

## **CUCURBIT VEGETABLES, CROP GROUP 9**

### General Information

#### PRODUCT INFORMATION

Read all label directions before use. All applications must be made according to the use directions that follow.

- Orondis Gold contains oxathiapiprolin and mefenoxam and is recommended for the control or suppression of the diseases listed on this label.
- Orondis Gold is active against Oomycete diseases listed on this label and has preventive, residual, eradicated and anti-sporulant activity.
- Orondis Gold is locally systemic, translaminar, and moves systemically in the xylem.
- See Section 7.0 for specific crop/disease directions.

#### MODE OF ACTION

Orondis Gold contains two active ingredients: oxathiapiprolin, which inhibits an oxysterolbinding protein (OSBP) homologue, and mefenoxam, which inhibits RNA polymerase I.

#### CROP TOLERANCE

Not all crops within a crop group, and not all varieties, cultivars or hybrids of crops have been individually tested for crop safety. It is not possible to evaluate for crop safety all applications of Orondis Gold on all crops within a crop group, on all varieties, cultivars, or hybrids of those crops, or under all environmental conditions and growing circumstances. To test for crop safety, apply the product in accordance with the label instructions to a small area of the target crop to ensure that a phytotoxic response will not occur, especially where the application is a new use of the product by the applicator.

#### Integrated Pest (Disease) Management (IPM)

Syngenta recommends the use of Integrated Pest Management (IPM) programs to control pests. Orondis Gold may be used as part of an IPM program which can include biological, cultural, and genetic practices aimed at preventing economic

pest damage. Application of this product should be based on IPM principles and practices including field scouting or other detection methods, correct target pest identification, population monitoring, and treating when disease forecasting models reach locally determined action levels. Consult your state cooperative extension service, professional consultants, or other qualified authorities to determine the appropriate management, cultural practice and treatment threshold levels for the specific crop, geography and diseases.

### Resistance Management

For resistance management, please note that Orondis Gold contains both a Group 49 [oxathiapiprolin] and Group 4 [mefenoxam] fungicide. Any fungal population may contain individuals naturally resistant to Orondis Gold and other Group 49 or Group 4 fungicides. A gradual or total loss of pest control may occur over time if these fungicides are used repeatedly in the same fields. Appropriate resistance-management strategies both general and product-specific should be followed.

#### General Strategies to delay resistance:

- Rotate the use of Orondis Gold or other Groups 49 and 4 fungicides within a growing season sequence with different groups that control the same pathogens.
- Use tank mixtures with fungicides from a different group that are equally effective on the target pest when such use is permitted. Use at least the minimum application rate as labeled by the manufacturer.
- Adopt an integrated disease management program for fungicide use that includes scouting, uses historical information related to pesticide use, and crop rotation, and which considers host plant resistance, impact of environmental conditions on disease development, disease thresholds, as well as cultural, biological and other chemical control practices.
- Where possible, make use of predictive disease models to effectively time fungicide applications. Note that using predictive models alone is not sufficient to manage resistance.
- Monitor treated fungal populations for resistance development.
- Contact your local extension specialist or certified crop advisor for any additional pesticide resistance-management and/or IPM recommendations for specific crops and pathogens.
- For further information or to report suspected resistance contact at Syngenta 1-866- Syngent(a) (866-796-4368). You can also contact your pesticide distributor or university extension specialist to report suspected resistance.

#### Product-Specific Strategies to delay resistance:

- Orondis Gold applications are to be made preventively.
- Do not tank-mix Orondis Gold with any fungicide for which resistance to the target disease has developed.
- Do not make more than 2 sequential applications before rotating to a fungicide with a different mode of action.
- Where 3 or more fungicide applications are made, do not use Orondis Gold (or any other FRAC 49- containing product) in more than 33% of the total fungicide applications, or a maximum of 4 applications, whichever is fewer. Where less than 3 fungicide applications are made, do not make more than 1 application of Orondis Gold (or any other FRAC 49-containing product).
- Do not follow soil applications of Orondis Gold (or any other FRAC 49-containing product) with foliar applications of Orondis Opti (EPA Reg. No. 100-1591) or Orondis Ultra (EPA Reg. No. 100-1612) (or any other FRAC 49-containing product).

- Do not combine different application methods (foliar and soil) when protecting a crop during a growing season.
- Do not apply more than 4 sprays during one crop cycle.
- Do not apply more than 6 applications of Orondis Gold (or any other FRAC 49-containing product) per year on the same acreage.
- Do not use Orondis Gold (or any other FRAC-49 containing product) in nursery production of transplanted crops.
- For guidance on a particular crop or disease control situation, consult your state extension specialist for official state recommendations.

