

66222-138

8-6-2010

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

Ann Stout
Makhteshim-Agan of North America Inc.
4515 Falls of Neuse Road, Suite 300
Raleigh, NC 27609

Dear Ms. Stout:

AUG 6 2010

Subject: Revised Labeling
Oryzalin 4 A.S.
EPA Registration No. 66222-138
Your Submission Dated June 14, 2010

The amendment referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended is acceptable provided that you submit one (1) copy of your final printed labeling before you release the product for shipment.

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

If you have any questions concerning this letter please contact Mr. James Stone at 703-305-7391

Sincerely yours,

A handwritten signature in black ink, appearing to read "Kathryn V. Montague".

Kathryn V. Montague
Product Manager 23
Herbicide Branch
Registration Division (7505P)

Enclosure

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Oryzalin 4 A.S.

Herbicide

A PREEMERGENCE SURFACE-APPLIED HERBICIDE FOR THE CONTROL OF MANY ANNUAL GRASSES AND CERTAIN BROADLEAF WEEDS IN CITRUS, FRUIT AND NUT TREES, BERRIES, VINEYARDS, AND CHRISTMAS TREE PLANTATIONS

ACTIVE INGREDIENT:

Oryzalin: 3,5-dinitro-N4, N4-dipropylsulfanilamide

% BY WT.

41.0%

OTHER INGREDIENTS:

59.0%

TOTAL 100.0%
ACCEPTED

Contains 4 pounds of active ingredient per gallon.

with COMMENTS
In EPA Letter Dated:

AUG - 6 2010

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

66222-138

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

Manufactured for:

Makhteshim Agan of North America, Inc.
4515 Falls of Neuse Rd., Suite 300
Raleigh, NC 27609

EPA Reg. No. 66222-138

EPA Est. No. XXXXXXXXXX

NET CONTENTS: _____ GALLONS

FIRST AID

IF ON SKIN OR CLOTHING:	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.
IF IN EYES:	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes; then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
IF SWALLOWED:	<ul style="list-style-type: none"> • Call a poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
IF INHALED:	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance; then give artificial respiration, preferably by mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact PROSAR at 1-877-250-9291 for emergency medical treatment information.

**PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS
CAUTION**

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves
- Shoes plus socks
- Mixers and loaders must wear a chemical-resistant apron in addition to other PPE

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

ENGINEERING CONTROLS STATEMENT: When handlers use closed systems or enclosed cabs in a manner that meets the requirement listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish. 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 contaminate water when disposing of equipment washwaters. Cover or incorporate spills.

DIRECTIONS FOR USE

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

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

AGRICULTURAL USE REQUIREMENTS

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

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

Workers may enter treated areas without required PPE during the reentry interval following 1/2-1 inch of rainfall or irrigation if they are performing tasks that do not involve contact with the soil subsurface; otherwise, PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated such as plants, soil, or water is:

- Coveralls
- Chemical-resistant gloves
- Shoes plus socks

PRODUCT INFORMATION

Read all directions for use carefully before applying.

Oryzalin 4 A.S. herbicide is a preemergence, surface applied herbicide for the control of many annual grasses and certain broadleaf weeds in citrus, fruit and nut trees, berries, vineyards, and Christmas trees plantations. Oryzalin 4 A.S. controls susceptible annual weeds by disrupting plant growth processes during germination. Oryzalin 4 A.S. may be applied in liquid sprays of water or liquid fertilizer. Oryzalin 4 A.S. may be tank mixed with other herbicides to control existing vegetation or improve the spectrum of weeds controlled. Oryzalin 4 A.S. alone does not control established weeds.

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Oryzalin 4 A.S. may be applied before or after transplanting of the crop. If applied prior to transplanting: (1) disturbance of surface soil should be minimized to prevent loss of weed control; and (2) exposure of the roots of transplants to treated soil should be minimized to avoid any possibility of crop injury.

