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REG. # 11273-47

**ZORIAL® DF**  
**A DRY FLOWABLE HERBICIDE**

FOR CONTROL OF GRASS AND BROADLEAF WEEDS IN COTTON, SOYBEANS  
AND DECIDUOUS TREE FRUIT, CITRUS AND PECANS

①

**ACTIVE INGREDIENT:**

norflurazon [4-chloro-5-(methylamino)-2-(alpha, alpha, alpha-trifluoro-m-toyl)-3(2H)-pyridazinone]..... 80%

INERT INGREDIENTS:..... 20%

KEEP OUT OF REACH OF CHILDREN

**CAUTION**

**PRECAUTIONARY STATEMENTS**

**Environmental Hazards:** Do not apply directly to any body of water. 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.

ACCEPTED  
SEP 17 1985  
Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 11273-47

**LOCATION OF USE**

For use in cotton in the states of Alabama, Arkansas, North Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

For use in soybeans in the states of Alabama, Arkansas, North Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Illinois, Indiana, Michigan, Ohio, Wisconsin, Nebraska, Iowa, Kansas, South Dakota and Minnesota.

For use in tree fruit and pecans in Alabama, Arkansas, North Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

For use in citrus in Texas only.

**WARRANTY AND CONDITIONS OF SALE**

Zoecon Corporation warrants that the chemical composition of this product conforms to the chemical description on the label and is reasonably fit for the purpose stated on the label when used in accordance with directions under normal conditions of use. Zoecon makes no other warranty, express or implied, concerning the use of this product other than as indicated on the label. Buyer assumes all risks of use, storage or handling of this material not in strict accordance with directions given on the label.

EPA Reg. No. 11273-47  
EPA Est. No. 39578-TX-1  
Net: 15 pounds

U.S. PAT. No. 3,644,355 and 3,834,889  
ZORIAL and ZORIAL SPLIT are trademarks  
of Sandoz Ltd.

ZOECON CORPORATION  
A Sandoz Company  
Crop Protection Division  
Palo Alto, California 94304

✓

2025

## WEEDS CONTROLLED

ZORIAL DF Herbicide at recommended rates is effective for:

A. Controlling the following weeds in cotton or soybeans:

Barnyardgrass	Goosegrass <sup>1</sup>	Purslane
Carpeweed	Johnsongrass (seedling)	Signalgrass
Crabgrass	Panicum spp.	Spurred Anoda
Florida Pusley	Pigweeds	(cottonweed)
Foxtail	Prickly Sida	Tropic Croton <sup>2</sup>
		Velvetleaf

B. Suppressing the following weeds in cotton or soybeans:

Bermudagrass	Lanceleaf Sage	Other Smartweeds
Cocklebur	(mintweed)	Pennsylvania Smartweed
Common Ragweed	Morningglory	Russian Thistle
Florida Beggarweed	Nutsedge (yellow	Sicklepod
Hemp Sesbania	and purple)	Spotted Spurge
Johnsongrass (rhizome)		Venice Mallow
Kochia		

C. Controlling the following weeds in fruit trees, citrus and pecans:

Grass Weeds

Annual bluegrass, Annual ryegrass, Annual sedge, Bahiagrass (seedling), Barnyardgrass, Broadleaf signalgrass, Bromus spp., Cheat, Crabgrass, Crowfoot grass,\* Downy brome, Fall panicum, Feather fingergrass, Foxtails, Goosegrass, Guineagrass (seedling),\* Italian ryegrass, Johnsongrass (seedling), Natalgrass,\* Pangolagrass,\* Sandbur, Sandspur,\* Southwestern cupgrass, Six weeks grama grass, Tall fescue, Texas panicum, Vaseygrass,\* Wild barley, Wild onion, Witchgrass.

Broadleaf Weeds:

Annual bursage, Black mustard, Camphorweed,\* Carolina geranium, Chickweed, Common ragweed,\* Cudweed, Dayflower,\* Dog fennel, False dandelion (smooth cat's ear), Fiddleneck, Filaree (redstem and whitestem)\*\*, Flixweed, Goldenrod,\* Little mallow (cheeseweed)\*\*, London rocket, Pineapple weed, Prostrate spurge, Puncturevine, Redmaids, Russian thistle, Shepherdspurse, Stinging nettle, Tumble mustard, Virginia pepperweed, Wild buckwheat, Wild geranium.

