

READ SAFETY DIRECTIONS BEFORE OPENING OR USING

ZOLIAR[®] DF

HERBICIDE

Active Constituent: 800 g/kg NORFLURAZON

A pre-emergence selective residual herbicide for a programmed approach to Nutgrass (*Cyperus* sp), and other grass and broadleaf weed control in Cotton, Citrus, Grapes, Nuts, Pome Fruit and Stone Fruit as per the Directions for Use table.

GROUP	F	HERBICIDE
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APVMA Approval No: 45804/0301

Pack size: 5 kg

GENERAL INSTRUCTIONS

Cotton: If the Nutgrass population is intense and before canopy closes over, apply glyphosate or other suitable product at recommended rates with a shield sprayer to assist in control of Nutgrass.

Citrus, grapes, apples, pears, stone fruit and almond orchards: ZOLIAR DF is a surface applied residual pre-emergence herbicide. Residual weed control can be expected for up to 6 months, dependent on rate applied and soil conditions. The 2.5 kg/ha rate is most effective on coarse or light loamy soils when harder to control weeds are not important. Extended period of weed control can be achieved by using rates higher than 2.5 kg. The period of control will then be determined by soil type, irrigation/rainfall patterns, time of treatment and other soil and management factors.

Rainfall or irrigation within 2 or 3 weeks after application is necessary for activation. Areas to be treated should be free of weeds and excessive mulch. Where weeds are already growing in the area to be treated, an appropriate "knockdown herbicide" must be applied either before or, if compatible, combined as a tank mix with this product. This product should be applied strategically at mid spring for full summer weed control, and early autumn when winter control is required. Where strip treatment is applied, the recommended rate per hectare must relate only to the area of the treated strip. If residual or "knockdown herbicides" are added, consider all label recommendations and adhere to the crop recommendations and directions that are most restrictive.

Resistant Weeds Warning

ZOLIAR DF Herbicide is a member of the pyridazinone group of herbicides. ZOLIAR DF has the inhibitor of carotenoid biosynthesis mode of action. For weed resistance management ZOLIAR DF is a Group F herbicide. Some naturally-occurring weed biotypes resistant to ZOLIAR DF and other inhibitors of carotenoid biosynthesis herbicides may exist through normal genetic variability in any weed population. The resistant individuals can eventually dominate the weed population if these herbicides are used repeatedly. These resistant weeds will not be controlled by ZOLIAR DF or other Group F herbicides. Since the occurrence of resistant weeds is difficult to detect prior to use, Syngenta Crop Protection Pty Limited accepts no liability for any losses that may result from the failure of ZOLIAR DF to control resistant weeds.

Mixing

Fill the spray or mixing tank to 2/3 full and start agitation. Add the required amount of ZOLIAR DF to tank whilst maintaining continuous agitation. Add additional compatible products (if required), then balance of water until tank is full. Maintain agitation throughout mixing, standing and spraying operations. If tank mixing, products should be added in the following order, after ZOLIAR DF:

1. Wettable powders and water dispersible granules
2. Flowable liquids
3. Emulsifiable concentrates
4. Surfactants

Application

Cotton: Apply in at least 100 L/ha water volume for ZOLIAR DF rates between 2.3 and 2.8 kg/ha. Use at least 150 L/ha of water for ZOLIAR DF rates above 2.8 kg/ha. Use 50 mesh screens on nozzles.

Citrus, grapes, apples, pears, stone fruit and almond orchards: Apply ZOLIAR DF as a directed spray, avoiding contact with foliage or fruit using a fixed boom sprayer. Apply 300 to 500 L of spray/ha, have good tank agitation, use 50 mesh nozzle strainers. Shut off spray booms when starting, stopping or slowing down to avoid overdosing. Wash out equipment thoroughly with water after use.

Method and Timing – Cotton

Fallow/Pre-Sowing: Apply at the recommended rate during the fallow and up to 4 to 6 weeks prior to planting, and before Nutgrass has commenced germination. Incorporation by rainfall is preferable. If rain does not fall within 14 days of application incorporate thoroughly to 3 to 7 cm. Set incorporation equipment to a working depth of at least 5 to 10 cm to achieve this.

For optimum activity the herbicide-incorporated-soil-zone needs to remain at a moisture level of 65% of field capacity for at least 6 weeks after application and should not drop below 50% of field capacity in the top layers of the soil.

Rapid flood irrigation may reduce efficacy by removing treated soil from the area.