USE PRECAUTIONS AND RESTRICTIONS

- Do not graze or feed forage from treated fields or orchards to livestock.
- Poor weed control may result if directions are not carefully followed.
- Do not over apply Oryzalin 4 A.S. Over application may result in crop injury or soil residue.
- Do not plant any root crop for 12 months following an Oryzalin 4 A.S. application.
- Do not use Oryzalin 4 A.S. on soils containing more than 5% organic matter.
- Apply Oryzalin 4 A.S. directly to the soil surface in orchards or vineyards.
- Carefully follow label directions to avoid poor weed control or crop injury.
- Chemigation: See instructions for chemigation in the **APPLICATION METHODS** section of this label.
- Do not aerially apply this product.

ROTATION CROP INTERVAL

To avoid crop injury, a 24-month rotational interval is suggested when rotating from tree and vine crops to row crops.

SOIL PREPARATION

Optimum herbicidal activity occurs when Oryzalin 4 A.S. is applied to the soil surface. Prior to application, existing unwanted vegetation should be destroyed by tillage or use of contact or translocated herbicides. Crop or weed residues, pruning, and trash should be thoroughly mixed into the soil by tillage equipment or removed before treatment. Soil should be in good tilth and free of clods at the time of application.

ACTIVATION AND CULTIVATION

A single ½–1 inch rainfall or sprinkler irrigation is required to activate Oryzalin 4 A.S. and move the herbicide into the zone of weed germination. Rainfall or irrigation of 1 inch or more is needed to activate Oryzalin 4 A.S. on fine-textured, high organic matter soils. If weeds begin to emerge, a shallow cultivation to a depth of 1–2 inches will destroy existing weeds and place Oryzalin 4 A.S. in the zone of weed germination.

MIXING DIRECTIONS

Oryzalin 4 A.S. Alone

Oryzalin 4 A.S. may be applied in water or most liquid fertilizer materials. Prior to mixing Oryzalin 4 A.S. in liquid fertilizer, refer to **TESTING FOR COMPATIBILITY IN LIQUID FERTILIZERS** section of this label for test procedures to determine compatibility with the fertilizer product to be used. The combination of Oryzalin 4 A.S. with solution and suspension-type fertilizers provides annual weed control equal to Oryzalin 4 A.S. applied in water. Individual state regulations relating to liquid fertilizer mixing, registration, labeling, and application are the responsibility of the individual and/or company offering the fertilizer and chemical mixture for sale.

Start with a clean spray tank. Fill the sprayer to ¼–½ of the required spray volume. Start agitation, shake the container well, add the correct amount of Oryzalin 4 A.S., continue agitation, and fill spray tank to required spray volume. Maintain continuous agitation from mixing through application.

Precaution: Do not allow the mixture to siphon back into the water source.

Oryzalin 4 A.S. in Tank Mix

Vigorous, continuous agitation during mixing, filling, and throughout application is required for all tank mixes. Sparger pipe agitators generally provide the most effective agitation in spray tanks. To prevent foaming in the spray tank, avoid stirring or splashing air into the spray mixture.

Oryzalin 4 A.S. may be tank mixed with label rates of other products and applied with water or most liquid fertilizer materials provided: (1) the tank mix product is labeled for the timing and method of application for the use site to be treated; (2) tank mixing is not prohibited by the label of the tank mix product; and (3) A jar test is performed to ensure the compatibility of products to be used in tank mixture.

TANK MIXING PRECAUTIONS

- Read carefully and follow all applicable use directions, precautions, and limitations on the respective product labels.

- Do not exceed application rates specified on this label.
- For products packaged in water-soluble packaging, do not tank mix with products containing boron or mix in equipment previously used to apply a product mixture containing boron unless the tank and spray equipment has been thoroughly cleaned.

Tank Mix Compatibility Testing: Perform a jar test prior to tank mixing to ensure compatibility of Oryzalin 4 A.S. and other products. Use a clear glass quart jar with lid and mix the tank mix ingredients in their relative proportions. Invert the jar containing the mixture several times and observe the mixture for approximately ½ hour. If the mixture balls-up, forms flakes, sludges, gels, oily films or layers, or other precipitates, it is not compatible and the tank mix combination should not be used.