<sup>1</sup>Include DNA resistant goosegrass.

<sup>2</sup>Use higher rates on Coastal Plains soils only for improved control.

D. Suppressing the following weeds in fruit trees, citrus and pecans:

Bermudagrass, Common purslane, Nutsedge, Orchardgrass, Quackgrass, Rhizome johnsongrass, Torpedograss,\* Western muhly (wirestem muhly), Common lambsquarters, Florida pusley,\* Groundsel, Henbit, Horseweed (marestail), Pigweeds (redroot, tumble and green amaranth), Plaintains (bracted and buckhorn), Poorjoe, Silverleaf nightshade (white horsenettle), Sowthistle, Flax-leaved fleabane.

\*When applied at the higher rates recommended for weed control in citrus only.

**\*\*Treat prior to germination and incorporate with water on coarse and medium soils for adequate control.**

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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.

### GENERAL INFORMATION FOR COTTON AND SOYBEANS

ZORIAL DF is a herbicide for control of certain grasses and broadleaf weeds in cotton and soybeans. Apply ZORIAL DF before weeds emerge. ZORIAL DF can be applied preplant incorporated, preemergence surface, or as a split application in areas with 40 inches or more annual rainfall. In areas with less than 40 inches rainfall, apply as a preplant incorporated or split application only.

The soil surface should be free of clods and existing weeds prior to application.

If replanting of cotton or soybeans is necessary, a light reworking of the topsoil will retain the herbicidal activity of ZORIAL DF.

Peanuts can be planted as a replacement crop 30 days after ZORIAL DF application. Prior to planting, a light reworking of the topsoil is recommended to remove existing plant material and to retain herbicidal activity. Do not graze replacement peanut fields with livestock for ten weeks following planting.

Do not graze treated cotton fields with livestock or feed treated cotton forage to livestock. Cover crops planted after harvest should be plowed under and not grazed or harvested. To minimize injury to small grain cover crops, they should be broadcast planted rather than drilled.

Quantity of ZORIAL DF applied in any one year must not exceed the broadcast rate in pounds per acre for a given soil type.

~~From one year following ZORIAL DF application, treated acreage may only be rotated to cotton, soybeans, and peanuts.~~ (2)

Crop Safety: If the cotton or soybean plant is stressed during early development, application of ZORIAL DF at the label rate may result in temporary bleaching or chlorosis of the leaves from which the plant will recover.

### MIXING INSTRUCTIONS

Clean and calibrate the sprayer. Add ZORIAL DF to the spray tank already filled with the required volume of the water. This will eliminate or minimize foaming. Maintain agitation while filling and spraying. If a by-pass line is used, discharge at the bottom of the tank to minimize foaming.

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

Tank Mixes: ZORIAL DF is approved as a tank mix with Prowl®, Treflan®, Sencor®, Lexone®, Cotoran®, Dual®, Lasso®, Lorox® and Bladex®. Always predetermine the compatibility of labeled tank mixes by mixing small proportional quantities in advance.

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

1. Wettable powders and water dispersable granules. Wettable powders should be premixed in a small amount of water. Water dispersable granulars 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.

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.

#### APPLICATION DIRECTIONS

Ground Application: Apply the recommended rate of ZORIAL DF in 10-20 gallons of water per acre. Apply accurately with a fixed boom sprayer. Equip sprayer with 8002 to 8006 fan-jet nozzle tips or equivalent for broadcast application. Use 8002E to 8006E nozzle tips or equivalent for band applications. Use screen size 50 mesh or larger. ✓

Aerial Application: Apply the recommended rate of ZORIAL DF in 5 or more gallons of water per acre. To minimize drift, use ZORIAL DF with a drift control agent such as Nalco-Trol® and Ortho-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. ( )

Preplant Incorporated Application (PPI): Apply ZORIAL DF at the recommended rate from 30 days to just prior to planting. In West Texas and Southwest Oklahoma, ZORIAL DF may be applied up to 60 days prior to planting. Incorporate not deeper than 2-3 inches with commonly used equipment. Incorporation should occur within one week after application.

Preemergence Surface Application (PRE): Apply ZORIAL DF at the recommended rate at the time of planting and preemergence to weeds.

Split Application - THE ZORIAL SPLIT™: Apply ZORIAL DF preplant incorporated, as indicated above, at one half the recommended rate. Apply the other half preemergence surface as recommended above.

