UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

April 17, 2020

Robert Avalos
Manager of Registrations
Loveland Products Inc.
PO Box 1286
Greeley, CO 80632-1286

Subject: Registration Review Label Mitigation for Oryzalin
Product Name: Oryzalin Liquid
EPA Registration Number: 34704-865
Application Dates: 9/12/19
Decision Numbers: 555221

Dear Mr. Avalos:

The Agency, in accordance with the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, has completed reviewing all the information submitted with your application to support the Registration Review of the above referenced product in connection with the Oryzalin Interim Decision, and has concluded that your submission is acceptable. The label referred to above, submitted in connection with registration under FIFRA, as amended, is acceptable.

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance.

A copy of your label stamped "Accepted" is enclosed. Products shipped after 12 months from the date of this amendment must bear the new revised label. Your release for shipment of the product bearing the amended label constitutes acceptance of these conditions. If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6.

If you have any questions about this letter, please contact Darius Stanton by phone at 703-347-0433, or via email at Stanton.darius@epa.gov.

Sincerely,

Linda Arrington, Branch Chief
Risk Management and Implementation Branch 4
Pesticide Re-Evaluation Division
Office of Pesticide Programs

Enclosure

ORYZALIN	GROUP	3	HERBICIDE

Loveland PRODUCTS

Oryzalin Liquid

A pre-emergence 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-N^4N^4-dipropylsulfanilamide):	40.4%
OTHER INGREDIENTS*:	59.6%
TOTAL	**100.0%**

Contains four pounds of active ingredient per gallon.

KEEP OUT OF REACH OF CHILDREN

CAUTION – PRECAUCIÓN

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand this label, find someone to explain it to you in detail).

EPA Reg. No. 34704-865
EPA Est. No. 34704-MS-1
Net Contents: 2.5 GAL (9.46 L)
[Print Code to be placed here]

FORMULATED FOR:
LOVELAND PRODUCTS, INC.
P.O. BOX 1286
GREELEY, COLORADO 80632-1286

ACCEPTED
04/17/2020
Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 34704-865

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Causes moderate eye irritation. May Cause Allergic Reactions in Some Individuals. Avoid contact with eyes or clothing.

Personal Protective Equipment (PPE)
Applicators and other handlers must wear:

- Coveralls over long-sleeved shirt and long pants
- Chemical-resistant gloves
- Chemical-resistant footwear
- Shoes plus socks
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron for mixers and loaders

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

Engineering Controls Statements
When handlers use closed systems or enclosed cabs 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.

FIRST AID	
If in eyes:	• 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.
FOR A MEDICAL EMERGENCY INVOLVING THIS PRODUCT CALL: 1-866-944-8565.	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. 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 or rinsate. Cover or incorporate spills.

Groundwater Advisory
Oryzalin is known to leach through soil into groundwater under certain conditions as a result of label use. This chemical may leach into groundwater if used in areas where soils are permeable, particularly where the water table is shallow.

NON-TARGET ORGANISM ADVISORY STATEMENT: This product is toxic to plants and may adversely impact the forage and habitat of non-target organisms, including pollinators, in areas adjacent to the treated site. Protect the forage and habitat of non-target organisms by following label directions intended to minimize spray drift.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read all Directions for Use carefully before applying.

Do not formulate this product into other end-use products.

Shake Well Before Using.

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 re-entry interval following ½ to 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 over long-sleeved shirt and long pants
- Chemical-resistant gloves
- Chemical-resistant footwear
- Shoes plus socks
- Chemical-resistant headgear for overhead exposure
- Chemical-resistant apron for mixers and loaders

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

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

For help with any spill, leak, fire or exposure involving this material, call day or night CHEMTREC – 1-800-424-9300

WEED RESISTANCE MANAGEMENT

The active ingredient in this product is oryzalin. Oryzalin mechanism of action (MOA) is mitotic inhibition by interfering with the microtubule assembly process of cell division belonging to MOA Group 3. A given weed population may contain or develop resistance to an herbicide after repeated use. Appropriate resistance-management strategies should be followed to mitigate or delay resistance. If levels of control provided by applications of this product is reduced and cannot be accounted for by factors such as misapplication, abnormal levels of target species or extremes of weather, it may be the case that target species have developed a strain resistant to applications of this product. Contact your local extension agent, crop advisor, or sales representative to find out if suspected resistant weeds have been found in your region.

Suspected herbicide-resistant weeds may be identified by these indicators:

- Failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds;
- A spreading patch of non-controlled plants of a particular weed species; and
- Surviving plants mixed with controlled individuals of the same species.