Mixing Order (Tank Mixing with Water): Fill the spray tank to ¼–½ of the total spray volume. Start agitation. Add different formulation types in the order below allowing time for complete mixing and dispersion after addition of each product. Allow extra mixing and dispersion time for dry flowable products:

1. Add dry flowables; wettable powders; Oryzalin 4 A.S. or other aqueous suspensions; flowables and water-based solutions.
2. Maintain agitation and fill spray tank to ¾ of total spray volume. Then add any emulsifiable concentrates. Finish filling the spray tank. Maintain continuous agitation during mixing, final filling and throughout application. If spraying and agitation must be stopped before the spray tank is empty, the materials may settle to the bottom. Settled materials must be resuspended before spraying is resumed. A sparger agitator is particularly useful for this purpose. Settled material may be more difficult to resuspend than when originally mixed.

Tank Mixing with Liquid Fertilizer: Prior to mixing Oryzalin 4 A.S. with other products in liquid fertilizer, refer to the tank mix product manufacturer's label to determine if application in liquid fertilizer is allowed. Also refer to **TESTING FOR COMPATIBILITY IN LIQUID FERTILIZERS** section of this label for testing procedures to determine tank mix compatibility with the liquid fertilizer product to be used. The combination of Oryzalin 4 A.S. with solution and suspension-type fertilizers provides annual weed control equal to Oryzalin 4 A.S. applied in water. Individual state regulations relating to liquid fertilizer mixing, registration, labeling, and application are the responsibility of the individual and/or company offering the fertilizer and chemical mixture for sale. Read and follow all label instructions for each material to be added to the spray tank.

Vigorous continuous agitation is required for all tank mixes. Sparger pipe agitators generally provide the best agitation in spray tank. To prevent foaming, keep the end of the fill pipe below the surface of the water in the spray tank during filling to prevent air from being stirred or splashed into the mixture.

Mixing Order (Tank Mixing With Liquid Fertilizer): Fill the spray tank to ¾ of the total spray volume required. Start agitation. Add different formulation types in the following order allowing time for complete mixing and dispersion after addition of each product; allow extra mixing and dispersion time for dry flowable products: Dry flowables; wettable powders; Oryzalin 4 A.S. or other aqueous suspensions; flowables; water-based solutions; and any emulsifiable concentrates.

Finish filling spray tank. Maintain continuous agitation during mixing, final filling, and throughout application. If spraying and agitation must be stopped before the spray tank is empty, the materials may settle to the bottom. Settled materials must be suspended before spraying is resumed. A sparger agitator is particularly useful for this purpose. Settled materials may be more difficult to resuspend than when originally mixed.

Premixing: When tank mixing, initial mixing and dispersion of certain dry flowable or wettable powder products may be improved by premixing with water (slurrying). Follow product label instructions for each material. Adding the slurried material to the spray tank through a 20–35 mesh wetting screen will help assure good initial dispersion. Line screens in the tank through a 20–35 mesh wetting screen will help assure good initial dispersion. Line screens in the tank should be no finer than 50 mesh (100 mesh is finer than 50 mesh).

TESTING FOR COMPATIBILITY IN LIQUID FERTILIZERS

Oryzalin 4 A.S. alone or in combination with dry flowable (DF), wettable powder (WP), aqueous suspension (AS), flowable (F), liquid (L), solution (S), or emulsifiable concentrate (EC) formulations may not combine properly with some liquid fertilizer materials. Small quantities of such mixtures should always be tested before full-scale mixing. Follow the testing procedure below to determine if a compatibility agent is needed or which compatibility agent works best in your liquid fertilizer plus herbicide mixture.

Testing Procedure

1. Add 1 pint of liquid fertilizer to 1 quart glass jar.
2. Add 1-4 teaspoonfuls of DF, WP, Oryzalin 4 A.S., other AS formulations, F, or L formulations depending on mixing ratio required to the liquid fertilizer. Close the jar and shake until evenly dispersed after addition of each formulation. If dry flowable or wettable powder formulations do not disperse well, it may be necessary to slurry the materials in a small amount of water before addition to the liquid fertilizer.
3. After dispersing the materials in step 2, add any S formulations to the jar and shake well. Finally, add EC formulations to the mixture and shake well. Observe the jar for about 10 minutes. If materials rise to the surface and form a thick layer that will not redisperse when agitated, a compatibility agent is needed. If the mixture is easily redispersed with slight agitation, a compatibility agent is not required. Good agitation must be provided to maintain dispersion in the spray tank from mixing through application.
4. If the need for a compatibility agent is demonstrated in step 3, follow the procedure outlined below: Using a clean clear plastic or glass container, repeat step 1 above and add 1/2 teaspoon of the compatibility agent to the liquid fertilizer mixture. Shake well and then repeat steps 2 and 3.