### SOYBEAN INFORMATION

Do not use in soybeans in West Texas or Southwest Oklahoma.  
Do not use when the soil type is sand, loamy sand, or sandy loam, except the Coastal Plains soils of the Southeast. Do not use the PPI treatment in soybeans unless as part of the split application treatment. Do not use PPI treatments in Coastal Plains soils of the Southeast. Soybeans should be planted to a depth of 1-2 inches and soil firmly packed above and around the seed bed.

#### BROADCAST RATES IN POUNDS OF ZORIAL DF PER ACRE:

SOIL TYPE	PRE*	Split	
		ppl	pre
Coastal Plains Soils (SE)	1.25		
loam, silty loam, silt sandy clay loam, sandy clay	1.9	.95	.95
clay loam, silty clay loam, silty clay, clay	2.5	1.25	1.25

\*For broadleaf weed control use as a tank-mix combination with metribuzin at grower use rates as described in the ZORIAL DF plus Sencor or Lexone tank-mix recommendations below. If ZORIAL DF is used alone as a preemergence or split application, use BLAZER® or BASAGRAN® according to all directions for use, precautions and limitations on the herbicide's labeling for broadleaf weed control as needed. (3)

#### ZORIAL DF COMBINATIONS IN SOYBEANS

##### ZORIAL DF plus Sencor® or Lexone® Tank Mix

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

Apply a tank mix of ZORIAL DF plus Sencor or Lexone preemergence surface at the rates per acre (broadcast) recommended in the following table. These rates represent optimum ZORIAL DF rates and 1/2 to the normal metribuzin rate. Use the metribuzin use rates (grower use rates) most applicable to local soil type and growing conditions. Apply using 10-20 gallons of water per acre.

Broadcast Rates

Soil Type	Pounds ZORIAL DF Per Acre	Pounds Sencor DF/Lexone DF Per Acre		
		Organic Matter		
		Less than 2%	2-4%	Over 4%
Coastal Plains Soils (SE only)	1.25	Do not use	0.25-0.50	0.33-0.66
Medium	1.25-1.50	0.25-0.66	0.33-0.83	0.425-1
Fine (heavy)	1.25-1.50*-1.90	0.33-0.83	0.425-1	0.50-1.17
Mississippi Delta Only	1.25-1.50*-1.90	0.50-1	0.58-1.17	0.665-1.33

\*Optimum rate

When using Sencor 4 or Lexone 4L convert to equivalent rates. The amount of Sencor DF or Lexone DF equals two thirds the amount of Sencor 4 or Lexone 4L. For example, one pint of Sencor 4 or Lexone 4L equals 2/3 pound Sencor DF or Lexone DF.

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

ZORIAL DF plus Lasso® Tank Mix

Use 1/2 rate of ZORIAL DF recommended on its label and 1/2 to 3/4 the rate of Lasso recommended on its label. Apply preemergence surface in the minimum amount of water specified on the label of the combination partner.

Before applying this tank mix, read and carefully observe the cautionary statements and all other information appearing on the product labels.

ZORIAL DF plus Dyanap® overlay

This combination is recommended for improved control of cocklebur, morningglory and spurge.

Apply half the recommended rate of ZORIAL DF ppi as directed for the ZORIAL DF split. Apply 6 qts. of Dyanap per acre as a preemergence overlay as recommended on its label. Carefully observe precautions on both labels.

ZORIAL DF plus DNA herbicides (Treflan®, Prowl®)

The combination of ZORIAL DF with a dinitroaniline (DNA) herbicide will control a broader spectrum of weeds than either product used alone. Apply and incorporate



from 1/2 to the full rate of the DNA herbicide as directed on its label. Follow this by applying the recommended rate of ZORIAL DF preemergence surface as directed on its label. Or apply and incorporate the half rate of ZORIAL DF and 1/2 to the full rate of the DNA herbicide as a tank mix, and apply the remaining half rate of ZORIAL DF preemergence surface as directed for the ZORIAL SPLIT. Carefully observe the precautions on the product labels.

NOTE: ZORIAL DF is not compatible with Treflan M.T.F. In addition, ZORIAL DF may not always be compatible with other formulations of 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, or 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.

#### ZORIAL DF Tank Mixes with Dual®, Amiben®, Lorox®, Surflan® or Premerge® 3

Use 1/2 the rate of ZORIAL DF recommended on its label and 1/2 to 3/4 the rate of Dual, Amiben, Lorox, Surflan or Premerge 3 recommended on those labels. Apply preemergence surface in at least the minimum amount of water specified on the label of the combination partner.