If resistance develops, this product may not provide sufficient control of target species. Where you suspect target species are developing resistance, contact State/local agricultural advisors. Integrated weed management guidelines promote an economically viable, environmentally sustainable, and socially acceptable weed control program regardless of the herbicide(s) used. The highlights of successful integrated weed management include:

- Correctly identify weeds and look for trouble areas within field to identify resistance indicators.
- Rotate crops.
- Start the growing season with clean fields.
- Rotate herbicide modes of action within a growing season sequence or among growing seasons with different herbicide groups that control the same weeds in a field.
- Apply listed rates of herbicides to actively growing weeds at the correct time with the right application techniques.
- Control any weeds that may have escaped the herbicide application.
- Thoroughly clean field equipment between fields.
- Scout before and after application.
- Contact your local extension specialist, certified crop advisors and/or manufacturer for herbicide resistance management and/or integrated weed management recommendations for specific crops and resistant weed biotypes.

Report any incidence of non-performance of this product against a particular weed species to your Loveland Products, Inc. retailer, representative or call 1-888-574-2878. If resistance is suspected, treat weed escapes with an herbicide having a different mechanism of action and/or use non-chemicals means to remove escapes, as practical, with the goal of preventing further seed production.

SPRAY DRIFT

Ground Boom Applications:

- User must only apply with the release height recommended by the manufacturer, but no more than 4 feet above the ground or crop canopy.
- Applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speeds exceed 15 miles per hour at the application site.
- Do not apply during temperature inversions.

Boomless Ground Applications:

- Applicators are required to use a medium or coarser droplet size (ASABE S572.1) for all applications.
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- Do not apply during temperature inversions.

SPRAY DRIFT ADVISORIES

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT.

BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

IMPORTANCE OF DROPLET SIZE

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

Controlling Droplet Size - Ground Boom

- Volume - Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- Pressure - Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.

- Spray Nozzle - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

BOOM HEIGHT - Ground Boom
For ground equipment, the boom should remain level with the crop and have minimal bounce.

SHIELDED SPRAYERS
Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

TEMPERATURE AND HUMIDITY
When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

TEMPERATURE INVERSIONS
Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing. Avoid applications during temperature inversions.

WIND
Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS.

Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

GENERAL INFORMATION

This product is a pre-emergence, 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. This product controls susceptible annual weeds by disrupting plant growth processes during germination. This product may be applied in liquid sprays of water or liquid fertilizer. This product may be tank mixed with other herbicides to control existing vegetation or improve the spectrum of weeds controlled. This product alone does not control established weeds.

This product 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.

GENERAL 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 this product. Over-application may result in crop injury or soil residue.
- Do not plant any root crop for 12 months following an application of this product.
- Do not use this product on soils containing more than 5% organic matter.
- Apply this product 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 "Application Methods".

Do not aerially apply this product.

Rotation Crop Interval: To avoid crop injury, a 24-month rotational interval is recommended when rotating from tree and vine crops to row crops.

SOIL PREPARATION

Optimum herbicidal activity occurs when this product 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.

ACTIVATIONS AND CULTIVATION

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

MIXING DIRECTIONS

Oryzalin Liquid - Alone

This product may be applied in water or most liquid fertilizer materials. Prior to mixing this product in liquid fertilizer, refer to "Testing for Compatibility in Liquid Fertilizers" for test procedures to determine compatibility with the fertilizer product to be used. The combination of this product with solution and suspension-type fertilizers provides annual weed control equal to Oryzalin Liquid 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 1/3 to ½ of the required spray volume. Start agitation. Shake the container well and add the correct amount of this product, 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 LIQUID HERBICIDE 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.

This product 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 recommended application rates.
- 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: A jar test is recommended prior to tank mixing to ensure compatibility of this product 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 to 1/3 of the total spray volume. 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):

1. Add dry flowables; wettable powders; Oryzalin Liquid 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 re-suspended before spraying is resumed. A sparger agitator is particularly useful for this purpose. Settled material may be more difficult to re-suspend than when originally mixed.

Tank Mixing with Liquid Fertilizer: Prior to mixing this product with other products in liquid fertilizer, refer to the tank mix product manufacture's label to determine if application in liquid fertilizer is recommended. Also refer to "Testing for Compatibility in Liquid Fertilizers" for testing procedures to determine tank mix compatibility with the liquid fertilizer product to be used. The combination of this product with solution and suspension type fertilizers provides annual weed control equal to this product applied in water. Individual state regulations relating to 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 Liquid or other aqueous suspensions, flowables, water-based solutions, and any emulsifiable concentrates.

