



Group

BM02

Fungicide

# THEIA<sup>®</sup>

fungicide

**ACTIVE INGREDIENT:***Bacillus subtilis* strain AFS032321†..... 100.0%**TOTAL**..... 100.0%†Contains not less than  $1.0 \times 10^9$  CFU/g of product.

## KEEP OUT OF REACH OF CHILDREN CAUTION

SEE INSIDE FOR ADDITIONAL PRECAUTIONARY STATEMENTS.

**FIRST AID****IF ON SKIN OR  
CLOTHING:**

- 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:**

- 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 INHALED:**

- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth to mouth, if possible.
- Call a poison control center or doctor for further treatment advice.

**IF SWALLOWED:**

- 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 the poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

**HOTLINE NUMBER**

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-222-1222 for emergency medical treatment information. For information on this pesticide product (including general health concerns or pesticide incidents), call the National Pesticide Information Center at 1-800-858-7378, Monday through Friday, 8:00 AM to 12:00 PM Pacific Standard Time. In the event of a medical emergency, call your poison control center at 1-800-222-1222.

See label booklet for complete Precautionary Statements, Directions for Use, and Storage and Disposal.

EPA Registration No.: 94713-2-92488

EPA Est. No.: 99016-MEX-1

**Manufactured for:**

Certis Biologicals  
9145 Guilford Rd  
Suite 175  
Columbia, MD 21046

Net Weight: 15 lbs.



# PRECAUTIONARY STATEMENTS

## HAZARDS TO HUMANS AND DOMESTIC ANIMALS

### CAUTION

Harmful if absorbed through skin, swallowed, or inhaled. Avoid contact with skin, eyes or clothing. Causes moderate eye irritation. Avoid breathing dust. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse.

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

**Applicators and other handlers must wear:**

- Shoes plus socks
- Long pants and long-sleeved shirt
- Waterproof gloves

Mixer/loaders and applicators must wear a NIOSH-approved particulate respirator with an N, R, or P filter with NIOSH approval number prefix TC-84A; or a NIOSH-approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21C. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow the 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

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 170.607 (d) and (e))], the handler PPE requirements may be reduced or modified as specified in the WPS.

**IMPORTANT:** When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment break-down.

### USER SAFETY RECOMMENDATIONS

**Users should:**

- Remove clothing/PPE 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

**For terrestrial uses:** Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean highwater mark. Do not contaminate water when disposing of equipment washwater or rinsate.

This product may be harmful to bees and other pollinating insects exposed to direct treatment. Do not apply this product while bees or other pollinating insects are actively visiting the treatment area.

## 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 State or Tribal 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 intervals (REI). 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 4 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.

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) includes:

- Coveralls
- Waterproof gloves
- Shoes plus socks

## PRODUCT INFORMATION:

THEIA® Fungicide is a broad spectrum fungicidal and bactericidal biological product for the control or suppression of many important foliar and soil borne plant diseases. The active ingredient is *Bacillus subtilis* strain AFS032321.

### APPLICATIONS FOR OPTIMUM DISEASE CONTROL:

- Always apply THEIA® Fungicide as a protectant treatment as part of a disease management program.
- Apply THEIA® Fungicide as a soil application or foliar spray alone, in alternating spray programs or in tank mixes with other registered crop protection products.
- Apply THEIA® Fungicide with spray equipment commonly used for making ground and chemigation applications.
- Adjust the application rate and/or spray intervals of THEIA® Fungicide according to the application instructions depending upon disease pressure. Heavy rainfall or irrigation shortly after application may require retreatment.
- To enhance performance, consider adding a surfactant that is known to be safe to the target crop to the spray tank to improve penetration and coverage of above-ground portions of the plant.

## FUNGICIDE RESISTANCE MANAGEMENT AND IPM:

The active ingredient in THEIA® Fungicide has been submitted to FRAC and has been classified as BM02 (biological with multiple modes of action).

Integrate THEIA® Fungicide into an overall disease and pest management strategy. Follow practices known to reduce disease development. Consult local agricultural authorities for specific IPM and resistance strategies developed for your location and crop(s). THEIA® Fungicide can contribute to resistance management strategies which may include rotating and/or tank mixing with other products effective against target diseases with different modes of action.

## APPLICATION INSTRUCTIONS:

THEIA® Fungicide can be applied pre-harvest via foliar spray, chemigation, soil drench, drip, banded spray, broadcast, in-furrow treatment, transplant water, bare root dip or tray drench. THEIA® Fungicide can also be applied in hydroponic operations and through various types of chemigation application as described in the Chemigation section of this label. Use sites include field, greenhouse, shadehouse, nursery, and forest.

Mix and apply THEIA® Fungicide in a sufficient volume of water to ensure uniform dispersion of product in the tank. Always add a portion of the water to the tank before adding THEIA® Fungicide. Constant agitation during mixing and application is necessary to maintain uniform suspension.

For foliar applications, good coverage of the foliage is needed to ensure performance.

Refer to the Crop-Specific Use Directions table portions of this label for proper application instructions for each crop/disease combination. Under light disease pressure, use lower rates and longer intervals. When conditions are conducive to severe disease pressure, use higher rates and shorter intervals.

Repeat applications at the intervals specified in the label and use an appropriate resistance management program.

Not all tank mixtures with THEIA® Fungicide have been tested. Before using any tank mix, test the combination on a small portion of the crop to ensure that the tank mixture is not phytotoxic to the crop. It is the responsibility of the user to ensure all components of the tank mixture are registered for use on the crop. When applying a tank mixture, the user must follow the instructions of the product with the most restrictive label.