Before applying any of these tank mixes, read and carefully observe the cautionary statements and all other information appearing on the product labels.

#### COTTON INFORMATION

##### BROADCAST RATES IN POUNDS OF ZORIAL DF PER ACRE:

SOIL TYPE	PPI	PRE	Split	
			ppi	pre
sand, loamy sand, sandy loam	1.25	1.25	.625	.625
Coastal Plains Soils (SE)*	**	1.9	.95	.95
loam, silty loam, silt, sandy clay loam, sandy clay	1.9	1.9	.95	.95
clay loam, silty clay loam, silty clay, clay	2.5	2.5	1.25	1.25

\* For improved control of hard to control weeds like pigweed, cocklebur and tropic croton.

\*\*Do not use 1.9 lbs. PPI on COASTAL PLAINS SOILS.

West Texas and Southwest Oklahoma Only: Do not use on sandy soils (soils with greater than 70% sand content). Prior to application of ZORIAL DF, completely destroy the seed beds of the previous year by "cross-discing." Apply ZORIAL DF PPI or pre-emergence surface. For best results, incorporate ZORIAL DF on flat disced soil at labeled rates for control of spurred anoda, annual grasses and suppression of yellow and purple nutsedge. To prevent removal of the herbicide application by wind, immediate incorporation is recommended. A single, one inch rain or its equivalent in center pivot or sprinkler irrigation is necessary to activate ZORIAL when applied preemergence. Soybeans can be planted as a replacement crop 45 days after the first planting of cotton. Do not plant peanuts as a replacement crop. Do not use ZORIAL DF on furrow planted cotton or on glandless cotton varieties. For one year following a ZORIAL DF application, treated acreage may only be rotated to cotton, soybeans or peanuts.

### ZORIAL DF COMBINATIONS IN COTTON

#### ZORIAL DF Plus COTORAN® 80W Overlay or Tank Mix

This combination is recommended for improved control of cocklebur and morningglory.

Overlay: Apply recommended broadcast label rates of ZORIAL DF ppi. Apply broadcast label rate of Cotoran 80W as a preemergence overlay as recommended on its label. Convert to applicable label rates for banding.

ZORIAL SPLIT™ Tank Mix: Apply the first half of the ZORIAL SPLIT at the recommended broadcast rate ppi as directed for the ZORIAL SPLIT. Apply the second half of the ZORIAL SPLIT at the recommended rate of ZORIAL DF plus recommended broadcast rate of COTORAN 80W as a preemergence overlay in 20 gallons of water per acre. Convert to applicable label rates for banding.

ZORIAL DF Preemerge; Tank-Mix: ZORIAL DF may be applied as a tank-mix with COTORAN 80W. Apply a tank-mix of recommended broadcast rates of ZORIAL DF plus the recommended broadcast rate of COTORAN 80W as a preemergence treatment in 20 gallons of water per acre. Convert to applicable label rates for banding.

Band Treatment: When applying a band treatment of ZORIAL DF the following formula may be used to calculate the amount per acre:

<u>Band width in inches</u>	X	Rate in lbs per acre	=	Pounds per acre
<u>Row width in inches</u>		broadcast treatment		for band treatment

SOUTHEASTERN COASTAL PLAINS SOILS: Apply ZORIAL DF at .625 lbs. ppi followed by .625 lbs. plus 1/2 the full rate of Cotoran 80W as a preemergence overlay as recommended on its label.

<u>Band width in inches</u>	X	Rate in lbs per acre	=	Pounds per acre
<u>Row width in inches</u>		broadcast treatment		for band treatment

Refer to the ZORIAL DF and Cotoran labels for further directions and precautions.

### ZORIAL DF plus Bladex Overlay or Tank Mix

This combination is recommended for improved control of cocklebur and morningglory.

Overlay: Apply 1/2 to the full rate of ZORIAL DF ppi as recommended on its label. Apply 3/4 to the full rate of Bladex 80W or Bladex 4L as a preemergence overlay as recommended on those labels.

Tank Mix: Apply a tank mix of 3/4 the rate of ZORIAL DF recommended on its label and 3/4 the rate of Bladex 80W or Bladex 4L recommended on those labels as a preemergence treatment. Apply 15-20 gallons of water per acre.