Finish filling spray tank. Maintain continuous agitation during mixing, final filling and thorough- out 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 re-suspend 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). Where recommended, follow product label instructions for each material. Adding the slurried material to the spray tank through a 20 to 35 mesh-wetting screen will help assure good initial dispersion. Line screens in the tank through a 20 to 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 Liquid 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 to 4 teaspoonfuls of DF, WP, Oryzalin Liquid, 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 re-disperse when agitated, a compatibility agent is needed. If the mixture is easily re-dispersed with slight agitation, a compatibility agent is not required. Good agitation, however, 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, the following procedure is recommended: Using a clean, clear plastic or glass container, repeat step 1 above and add ½ 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 ½ hour or longer. If slight separation occurs, 2 to 3 inversions of container should be sufficient to uniformly re-disperse 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 re-disperse 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 ½ to 2 pints per ton of liquid fertilizer. This type of surfactant usually doesn't work well as 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 this product directly to the soil surface of the orchard or vineyard in a total spray volume of 20 to 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 in-line 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 those recommended.

Band Application

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

Band Width (inches)/Row Width (inches) X Broadcast rate = Amount required per acre per acre

Chemigation

This product 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 this product 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 applications are excluded, except for dormant season applications of this product. 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 non-uniform 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 recommended 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. This product 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. This product may cause some staining of plastic hoses and tanks.
12. Apply this product in sprinkler irrigation equal to ½ to 1 inch of water.

Chemigation System Calibration: Sample calculation for use of this product 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 of this product 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 gallons/5 hours=3.5 gallons/hour
  [3.5 gallons = 448 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 fl. oz. per hr./60 min per hr. = 7.47 fl. oz./min.

Chemigation Mixing Directions: The injection mixture (slurry) with minimum volume may be prepared by adding the required amount of this product to an equal amount of water in the injection tank (ratio of this product to water = 1:1). Meter the mixture into the irrigation system during the entire irrigation period. Additional dilution of this product 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 Liquid should not be injected into chemigation systems.

WEEDS AND GRASSES CONTROLLED
Annual Grasses

Common Name	**Scientific Name**
barley, little	*Hordeum pusillum*
barnyardgrass (watergrass)	*Echinochloa crus-galli*
bluegrass, annual (poa)	*Poa annua*
brachiaria (signalgrass)	*Brachiaria* spp.
browntop panicum	*Panicum fasciculatum*
crabgrass	*Digitaria* spp.
(large crabgrass)	
(smooth crabgrass)	
crowfootgrass	*Dactyloctenium aegyptium*
cupgrass	*Eriochloa gracilis*

Common Name	Scientific Name
downy brome	*Bromus tectorum*
fall panicum	*Panicum dichotomiflorum*
(spreading panicgrass)	
foxtails	*Setaria* spp.
(bottlegrass)	
(bristlegrass)	
(giant foxtail)	
(green foxtail)	
(pigeongrass)	
(robust foxtail)	
(yellow foxtail)	
guineagrass	*Panicum maximum*
(narrowleaf panicum)	
goosegrass	*Eleusine indica*
johnsongrass (seedling only)	*Sorghum halepense*
junglerice	*Echinochloa colonum*
lovegrass, Mexican	*Eragrostis mexicana*
lovegrass, orcutt	*Eragrostis orcuttiana*
oat, wild	*Avena fatua*
ryegrass, annual (Italian)	*Lolium multiflorum*
sandbur, field	*Cenchrus incertus*
sprangletop, red	*Leptochloa filiformis*
Texas panicum	*Panicum texanum*
(buffalograss)	
(Coloradograss)	
witch grass	*Panicum capillare*

Annual Broadleaf Weeds

Common Name	Scientific Name
carpet weed	*Mollugo verticillata*
chickweed	*Stellaria media*
cudweed	*Gnaphalium chilense*
fiddleneck, coast	*Amsinckia intermedia*
Florida pusley	*Richardia scabria*
(Florida purslane)	
(Mexican clover)	
(pusley)	
henbit	*Lamium amplexicaule*
knotweed, prostrate	*Polygonum aviculare*
lambsquarters	*Chenopodium album*
pigweeds	*Amaranthus* spp.
(carelessweed)	
(prostrate pigweed)	
(redroot pigweed)	
(smooth pigweed)	
(spiny pigweed)	
(tumble pigweed)	
puncturevine	*Tribulus terrestris*
purslane, common	*Portulaca oleracea*
rockpurslane, redmaids	*Calandrinia caulescens*
shepherdspurse	*Capsella bursa-pastoris*