If ZOLIAR DF is applied to flat soil (before hilling), a concentration of ZOLIAR DF in the hill will occur. Efficacy in the hill will be improved but strongly reduced in the furrow.

Compatibility

ZOLIAR DF is compatible with trifluralin and most "knockdown" and residual herbicides in situations where appropriate recommendations exist for such herbicides in the crop concerned. Tank mixtures with residual herbicides are primarily made to improve control of particular weed species. Observe mixing instructions.

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ZOLIAR[®] DF

Plant Back Periods – Cotton

NOTE: Rotational crops may be damaged by previous ZOLIAR DF applications.

The following safe plant back periods have been determined after a single application of ZOLIAR DF Herbicide.

The crops specified in the table below may be safely planted into soils previously treated with a single application of

ZOLIAR DF provided the specified plant back periods have been observed.

If seasonal conditions have been very dry, growers should extend the plant back period to include the time of that very dry period.

If **multiple applications** of ZOLIAR DF have been made, contact a Syngenta representative, your district agronomist or extension officer prior to rotating to other crops.

Crop	Plant Back Period (months)		
	Medium/Heavy Soils		Light Soils
	Rates less than 3.5 kg/ha	Rates equal to or greater than 3.5 kg/ha	Rates up to 2.8 kg/ha
Coriander	1	6	3
Chickpeas, Linseed, Soybeans	3	9	6
Safflower	12	18	15
Corn, Mungbeans, Sorghum, Sunflowers	21	27	24
Barley, Faba Beans, Oats, Triticale, Rye, Wheat	24	30	27

PROTECTION OF LIVESTOCK

DO NOT graze livestock on treated areas.

PROTECTION OF CROPS, NATIVE AND OTHER NON-TARGET PLANTS

DO NOT apply under weather conditions, or from spraying equipment, that may cause spray to drift onto nearby susceptible plants/crops, cropping lands or pastures.

DO NOT drain or flush equipment or spray near desirable trees or other plants or where their roots may extend; or in locations where the product may be washed or moved into such situations.

DO NOT apply while fruit or nuts are on the ground at harvest.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT

DO NOT contaminate streams, rivers or waterways with ZOLIAR DF or used container. Avoid rapid flood irrigation which may erode treated soil from the field.

STORAGE AND DISPOSAL

Store in the closed, original container in a dry, well ventilated area, as cool as possible out of direct sunlight. Keep out of reach of children.

Single rinse containers before disposal. Add rinsings to the spray tank. DO NOT dispose of undiluted chemicals on site. Puncture and bury the containers in a local authority landfill. If not available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

SAFETY DIRECTIONS

Avoid contact with skin and eyes. DO NOT inhale dust or spray mist. After use and before eating, drinking or smoking, wash hands, arms and face thoroughly with soap and water.

FIRST AID

If poisoning occurs, contact a doctor or Poisons Information Centre. Phone 131 126.

MATERIAL SAFETY DATA SHEET

If additional hazard information is required refer to the Material Safety Data Sheet. For a copy phone 1800 067 108 or visit our website at www.syngenta.com.au

MANUFACTURER'S WARRANTY AND EXCLUSION OF LIABILITY

Syngenta has no control over storage, handling and manner of use of this product. Where this material is not stored, handled or used correctly and in accordance with directions, no express or implied representations or warranties concerning this product (other than non-excludable statutory warranties) will apply. Syngenta accepts no liability for any loss or damage arising from incorrect storage, handling or use.

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DIRECTIONS FOR USE

Restrains: DO NOT rotate to alternate crops in fields treated with ZOLIAR DF unless crop rotation plant back periods detailed under General Instructions are observed.
 DO NOT use on dry land Cotton.
 DO NOT incorporate in a manner which would place untreated soil on top of treated soil.
 DO NOT use more than 4.2 kg/ha of ZOLIAR DF in any one year.
 DO NOT apply to nursery stock.
 DO NOT apply to trees or vines unless they have been established in the orchard or vineyard for 18 months.