### ZORIAL DF plus DNA Herbicide Treflan®, Prowl®, or Basalin®

ZORIAL DF may be tank mixed with dinitroaniline (DNA) herbicides and incorporated for control of a broader spectrum of weeds than either product alone.

Apply a tank mix of ZORIAL DF and a DNA herbicide as a ppi treatment. Use the full rate of ZORIAL DF as recommended on its label and from 1/2 to full rate of the DNA herbicide as recommended on its label.

Or apply and incorporate the half rate of ZORIAL DF and the full rate of the DNA herbicide as a tank mix, and apply the remaining half rate of ZORIAL DF preemergence surface as directed for the ZORIAL SPLIT. Refer to the label of the DNA herbicide for specific directions for timing and application of the ppi treatment. ✓

NOTE: ZORIAL DF is not compatible with Treflan M.T.F. In addition, ZORIAL DF may not always be compatible with other formulations of 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, or 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.

### ZORIAL DF plus Karmex® Tank Mix

This combination will control a broader spectrum of weeds than either product used alone.

Apply a tank mix of ZORIAL DF and Karmex as a preemergence treatment. Use 1/2 to 3/4 the rate of ZORIAL DF recommended on its label and 1/2 to 3/4 the rate of Karmex recommended on its label. Apply 25 gallons of water per acre.

Refer to the ZORIAL DF and Karmex labels for further directions and precautions.

**GENERAL INFORMATION FOR  
DECIDUOUS TREE FRUIT, CITRUS AND PECANS**

~~ZORIAL DF is a herbicide for control of certain grasses and broadleaf weeds in~~  
deciduous tree fruit, citrus and pecans. (4)

Apply ZORIAL DF as directed to the soil surface from fall to early spring before weeds emerge unless otherwise indicated.

ZORIAL DF must be moved into the weed seed germination zone to be effective. If no rainfall occurs within four weeks after application, the product must be activated by flood irrigation or sprinkler irrigation. ZORIAL DF alone has no post-emergence activity and will not control established weeds.

Do not use on nursery stock except where uses are indicated. Do not graze livestock on treated areas. Do not feed or graze cover crops grown in treated areas.

APPLICATION DIRECTIONS

Apply ZORIAL DF before weeds emerge. The soil surface must be free of weeds and relatively free of plant residues. The soil should be settled and firm at the time of application.

Apply as a directed spray. Avoid contact with fruit or foliage. Make only one application per year unless otherwise indicated. Do not apply when nuts or fruit are on the ground at harvest.

Equipment

Apply accurately with a fixed boom sprayer. Use screen size 50 mesh or larger.

Mixing Instructions

Clean and calibrate the sprayer. Add SOLICAM DF to the spray tank already filled with 1/4 of the required volume of water. Maintain agitation while filling and spraying. If a by-pass line is used, discharge at the bottom of the tank to minimize foaming.

Do not allow SOLICAM DF spray mixture to remain in the spray tank overnight, because settling could occur and resuspension would be difficult.

Tank Mixes

Always predetermine the compatibility of labeled tank mixes by mixing small, proportional quantities in advance. 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 granulars should be added during filling. Allow both to disperse before other products are added. The order of addition is not important. (4)
2. Flowable liquids.
3. Emulsifiable concentrates.
4. Surfactants cleared for application to growing crops.

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.

#### Broadcast Rates

Unless otherwise directed, use 2.5 - 5 lbs. of ZORIAL DF per acre (per season) as a directed spray in 20-100 gallons of water.

Use the lower rates on coarse soils. Use the higher rates on medium to fine soils or soils having organic matter content of greater than 3%.

<u>SOIL TEXTURE</u>	<u>SOIL TYPE</u>	<u>ZORIAL DF RATE OF APPLICATION</u>
Coarse	sand, loamy sand, sandy loam	2.5 lbs. ✓
Medium	loam, silt loam, silt, sandy clay loam	3.75 lbs.
Fine	sandy clay, clay loam, silty clay loam, silty clay, clay	5.0 lbs.