## APPLICATION DIRECTIONS

### Methods of Application

- For suppression or control of soil-borne diseases, as specified in this label, Orondis Gold must be applied in a manner that ensures the product solution adequately saturates the target crop root/crown zone.
- When applied to the root/crown zone before, during, or soon after sowing or transplanting the crop, Orondis Gold will suppress or control certain seedling root rot and crown diseases that limit crop stand establishment.
- For soil application, apply Orondis Gold using chemigation, transplant water application (water wheel or continuous stream transplanters), surface band or directed application, or in-furrow application using the rates in Table 1. See table and Section 4.5 for chemigation instructions.
- If the application method does not move the product to the target root/crown disease zone, the application must be followed with irrigation or cultivation to correctly place the product for disease control.
- Use Orondis Gold as a foliar application only where specified in this label.

### SOIL APPLICATIONS (IN-FURROW OR BANDED)

#### In-furrow application:

- Apply Orondis Gold as an in-furrow spray in 5-15 gallons water per acre at planting.
- Mount the spray nozzle so the spray is directed into the furrow just before the seed are covered.

Refer in the label for soil application rates for Orondis Gold /1,000 feet of row, based on plant row spacing.

#### Transplant Water Application

- Transplants should be adequately watered before transplanting. Ensure transplant water volume is sufficient to thoroughly wet the root zone.
- See Table 1 for continuous-stream transplanters. Ensure 4-8 fl oz transplant water/transplant depending on sandy (4 fl oz) vs silty soil (6-8 fl oz).
- For water-wheel transplanters, use the plant population to determine the rate of product per plant.

#### Surface Band or Directed Application

- Apply in a 6- to 12-inch band. See Table 1 for rates.
- Follow application with cultivation or irrigation (0.25 – 0.5 inch) to move Orondis Gold to the target disease zone.

#### Application Equipment

Orondis Gold can be applied using ground equipment, pressurized and hand-held sprayers, and chemigation equipment, except as otherwise directed. Maintain agitation during mixing and application to ensure uniform product suspension.

#### SHIELDED SPRAYERS

- Shielding the boom or individual nozzles can reduce the effects of wind.
- However, it is the responsibility of the applicator to verify that the shields are minimizing drift potential, and not interfering with uniform deposition of the product.

#### SPRAY TANK CLEAN-OUT

- Prior to application, start with clean, well-maintained application equipment.
- Immediately following application, thoroughly clean all spray equipment to reduce the risk of forming hardened deposits which might become difficult to remove.
- Drain application equipment. Thoroughly rinse and flush all application equipment with clean water.
- Take all necessary safety precautions when cleaning equipment. Do not clean near wells, water sources, or desirable vegetation. Dispose of waste rinse water in accordance with local regulations.

#### Application Volume and Spray Coverage

See Section 4.1 for general information and Section 7.0 for directions on specific crops.

#### Application through Irrigation Systems (Chemigation)

## APPLICATION INSTRUCTIONS FOR IRRIGATION SYSTEMS

- Use only on crops where chemigation is specified on this label.
- Apply this product only through center-pivot, solid-set, hand-move, moving-wheel irrigation systems or drip (trickle) or strip tubing irrigation systems. Do not apply this product through any other type of irrigation system.
- [Do not inject Orondis Gold at full strength or deterioration of valves and seals may occur. Use a dilution ratio of at least 15 parts water to 1 part Orondis Gold in the mix tank. Orondis Gold can affect many seal materials. Leather seals are best. EPDM or silicone rubber seals can be used, but should be replaced once a year. Do not use VitonR, nitrile (Buna-N), Neoprene, or PVC seals.]
- Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
- Apply Orondis Gold use rates in 0.25-0.5 inch per acre. Excessive water may reduce efficacy.
- If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers, or other experts.
- Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system, unless the pesticide label-prescribed safety devices for public water systems are in place.
- 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.

### Center-Pivot Irrigation Equipment

Restrictions: (1) Use only with drive systems which provide uniform water distribution. (2) Do not use end guns when chemigating Orondis Gold through center-pivot systems because of non-uniform application.

### Irrigation Instructions:

- Determine the size of the area to be treated.
- Determine the time required to apply 0.25-0.5 inch of water over the area to be treated when the system and injection equipment are operated at normal pressures as recommended by the equipment manufacturer. When applying Orondis Gold through irrigation equipment use the lowest obtainable water volume while maintaining uniform distribution. Run the system at 80-95% of the manufacturer's rated capacity.

- Using water, determine the injection pump output when operated at normal line pressure.
- Determine the amount of Orondis Gold required to treat the area covered by the irrigation system.
- Add the required amount of Orondis Gold and sufficient water to meet the injection time requirements to the solution tank.
- Make sure the system is fully charged with water before starting injection of the Orondis Gold solution. Time the injection to last at least as long as it takes to bring the system to full pressure.
- Maintain constant solution tank agitation during the injection period.
- Continue to operate the system until the Orondis Gold solution has cleared the sprinkler head.