An effective compatibility agent will cause the mixture to remain uniformly mixed with little or no separation for 1/2 hour or longer. If slight separation occurs, 2-3 inversions of container should be sufficient to uniformly redisperse the mixture. If layers form which will not disperse, try adding additional compatibility agent or use an alternative compatibility agent to achieve a uniform mixture. Use a clean jar in each test. A compatible mixture will have a uniform appearance and will be relatively easy to redisperse with gentle agitation of the jar.

COMPATIBILITY AGENTS

Use a phosphate ester-type surfactant designed for use with liquid fertilizers mixed at rates as low as 1 1/2- 2 pints per ton of liquid fertilizer. This type of surfactant usually doesn't work well as a compatibility agent for tank mixes in plain water. Add the compatibility agent just before adding herbicides. Read and follow label directions for the compatibility agent.

APPLICATION METHODS

Ground Broadcast Application

Apply Oryzalin 4 A.S. directly to the soil surface of the orchard or vineyard in a total spray volume of 20-40 gallons per acre (broadcast basis) using any properly calibrated low pressure herbicide sprayer that will apply the spray uniformly. Use herbicide nozzle tips and screens no finer than 50 mesh for nozzle and inline strainers. As the amount of spray volume per acre decreases, the importance of accurate calibration and uniform application increases. Check the sprayer daily to insure proper calibration and uniform application. Avoid boom overlaps that will increase rates above labeled rates.

Band Application

For band application, use the following formula to calculate the required amount of product per acre.

$$\frac{\text{Band Width (inches)}}{\text{Row Width (inches)}} \times \text{Broadcast rate per acre} = \text{Amount required per acre}$$

CHEMIGATION

Oryzalin 4 A.S. may be applied through properly equipped chemigation systems for weed control in fruit and nut orchards or vineyards. Read and follow all label instructions outlined below concerning chemigation before applying Oryzalin 4 A.S. by this method.

Chemigation Use Precautions: Apply this product only through solid set or hand move systems designed to distribute sprinkler irrigation beneath the tree canopy. Solid set systems utilizing tall risers for overhead application are excluded except for dormant season applications of Oryzalin 4 A.S. Do not apply this product through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.

If you have questions about calibration you should contact state extension specialists, equipment manufacturers, or other experts.

Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system.

A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Sprinkler Chemigation Directions: The following directions must be followed for all sprinkler irrigation systems (solid set and hand move systems):

1. The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
3. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
5. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point that pesticide distribution is adversely affected.
6. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Do not apply when wind speed favors drift beyond the area intended for treatment.
8. Oryzalin 4 A.S. should be injected continuously throughout the chemigation period. The chemigation metering pump should be checked periodically during application to insure proper operation.
9. The injection metering pump must be calibrated as specified by the manufacturer.
10. During chemigation, maintain agitation in supply tank at all times.
11. Oryzalin 4 A.S. may cause some staining of plastic hoses and tanks.
12. Apply Oryzalin 4 A.S. in sprinkler irrigation equal to 1/2 to 1 inch of water.

Chemigation System Calibration: Sample calculation for use of Oryzalin 4 A.S. in a chemigation system:

- Assume, in this example, 35 acres are to be covered by a chemigation treatment.
- Product required, assuming 1 quart per acre is 35 quarts (8.75 gallons).
- Prepare a mixture containing 1 part water and 1 part Oryzalin 4 A.S. by adding 8.75 gallons of product to the supply tank containing an equal amount of water (total volume = 17.5 gallons).
- Adjust the injection system to deliver 17.5 gallons during the time required to apply 1 inch of water to 35 acres.
- If the irrigation system requires 5 hours to apply 1 inch of water to 35 acres, the injection rate is 3.5 gallons per hour and is calculated as follows:
 $17.5 \text{ gallons} / 5 \text{ hours} = 3.5 \text{ gallons/hour}$
 $[3.5 \text{ gallons} = 448 \text{ fluid ounces (fl oz)}]$