#### Strip or Band Treatment

When applying a strip treatment of ZORIAL DF, the following formula may be used to calculate the amount per acre:

$$\frac{\text{Width of strip in feet}}{\text{Distance between rows in feet}} \times \text{Pounds per acre for broadcast treatment} = \text{Pounds per acre for strip treatment}$$

#### GRAPES

Apply ZORIAL DF as directed on sandy loam or finer soil types from fall to early spring. It is not recommended that ZORIAL DF be applied after bud break on sandy loam soils. Vines must be established at least two years in the field. Do not use on nursery stock. Do not use on coarse-textured soil such as sand, loamy sand, and gravelly sand in all areas.

### APPLES AND PEACHES

Apply ZORIAL DF as directed. The product may be used on newly planted apples. Peaches must be established at least 6 months in the field. The soil around the trees should be firm and free of depressions in which rain or irrigation water could accumulate. Higher rates of 3.75 - 5 lbs per acre may be used in Coastal Plains soils of the Southeast.

### PECANS

Apply ZORIAL DF as directed to bearing and non-bearing pecans. The product may also be used on newly set pecan trees. Higher rates of 2.5 - 5 lbs. per acre may be used in Coastal Plains soils of the Southeast.

### BLUEBERRIES, RASPBERRIES, BLACKBERRIES

Apply ZORIAL DF as a directed spray from fall to early spring before weeds emerge. The soil surface must be free of weeds and relatively free of plant residues at the time of application. Make only one application per year. ZORIAL may be used on newly set or established blueberry plantings.

### CITRUS CROPS (Texas Only)

Apply ZORIAL DF as directed any time during the year according to local practice. ZORIAL DF may be used on bearing and non-bearing citrus. It may also be used on field grown nursery stock. Do not use on germinating citrus seed beds. Do not use where citrus is interplanted with palm trees. Do not harvest citrus crops treated at greater than 4 lbs. per acre prior to 12 weeks after ZORIAL DF treatment.

For oranges, grapefruit, lemons, limes, and tangerines, apply 5-10 lbs. of ZORIAL DF per acre unless otherwise directed. Use the same rate for all coarse-textured soils. ZORIAL DF may be applied up to two times per year to newly planted or established trees. Apply no more than 10 lbs. total ZORIAL DF per acre per year.

### Injection into Citrus Irrigation Systems (Texas only)

Low volume - 4 to 50 gallons per hour (gph) per emitter, drip 0.5 - 3 gph per emitter. Point of application should be above ground.

Irrigation system should run a sufficient amount of time prior to ZORIAL DF injection to have all emitters functioning properly. After system is operating properly, length of injection should be such that at one period of time during the injection, the first and last emitters in the system contain ZORIAL DF treated water. Maintain proper agitation in ZORIAL DF injection tank. ZORIAL DF should be mixed in clean water and injected down-line from filters. Following ZORIAL DF injection, system should be flushed for a period

of time sufficient to clear the line of ZORIAL DF. (If ZORIAL DF application is made during a normal irrigation cycle, injection should be made during the late stage.)

### Calibration

Calculation of use rate is based on wetted area around emitters - NOT on tree acres. To determine correct amount of ZORIAL DF, use the following formula:

1. Treated area per each emitter = A

$$A = 3.14 \times (\text{radius} \times \text{radius})$$

Example: If the average distance from emitter to perimeter of wetted area, measured one inch below soil surface = 13 inches then

$$A = 3.14 \times (13" \times 13") = A = 3.14 \times (169") = A = 530.7 \text{ square inches.}$$

2. The area in square feet wet in each acre = B

$$B = \frac{A \times \text{emitters/acre}}{144}$$

Example: If there are 300 emitters per acre, then

$$B = \frac{530.7 \times 300}{144} = B = 1105.6 \text{ square feet wetted per acre.}$$

3. The total area (in square feet) wet by your system = C

$$C = B \times \text{acres covered by system}$$

Example: If the system covers 20 acres, then

$$C = 1105.6 \text{ square feet per acre} \times 20 \text{ acres} \\ = 22,112 \text{ square feet wetted by system.}$$

4. Amount of ZORIAL to inject = S

$$S = \frac{C}{43,560} \times 1.5 = \text{pounds of ZORIAL DF}$$

(Note: This will change the a.i. from 1.0 to 1.2 lbs. a.i. per acre.)

$$\text{Example: } S = \frac{22,112}{43,560} \times 1.5 = 0.76 \text{ pounds of ZORIAL DF should be injected into the system.}$$

Application of ZORIAL DF through irrigation systems should be used as a supplemental weed control practice. The addition of ZORIAL DF through irrigation systems should help prevent break-through weeds at irrigation point providing the application is made before weed seeds germinate.