#### Solid-Set, Hand-Move, and Moving-Wheel Irrigation Equipment

- Determine the acreage covered by the sprinklers.
- Fill injector solution tank with water and adjust flow rate to use the contents over a 20- to 30-minute interval. When applying Orondis Gold through irrigation equipment use the lowest obtainable water volume while maintaining uniform distribution.
- Determine the amount of Orondis Gold required to treat the area covered by the irrigation system.
- Add the required amount of Orondis Gold into the same quantity of water used to calibrate the injection period.
- Operate the system at the same pressure and time interval established during the calibration.
- Stop injection equipment after treatment is completed. Continue to operate the system until the Orondis Gold solution has cleared the last sprinkler head.

#### Drip (Trickle) Irrigation Instructions

- Orondis Gold must be applied in a manner that ensures the product is in the root zone.
- Orondis Gold must be in the root zone to provide effective control of target pests.
- Orondis Gold is most effective when it is applied so that the roots are at or near the site of application; manage irrigation so that significant quantities of Orondis Gold remain in the root zone.
- A pesticide tank is recommended for the application of Orondis Gold in drip chemigation systems.
- Ensure the drip chemigation system is operating properly to uniformly distribute

the chemigation application to the crop. Contact the equipment manufacturer, the local University Extension agent or other experts if you have questions about achieving uniform distribution of the application. This product must be applied uniformly in the root zone or poor performance may result. Drip tape or emitters must be located within or directly adjacent to the root zone.

- In most situations, this product should be applied during the middle 1/3 of the irrigation cycle.

- The minimum injection period is the time that it takes water to move from the injection point to the furthest emitter in the irrigation zone (propagation time). If this time is not known, it can be calculated by measuring the time for a soluble dye to move from the injection point to the farthest emitter. A longer injection improves uniformity throughout the zone, but needs to allow for at least an equal period of water to flush the system and move the product through the soil.

#### OPERATING INSTRUCTIONS FOR CHEMIGATION

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 backflow.
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 where 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.

## SPECIFIC INSTRUCTIONS FOR PUBLIC WATER SYSTEMS

1. Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
2. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
3. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
4. The pesticide injection pipeline must 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.
5. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or, in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering device, 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.

## RESTRICTIONS AND PRECAUTIONS

See Section 7.0 for crop-specific restrictions and precautions.

## Use Restrictions

- DO NOT use Orondis Gold in greenhouse production.

## Spray Drift Management

- To avoid spray drift, do not apply when conditions favor drift beyond the target area.
- Avoid spray overlap, as injury may occur.

THE APPLICATOR AND THE GROWER ARE RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT. BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

## GROUND BOOM APPLICATIONS

- Apply with the nozzle height recommended by the manufacturer, but no more than 4 feet above the ground or crop canopy.
- Do not apply when wind speeds exceed 10 miles per hour at the application site.
- Do not apply during temperature inversions.

## Limitations, Restrictions, and Exceptions

### CUCURBIT VEGETABLES, CROP GROUP 9

#### Application Timing

At-Planting Soil Application by any of the following methods:

- In-furrow
- Banded surface spray – Apply following transplanting or during seeding in a 6- to 12-inch band.
- Drip irrigation – If using drip on direct-seeded crops, delay application until after emergence.

## Use Directions

- See Section 4.1.1 for directions for at-planting applications in-furrow or as a banded soil surface spray.
- See Section 4.5.1 for drip irrigation instructions.
- For enhanced control of *Pythium* spp., add a mefenoxam-containing product (e.g. Ridomil Gold SL [EPA Reg. No. 100-1202]) to the spray mixture.
- If disease pressure is high, use the highest specified rate.

## Resistance Management:

- Use either soil applications or foliar applications but not both for disease control.

## Precautions:

- At-planting and post-planting applications may cause some yellowing of cucurbit leaves.
- Avoid application to cucurbits in transplant water since there is a risk of plant injury.

## USE RESTRICTIONS

- 1) Refer to Section 6.1 for additional product use restrictions.
- 2) Maximum Single Application Rate: 55.0 fl oz/A
- 3) Minimum Application Interval: 20 days
- 4) Maximum Annual Rate: 55.0 fl oz/A/year
  - a. DO NOT apply more than 0.5 lb ai/A/year of soil-applied or 0.12 lb ai/A/year of foliar-applied oxathiapiprolin-containing products.
  - b. DO NOT apply more than 1.0 lb ai/A/year of soil-applied or 0.5 lb ai/A/year of foliar-applied mefenoxam-containing products.
- 5) DO NOT follow soil applications of Orondis Gold with foliar applications of Orondis Gold (or any other FRAC 49-containing product).
- 6) DO NOT make more than one at-planting soil application per crop.
- 7) On multiple plantings in the same year, DO NOT exceed 6 applications per acre per year.
- 8) DO NOT use Orondis Gold in nursery production of transplants.

## Method

[In Furrow](#)

[Drip Irrigation](#)

[Soil application](#)

[Banded Surface Spray](#)

Pre-Harvest Interval

5 days

Restricted Entry Interval

48 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 immediately if there will be no contact with anything that has been treated.

Timings

[At-Plant](#)