL**

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

**Pesticide Disposal:** Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of federal law. If waste cannot be disposed of by use according to label instructions, contact your state pesticide or environmental control agency or hazardous waste representative at the nearest EPA Regional Office for guidance.

**Container Disposal:** Completely empty and triple rinse container into application equipment. Then dispose of empty container in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**PRECAUTIONARY STATEMENTS**

**Hazards to Humans and Domestic Animals**

**CAUTION**

Harmful if swallowed or absorbed through the skin. Avoid contact with skin, eyes, or clothing. In case of skin or eye contact, flush with plenty of water.

Mixers, loaders, and applicators must wear long-sleeved shirt and long pants, waterproof gloves, coveralls, and shoes plus socks.

**Statement of Practical Treatment**

**If swallowed:** Call a physician or Poison Control Center. Drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person.

**If on skin:** Wash with plenty of soap and water. Get medical attention if irritation persists.

**If in eyes:** Flush eyes with plenty of water. Get medical attention if irritation persists.

**Personal Protective Equipment**

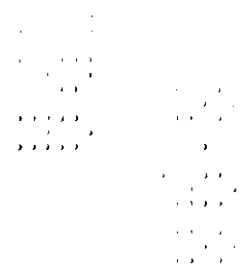
**Applicators and other handlers must wear:**

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks

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 Control 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:

- 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

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 apply when weather conditions favor runoff or drift from treated areas. Do not contaminate water by cleaning of equipment or disposal of wastes.

Norflurazon is known to leach through soil into ground water under certain conditions as a result of agricultural use. Use of this chemical in areas where soils are highly permeable, particularly where the water table is shallow, may result in ground water contamination with norflurazon.

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