Precautions: 1) Apply only through irrigation systems containing antisiphon and check valves to prevent contamination of well during shutdown and overflow of solution tank. 2) Inject ahead of any right angle turn in the main line to insure adequate mixing. 3) Chemical injection pumps and water pumps must have interlocking controls to insure simultaneous shutoff. 4) Application when drift may occur, such as from windy conditions, or when system joints and connections are leaking, or when nozzles are not providing uniform distribution, may cause crop injury. 5) Application should be directed in such a way that ZORIAL does not come into contact with foliage.

ZORIAL DF TANK MIX COMBINATIONS  
IN DECIDUOUS TREE FRUIT CITRUS AND NUT CROPS

The following tank mix combinations are recommended for improved control of weeds in tree fruit and nut crops, including citrus. No label dosage rates may be exceeded and the more restrictive label limitations and precautions should be observed. Before applying these combinations, read thoroughly all precautionary statements and other information in both labels. Refer to the Mixing Instructions section of this label for specific tank mixing directions. ZORIAL DF may not be tank-mixed with any product containing a prohibition against such mixing.

ZORIAL DF plus Paraquat CL

This tank mix combination is recommended for kill of existing vegetation and for residual preemergence control of susceptible broadleaf and grassy weeds in all tree crops listed on this label. ✓

Apply 2.5 - 5 lbs. of ZORIAL DF per acre and 1-2 qts. of Paraquat CL per acre in 50-200 gals. of water per acre. Apply to the orchard floor avoiding contact with fruit, foliage, or stems. Add an agriculturally approved nonionic surfactant such as Ortho® X-77 at the rate of 1/2 pint per 100 gallons of spray. Apply when the weeds and grasses are succulent and new growth is 1-6 inches tall. Apply this combination only once per year.

Texas citrus only - Apply 5-10 lbs. of SOLICAM DF per acre and 1-2 qts. of Paraquat CL per acre in 50-200 gals. of water per acre. This combination may be applied up to two times per year. Apply no more than 10 lbs. total SOLICAM DF per acre per year.

Do not spray under windy conditions, and use shield for young trees. Refer to the ZORIAL DF and Paraquat CL labels for further directions, cautions, warnings, precautions, and notes.

ZORIAL DF plus Roundup®

This tank mix combination is recommended for control of existing annual and perennial weeds and for residual preemergence control of susceptible broadleaf and grassy weeds in all tree crops listed on this label.



Apply 2.5 - 5 lbs. of ZORIAL DF per acre as recommended on its label and 1-5 qts. of Roundup per acre as recommended on its label. Apply to the orchard floor in 20-40 gals. of water per acre, avoiding contact with fruit, foliage or other tree parts. Apply when the weeds and grasses are actively growing. Apply this combination only once per year.

Do not apply under windy conditions and use a shield for young trees. Use extreme care when applying this combination. Refer to the SOLICAM DF and Roundup labels for further directions, cautions, warnings, precautions, and notes.

Texas citrus only - Apply 5-10 lbs. of SOLICAM DF per acre and 1-5 qts. of Roundup per acre in 20-40 gals. of water per acre. This combination may be applied up to two times per year. Apply no more than 10 lbs. total SOLICAM DF per acre per year.

ZORIAL DF plus Princep® Caliber® 90,  
Princep® 80W or Registered Simazine 80W or 90 Products

This tank mix combination is recommended for improved control of broadleaf weeds, and more specifically the following: Clover, Cutleaf Eveningprimrose, Dandelion, Henbit, Horseweed (marestail), Lambsquarters, Pigweeds, Puncturevine.

This combination may be used in the following crops: Apples, Peaches, Pecans.

Apply the appropriate rates in the following table as a tank mix in 20-100 gals. water per acre. Apply as a directed spray to the soil surface before weeds emerge, avoiding contact with fruit, foliage, or stems.

<u>Soil Type</u>	<u>ZORIAL</u>	<u>Pounds Product per Acre</u>	
		<u>Princep Caliber 90</u>	<u>Simazine 80W</u>
Medium	2.5	1.125	1.25
Fine	3.75	2.25	2.5

Do not use this combination in coarse soils. Use only in those crops and locations specified in both the ZORIAL DF and Simazine 80W labels.