Crop	Weeds Controlled	State	Rate/ha	Critical Comments
Cotton, Cotton Fallow	Nutgrass	Qld, NSW only		Soil moisture is critical for weed control. If rainfall has not occurred within 14 days, incorporate mechanically. If seasonal conditions are very cool and wet, delay planting cotton following ZOLIAR DF applications until soil temperatures consistently exceed 16°C. Significant suppression (50 to 80% control) of Nutgrass is only achieved after 3 or more seasons of consecutive treatment with ZOLIAR DF.
			2.8 kg	Light Soils: (such as sandy loam, loam, sandy clay loam soils). Use recommended rate in all years of a ZOLIAR DF program.
			2.8 to 4.2 kg	Heavy Soils: (such as silty clay loam, clay loam, clay soils). Use these rates for the first year only of a ZOLIAR DF program. Use the higher rate for heavier infestations of Nutgrass.
			2.8 to 3.5 kg	Heavy Soils: Use these recommended rates for the second and subsequent years of a ZOLIAR DF program. Use the higher rate for heavier infestations of Nutgrass.
	Crowsfoot Grass, Redshank Amaranth [†]		2.3 kg	[†] Suppression only
	Barnyard Grass, Black Pigweed [†]		2.3 to 2.8 kg	In the first year of a ZOLIAR DF program, an additional herbicide should be used to gain best control. [†] Suppression only
	Giant Panic, Peach Vine, Pigweed [†]			[†] Suppression only
	Spring Grass			On heavy soils, the rates may result in suppression only. An additional herbicide should be included in the control program.
	Summer Grass			Use the higher rate on heavier soils.
	Sesbania Pea, Yellow Vine		2.8 kg	Use in the first year of a ZOLIAR DF program, mix with another herbicide to gain best control.
Anoda Weed, Bladder Ketmia [†] , Mimosa [†] , Mintweed [†] , Prickly Lettuce, Sowthistle, Thornapple, Wild Oats [†]	[†] Suppression only			
Deadnettle	4.0 kg			

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DIRECTIONS FOR USE – *continued*

Crop	Weeds Controlled	Rate/ha	Critical Comments
Citrus Grapefruit, Lemons, Mandarins, Oranges (Navel and Valencia) Grapes Pome Fruit Apples, Pears Stone Fruit Apricots, Cherries, Nectarines, Peaches, Plums Nuts Almonds only	Annual Ryegrass, Barley Grass, Blackberry Nightshade, Brachiaria (Green Summer Grass), Caltrop, Capeweed, Chickweed, Common Sowthistle (Milk Thistle), Dandelion seedlings, Curled Dock seedlings, False Caper seedlings, Fat-Hen [†] , Indian Hedge Mustard, Innocent Weed (Spiny Burgrass), Medic, Hedge Mustards, Paspalum, Plantain seedlings, Pigweed (<i>Portulaca</i>), Prairie Grass, Prickly Lettuce, Great Brome (Ripgut Brome), Salvation Jane, Scarlet Pimpernel, Shepherd's Purse, Silver Grass, Skeleton Weed seedlings, Sorrel seedlings, Soursob [†] , Stinkgrass, Stinking Roger, Subterranean Clover, Summer Grass (Crabgrass), Three-cornered Jack (Doublegee, Spiny Emex), Variegated Thistle, Wild Oats, Wild Radish, Wild Turnip, Winter Grass, Wireweed, Witch Grass, Yellow Weed, Yorkshire Fog Grass	2.5 kg	Apply using a boom spray to bare ground prior to weed emergence. Apply as a directed spray in 300 to 500 L water/hectare. Avoid contact with foliage or fruit. An application in early autumn will give winter weed control or in early to mid-spring will give full summer weed control. Note: <i>For grapes only:</i> Not recommended for grapes grown in sand or loamy sand soils with less than 1% organic matter and pH greater than 7.5 as veinal chlorosis may occur. <i>For almond and cherries only:</i> DO NOT use on coarse textured soil such as sand, loamy sand, gravelly sand and fine sand as veinal chlorosis may occur.
	Couch Grass [†] , Dandelion, Curled Dock, False Caper, Johnson Grass [†] , Skeleton Weed, Sorrel, Soursob	5.0 kg	
	Pigweed (<i>Portulaca</i>)	1.25 kg ZOLIAR DF + 2.0 L Simazine 500 g/L	When specific weeds are present as a major pest they will be more effectively controlled by tank mixes of ZOLIAR DF + Simazine.
	Barnyard Grass, Clammy Goosefoot, Cobbler's Pegs, Green Pigeon Grass, Redroot Amaranth, Summer Grass, Wireweed	1.9 kg ZOLIAR DF + 2.0 L Simazine 500 g/L	

[†] Suppression only

NOT TO BE USED FOR ANY PURPOSE, OR IN ANY MANNER, CONTRARY TO THIS LABEL UNLESS AUTHORISED UNDER APPROPRIATE LEGISLATION.

WITHHOLDING PERIOD: NOT REQUIRED WHEN USED AS DIRECTED