This product provides partial control or suppression of:

Common Name	Scientific Name
filaree, redstem	*Erodium cicutarium*
filaree, whitestem	*Erodium moschatum*
groundsel, common	*Senecio vulgaris*
ladysthumb	*Polygonum persicaria*
lettuce, prickly	*Lactuca serriola*
mallow, common	*Malva neglecta*
milkweed, climbing	*Sarcostemma cynanchoides*
morningglory, annual	*Ipomoea* spp.
mustard, black	*Brassica nigra*
mustard, wild	*Sinapis arvensis*
nightshade, black	*Solanum nigrum*
prickly sida (teaweed)	*Sida spinosa*
ragweed, common	*Ambrosia artemisiifolia*
ragweed, giant	*Ambrosia trifida*
rocket, London	*Sisymbrium irio*
smartweed, annual	*Polygonum* spp.
sowthistle, annual	*Sonchus oleraceus*
spurge, prostrate	*Euphorbia humistrata*
spurge, spotted	*Euphorbia maculate*
velvetleaf	*Abutilon theophr*

CROP-SPECIFIC USE DIRECTIONS

Tree and Vine Crops - Citrus, Fruit and Nut Trees, Berries and Vineyards (Non- Bearing and Bearing)

Apply this product as a pre-emergence treatment to control annual grasses and broadleaf weeds listed in "General Information" section.

Crop Listing: This product may be used in the following crop groupings:

Citrus Fruits such as:
citrus citron
citrus hybrids
grapefruit
kumquat
lime
lemon
mandarin (tangerine)
orange
pummelo

Pome and Stone Fruits such as:
apple
apricot
cherry
crabapple
loquat
mayhaw
nectarine
peach
pear
plum

prune
quince

Tree Nuts such as:
almond
chestnut
chinquapin
filbert
hickory nut
macadamia nut
pecan
pistachio
walnut

Berries such as:
blackberry
blueberry†
boysenberry
currant
dewberry
elderberry
gooseberry
loganberry
raspberry

Vineyards:
grapes

†Do not apply this product to lowbush blueberries.

In addition to the crops within groupings listed above, this product 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 Liquid (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

Management of Orchard and Vineyard Middle Strips with Reduced Rates

In areas between tree or vine rows apply 1-2 quarts/acre of this product for temporary suppression of weed growth in spring and summer months. Include a burndown treatment if existing weeds are present. Adjust rates of repeat applications as necessary to achieve re-establishment of desired vegetation during winter months.

Chemigation

This product may be applied through properly equipped chemigation systems for weed control in fruit and nut orchards and vineyards. Refer to "Chemigation" in "General Information" for use directions. Do not apply this product by chemigation unless these use directions are carefully followed.

Apply this product 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 recommended for this product alone. Apply in sprinkler irrigation equal to ½ to 1 inch of water on medium to fine textured or high organic matter soils.

Oryzalin Liquid Tank Mix Recommendations

To broaden the spectrum of weed control, this product 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 this product at recommended 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, this product 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 this product with other products.

User should always consult the manufacturer's label for the product(s) to be tank mixed with this product 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 Liquid - Alone

Apply this product 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 mensiesii*). Do not apply to seedbeds or seedling transplant beds. Apply only to established planting. 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 "General Information" section of this label.

Broadcast Application Rates

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

Tank Mix Combinations

Tank mix combinations of this product plus other labeled herbicides may be used as directed 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 this product for specific use directions, precautions and limitations before use.

Oryzalin Liquid Plus Roundup/Glyphosate Herbicide: Apply tank mix combinations of this product plus Roundup only as directed sprays in Christmas tree plantings. When applied according to use directions, this product plus Roundup will provide postemergence control of susceptible weed species listed on the label for Roundup and residual pre-emergence control of susceptible weed species listed on the label for this product. 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.

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BEFORE BUYING OR USING THIS PRODUCT, read the entire Directions for Use and the following Conditions of Sale and Limitation of Warranty and Liability. By buying or using this product, the buyer or user accepts the following Conditions of Sale and Limitation of Warranty and Liability, which no employee or agent of LOVELAND PRODUCTS, INC. or the seller is authorized to vary in any way.

Follow the Directions for Use of this product carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop or other plant injury, ineffectiveness, or other unintended consequences may result from such risks as weather or crop conditions, mixture with other chemicals not specifically identified in this product's label, or use of this product contrary to the label instructions, all of which are beyond the control of LOVELAND PRODUCTS, INC. and the seller. The buyer or user of this product assumes all such inherent risks.

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