Proper calibration requires the injection pump to be adjusted to deliver 7.47 fl oz per minute and is calculated as follows:

$$448 \text{ fl oz per hr} / 60 \text{ min per hr} = 7.47 \text{ fl oz/min.}$$

Chemigation Mixing Directions: The injection mixture (slurry) with minimum volume may be prepared by adding the required amount of Oryzalin 4 A.S. to an equal amount of water in the injection tank (ratio Oryzalin 4 A.S. to water = 1:1). Meter the mixture into the irrigation system during the entire irrigation period. Additional dilution of Oryzalin 4 A.S. may be necessary for accurate calibration of equipment designed to deliver a larger injection volume per hour. Maintain supply tank agitation throughout the irrigation period.

Undiluted Oryzalin 4 A.S. should not be injected into chemigation systems.

WEEDS AND GRASSES CONTROLLED

ANNUAL GRASSES

Common Name	Scientific Name
Barley, little	<i>Hordeum pusillum</i>
Barnyardgrass (water grass)	<i>Echinochloa crus-galli</i>
Bluegrass, annual (poa)	<i>Poa annua</i>

Common Name	Scientific Name
Brachiaria (signalgrass)	<i>Brachiaria</i> spp.
Browntop panicum	<i>Panicum fasciculatum</i>
Crabgrass (large crabgrass) (smooth crabgrass)	<i>Digitaria</i> spp.
crowfootgrass	<i>Dactyloctenium aegyptium</i>
cupgrass	<i>Eriochloa gracilis</i>
downy brome	<i>Bromus tectorum</i>
Fall panicum (spreading panicgrass)	<i>Panicum dichotomiflorum</i>
foxtails (bottlegrass) (bristlegrass) (giant foxtail) (green foxtail) (pigeongrass) (robust foxtail) (yellow foxtail)	<i>Setaria</i> spp.
guineagrass (narrowleaf panicum)	<i>Panicum maximum</i>
goosegrass	<i>Eleusine indica</i>
johnsongrass (seedling only)	<i>Sorghum halepense</i>
junglerice	<i>Echinochloa colonum</i>
lovegrass, Mexican	<i>Eragrostis mexicana</i>
lovegrass, orcutt	<i>Eragrostis orcuttiana</i>
oat, wild	<i>Avena fatua</i>
ryegrass, annual (Italian)	<i>Lolium multiflorum</i>
sandbur, field	<i>Cenchrus incertus</i>
sprangletop, red	<i>Leptochloa filiformis</i>
Texas panicum (buffalograss) (Coloradograss)	<i>Panicum texanum</i>
witchgrass	<i>Panicum capillare</i>

ANNUAL BROADLEAF WEEDS

Common Name	Scientific Name
Carpet weed	<i>Mollugo verticillata</i>
Chickweed	<i>Stellaria media</i>
Cudweed	<i>Gnaphalium chilense</i>
Fiddleneck, coast	<i>Amsinckia intermedia</i>
Florida pusley (Florida purslane) (Mexican clover) (pusley)	<i>Richardia scabra</i>
henbit	<i>Lamium amplexicaule</i>
knotweed, prostrate	<i>Polygonum aviculare</i>
lambsquarters	<i>Chenopodium album</i>
pigweeds (carelessweed) (prostrate pigweed) (redroot pigweed) (rough pigweed) (smooth pigweed) (spiny pigweed) (tumble pigweed)	<i>Amaranthus</i> spp.
puncturevine	<i>Tribulus terrestris</i>

purslane, common
 rockpurslane, redmaids
 shepherdspurse

Portulaca oleracea
Calandrinia caulescens
Capsella bursa-pastoris

ORYZALIN 4 A.S. PROVIDES PARTIAL CONTROL OR SUPPRESSION OF:

Common Name	Scientific Name
Filaree, redstem	<i>Erodium cicutarium</i>
Filaree, whitestem	<i>Erodium moschatum</i>
Groundsel, common	<i>Senecio vulgaris</i>
Ladysthumb	<i>Polygonum persicaria</i>
Lettuce, prickly	<i>Lactuca serriola</i>
Mallow, common	<i>Malva neglecta</i>
Milkweed, climbing	<i>Sarcostemma cynanchoides</i>
Morningglory, annual	<i>Ipomoea</i> spp.
Mustard, black	<i>Brassica nigra</i>
Mustard, wild	<i>Sinapis arvensis</i>
Nightshade, black	<i>Solanum nigrum</i>
Prickly sida (teaweed)	<i>Sida spinosa</i>
Ragweed, common	<i>Ambrosia artemisiifolia</i>
Ragweed, giant	<i>Ambrosia trifida</i>
Rocket, London	<i>Sisymbrium irio</i>
Smartweed, annual	<i>Polygonum</i> spp.
Sowthistle, annual	<i>Sonchus oleraceus</i>
Spurge, prostrate	<i>Euphorbia humistrata</i>
Spurge, spotted	<i>Euphorbia maculata</i>
Velvetleaf	<i>Abutilon theophrasti</i>

CROP USE INSTRUCTIONS

TREE AND VINE CROPS – CITRUS, STONE FRUIT, POME FRUIT, AND NUT TREES, BERRIES AND VINEYARDS (NON-BEARING AND BEARING)

Apply Oryzalin 4 A.S. as a preemergence treatment to control annual grasses and broadleaf weeds listed in **PRODUCT INFORMATION** section.

For orchard crops including citrus, pome fruits, stone fruits, and tree nuts, apply product only as a strip treatment in the tree rows; do not apply to row middles or drive rows.

Crop Listing: Oryzalin 4 A.S. may be used in the following crop groupings:

Citrus Fruits Crop Group such as:	Pome & Stone Fruits Crop Group such as:	Tree Nuts Crop Group such as:
citrus citron	apple	almond
citrus hybrids	apricot	chestnut
grapefruit	cherry	chinquapin
kumquat	crabapple	filbert
lime	loquat	hickory nut
lemon	mayhaw	macadamia nut
mandarin (tangerine)	nectarine	pecan
orange	peach	pistachio
pummelo	pear	walnut
	plum	
	prune	
	quince	
Berries Crop Group such as:	Vineyards	
blackberry	grapes	
blueberry*		
boysenberry		
currant		

- dewberry
- elderberry
- gooseberry
- loganberry
- raspberry

*Do not apply Oryzalin 4 A.S. to lowbush blueberries.

In addition to the crops within crop groupings listed above, Oryzalin 4 A.S. may be used in the following crops: avocado, fig, guava, kiwi fruit, olive, papaya, and pomegranate.

Broadcast Application Rates

Soil Texture	Length of Control	Oryzalin 4 A.S. (qt/acre)	Minimum Time Between Applications (months)	Total Amount Allowed Per Year (qt/acre)
All Soil Textures	Short Term (2-4 months)	2	2.5	12
	Long Term (6-8 months)	4	2.5	12
	(8-12 months)	6	2.5	12

Chemigation

Oryzalin 4 A.S. may be applied through properly equipped chemigation systems for weed control in fruit and nut orchards and vineyards. Refer to the **CHEMIGATION** section of this label for use directions. Do not apply Oryzalin 4 A.S. by chemigation unless use directions are carefully followed.

Apply Oryzalin 4 A.S. by chemigation prior to weed germination or immediately after existing weeds have been controlled. Control existing unwanted vegetation by tillage or with a contact or translocated herbicide. Use broadcast application rates for Oryzalin 4 A.S. alone. Apply in sprinkler irrigation equal to 1/2-1 inch of water on medium- to fine-textured or high organic matter soils.

Oryzalin 4 A.S. Tank Mix Instructions

To broaden the spectrum of weed control, Oryzalin 4 A.S. may be applied in tank mix combination with labeled rates of other herbicide products, including, but not limited to Goal, Gramoxone Super, Princep (Simazine), Roundup/glyphosate, or Solicam herbicide. Performance and risk of carryover from tank mixed products used in combination with Oryzalin 4 A.S. at labeled rates is the same as when each product is used separately.

Non-Bearing Tree and Vine Crops: For additional broad spectrum control of broadleaf weeds in non-bearing fruit and nut trees, berries, and vineyards, Oryzalin 4 A.S. may be applied in tank mix combination with labeled rates of Gallery 75 Dry Flowable herbicide. Non-bearing crops are defined as plants that will not bear fruit for at least one year after treatment.