Texas citrus only - Apply 4-5 lbs. of ZORIAL DF per acre and 3.6-4.5 lbs. Princep Caliber 90 or 4-5 lbs. Simazine 80W per acre in 20-100 gallons of water per acre. Use the same rates in all coarse-textured soils. Apply this combination only once per year.

ZORIAL DF plus Simazine plus Paraquat CL

1-2 qts. of Paraquat CL may be added to the ZORIAL DF plus Simazine tank mix combinations to kill existing vegetation. Add an agriculturally approved nonionic surfactant such as Ortho X-77 at the rate of 1/2 pint per 100 gallons of spray. Refer to directions for the ZORIAL DF plus Simazine combinations for recommended crops, application rates and restrictions.

Apply to the orchard floor in at least 50 gals. of water per acre, avoiding contact with fruit, foliage or stems. Apply when the weeds and grasses are succulent and new growth is 1-6 inches tall.

Do not spray under windy conditions and use a shield for young trees. Refer to the product labels for further directions, warnings, precautions, and notes.

#### ZORIAL DF plus Simazine plus Roundup®

1-5 qts. of Roundup may be added to the ZORIAL DF plus Simazine tank mix combinations to control existing annual and perennial weeds. Refer to directions for the ZORIAL DF plus Simazine combinations for recommended crops, application rates and restrictions.

Apply in 20-40 gals. of water per acre, avoiding contact with fruit, foliage or stems. Apply when the weeds are actively growing. Use extreme care when applying this combination. Refer to the individual product labels for further directions, warnings, precautions, and notes.

#### ZORIAL DF plus Goal®

This tank mix combination is recommended for control of certain existing weeds, including malva and filaree, and improved residual control of annual broadleaf weeds.

This combination may be used in peaches. (5)

Apply 2.5 - 5 lbs. of ZORIAL DF per acre and 2-4 qts. of Goal 2E or 2.5 - 5 qts. of Goal 1.6E per acre in at least 50 gals. of water per acre. Add an agriculturally approved nonionic surfactant such as Triton® AG-98 or Ortho X-77 at the rate of 1 quart per 100 gallons of spray. Apply to the orchard floor avoiding contact with fruit, foliage or other tree parts. Refer to the Goal label for directions regarding application timing. Do not apply under windy conditions.

Apply this combination only once per year. Use only in those locations specified in both ZORIAL DF and Goal labels.

#### ZORIAL DF plus Surflan® plus Paraquat CL

This tank mix combination is recommended for kill of existing vegetation and improved residual control of certain broadleaf weeds, including Purslane, Lambsquarters, and Pigweeds.

This combination may be used in the following crops: Apples, ~~grapes, lemons, and oranges~~ Peaches. (6)

Apply 2.5 - 5 lbs. of ZORIAL DF per acre, 1-2 qts. of Paraquat CL per acre, and 2-4 qts. of Surflan A.S. or 2 2/3 - 5 1/3 lbs. of Surflan 75W per acre in at least 50 gals. of water. Add an agriculturally approved nonionic

surfactant such as Ortho X-77 at the rate of 1/2 pint per 100 gallons of spray. Apply to the orchard floor avoiding contact with fruit, foliage or stems. Apply when the weeds and grasses are succulent and new growth is 1-6 inches tall.

Do not spray under windy conditions and use a shield for young trees. Refer to the ZORIAL DF, Paraquat and Surflan labels for further directions, warnings, precautions, and notes.

ZORIAL DF plus Karmex®  
or Other Diuron 80WP Products

There may be instances where the combination with Diuron will improve overall weed control in sandy loam, medium or fine soils. ZORIAL DF at labeled rates is safe in citrus crops in all soil types when used alone.

This combination may be used in the following crops: Apples, Texas citrus only, Peaches, Pecans.

Apply of the appropriate rates in the following table as a tank mix in 20-100 gals. water per acre. Apply as directed to the soil surface before weeds emerge, avoiding contact with fruit, foliage and stems.

<u>Soil Type</u>	<u>Pounds Product Per Acre</u>	
	<u>ZORIAL DF</u>	<u>Diuron 80WP</u>
Sandy loam	1.75	1
Medium	2.5	1.5
Fine	3.75	2

Do not use this combination on sand, loamy sand, gravelly soils or exposed subsoils, or in soils with less than 1% organic matter (0.5% for pecans). Use only in those crops and locations specified in both the ZORIAL DF and Diuron labels.

### STORAGE AND DISPOSAL

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

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

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

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