Follow tank mixing instructions in the **MIXING DIRECTIONS** section of this label when mixing Oryzalin 4 A.S. with other products.

Users should always consult the manufacturer's label for the products to be tank mixed with Oryzalin 4 A.S. for specific information on use rates, additional weeds controlled, rotational crop restrictions or risk of carryover, special tank mix instructions, additional use directions, precautions and limitations.

CHRISTMAS TREE PLANTATIONS

Oryzalin 4 A.S. Alone

Apply Oryzalin 4 A.S. as a directed spray to the soil surface or as an overtop spray to established plantings of field grown Christmas tree species, including fir (*Abies* spp.), pine (*Pinus* spp.), and spruce (*Picea* spp.). Do not apply to Douglas-fir (*Pseudotsuga menziesii*). Do not apply to seedbeds or seedling transplant beds. Apply only to established plantings. Established plantings are defined as those that have been transplanted into their final growing location for a sufficient period of time to allow the soil to be firmly settled around the roots from packing and rainfall or irrigation. Follow all instructions provided in the **PRODUCT INFORMATION** section of this label.

Broadcast Application Rates

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Length of Control	Amount of Oryzalin		Minimum Time Between Applications (months)	Total Amount Allowed Per Year (qt/acre)
	(qt/acre)	(fl oz/ 1000 sq ft)		
2-4 months	2	1.5	2	8
4-8 months	4	3	2	8

Tank Mix Combinations

Tank mix combinations of Oryzalin 4 A.S. plus other labeled herbicides may be used as directed sprays or overtop sprays in established Christmas tree plantings. When applied according to use directions, these tank mixes will provide control of susceptible weed species listed on the respective product labels. Refer to label of the product to be tank mixed with Oryzalin 4 A.S. for specific use directions, precautions, and limitations before use.

Oryzalin 4 A.S. Herbicide Plus Roundup/Glyphosate Herbicide:

Apply tank mix combinations of Oryzalin 4 A.S. plus Roundup only as directed sprays in Christmas tree plantings. When applied according to use directions, Oryzalin 4 A.S. plus Roundup will provide postemergence control of susceptible weed species listed on the label for Roundup and residual preemergence control of susceptible weed species listed on the label for Oryzalin 4 A.S. Refer to the label for Roundup for specific use directions, precautions, and limitations before use.

Precautions:

- Do not apply sprays containing Roundup over the top of Christmas tree plantings.
- Extreme care must be exercised to avoid contact of spray containing Roundup with foliage and stems of Christmas trees or severe damage or death may result.

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Store in original container only. In case of leak or spill, use absorbent materials to contain liquids and dispose as waste.

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

CONTAINER DISPOSAL:

Nonrefillable Container (five gallons or less): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning, or 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.

Nonrefillable Container (greater than five gallons): Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling or reconditioning, or 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.

Refillable Container: Refillable container. Refill this container with oryzalin only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

LIMITATION OF WARRANTY AND LIABILITY

Read the entire directions for use, conditions of warranties and limitations of liability before using this product. If terms are not acceptable, return the unopened product container at once.

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By using this product, user or buyer accepts the following **CONDITIONS, DISCLAIMER OF WARRANTIES and LIMITATIONS OF LIABILITY.**

CONDITIONS: The directions for use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Makhteshim Agan of North America, Inc. All such risks shall be assumed by the user or buyer.

DISCLAIMER OF WARRANTIES: To the extent consistent with applicable law, Makhteshim Agan of North America, Inc. makes no other warranties, express or implied, of merchantability or of fitness for a particular purpose or otherwise, that extend beyond the statements made on this label. No agent of Makhteshim Agan of North America, Inc. is authorized to make any warranties beyond those contained herein or to modify the warranties contained herein. To the extent consistent with applicable law, Makhteshim Agan of North America, Inc. disclaims any liability whatsoever for special, incidental or consequential damages resulting from the use or handling of this product.

LIMITATIONS OF LIABILITY: To the extent consistent with applicable law, the exclusive remedy of the user or buyer for any and all losses, injuries or damages resulting from the use or handling of this product, whether in contract, warranty, tort, negligence, strict liability or otherwise, shall not exceed the purchase price paid or at Makhteshim Agan of North America, Inc.'s election, the replacement of product.

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