## **FOLIAR APPLICATION DIRECTIONS:**

### **Ground:**

This product can be applied by commonly used ground equipment such as hose-end and pressurized sprayers. Consult spray nozzle and accessory documentation for specific information on proper equipment calibration. Maintain agitation during mixing and application to assure uniform product suspension. Thorough coverage of all foliage and/or soil surfaces is essential for effective disease control or suppression. Use the application rate indicated for the crop in the Crop-Specific Use Directions table of this label in sufficient water to achieve thorough coverage. Overall, to achieve good coverage, use proper spray pressure, gallonage per acre, nozzles, nozzle spacing and ground speed.

### **Chemigation:**

This product can be applied through sprinkler including center pivot, lateral move, end tow, side (wheel) roll, traveler, solid set, big gun or hand move irrigation systems. Refer to the Chemigation section of this label for additional directions and precautions. Maintain agitation during mixing and application to ensure uniform product suspension. Use the appropriate application rate as indicated for the crop in the Crop-Specific Use Directions table of this label. Use sufficient water to achieve thorough coverage.

### **General Foliar Application Use Restrictions:**

- Do not apply when wind speed favors drift beyond the area intended for treatment.
- Remove scale, pesticide residues and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank that is void of scale or residues may cause THEIA® Fungicide to lose effectiveness or strength.
- Do not combine THEIA® Fungicide with pesticides, surfactants or fertilizers for application through chemigation equipment unless prior experience has shown the combination to be physically compatible, effective and non-injurious under conditions of use. THEIA® Fungicide has not been fully evaluated for compatibility with all agricultural products.
- Conduct a spray compatibility test if tank mixing with other pesticides, surfactants or fertilizers is planned.

## **SPRAY DRIFT MANAGEMENT:**

Do not allow spray to drift from the application site and contact people, structures people occupy at any time and the associated property, parks and recreation areas, nontarget crops, aquatic and wetland areas, woodlands, pastures, rangelands, or animals.

For ground boom applications, apply with nozzle height no more than 4 feet above the ground or crop canopy and when wind speed is 10 mph or less at the application site as measured by an anemometer. Use fine or coarser spray according to ASAE 572 definition for standard nozzles or VMD for spinning atomizer nozzles.

For orchard/vineyard airblast applications, do not direct spray above trees/vines and turn off outward pointing nozzles at row ends and outer rows. Apply only when wind speed is 3 - 10 mph at the application site as measured by an anemometer outside of the orchard/vineyard on the upwind side.

For overhead chemigation, apply only when wind speed is 10 mph or less.

The applicator also must use all other measures necessary to control drift.

## **CHEMIGATION APPLICATION DIRECTIONS:**

### **General Information**

1. Apply this product only through sprinkler including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set, or hand move; furrow; border irrigation system(s). Do not apply this product through any other type of irrigation system.
2. Crop injury or lack of effectiveness, can result from non-uniform distribution of treated water.
3. If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.
4. 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.
5. 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.

Maintain agitation during mixing and application to ensure uniform product suspension. Use the application rate indicated in the Crop-Specific Use Directions table in this label. Use sufficient water to achieve thorough coverage.

### **Public Water System Chemigation**

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 regular serves an average of at least 25 individuals daily at least 60 days out of the year.

1. Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, back flow 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 flow 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.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection.
3. 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.
4. 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.
5. 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.
6. Do not apply when wind speed favors drift beyond the area intended for treatment.

### **Directions for Sprinkler 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 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 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.

### **Center Pivot, Lateral Move, End Tow, Big Gun and Traveler Irrigation Equipment (Use only with electric or oil hydraulic drive systems that provide a uniform water distribution)**

- Determine the size of area to be treated.
- Determine the time required to apply no more than  $\frac{1}{4}$  inch of water (6,750 gallons water per acre) over the area to be treated when the system and injection equipment are operated at normal pressures specified by the equipment manufacturer. Run system at 80 to 95% of manufacturer's rated capacity.
- Using only water, determine the injection pump output when operated at normal line pressure.
- Determine the amount of THEIA® Fungicide required to treat area.
- Add required amount of THEIA® Fungicide and sufficient water to meet the injection time requirements of the solution tank.
- Maintain constant solution tank agitation during the injection period.
- Stop injection equipment after treatment is completed. Continue to operate the system until THEIA® Fungicide solution has cleared the sprinkler head.

### **Solid Set, Side (Wheel) Roll and Hand Move Irrigation Equipment**

- Determine acreage covered by sprinkler.
- Fill injector solution tank with water and adjust flow rate to use contents over a 10 to 30 minute interval.
- Determine the amount of THEIA® Fungicide required to treat area.
- Add the required amount of THEIA® Fungicide into the same quantity of water used to calibrate the injection equipment.
- Maintain constant solution tank agitation during the injection period.
- Operate system at normal pressures specified by the manufacturer of the injection equipment and used for the time interval established during calibration.
- Inject THEIA® Fungicide at the end of the irrigation cycle or as a separate application to maximize foliar fungicide retention.
- Stop injection equipment after treatment is completed. Continue to operate the system until THEIA® Fungicide solution has cleared the last sprinkler head.

### **Directions for Drip (Trickle) 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 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.

- 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.
- The system must contain functional inter-locking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 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.
- 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.
- Dilute the product in water following the label mixing directions. It may be premixed with water, fertilizer or other appropriate tank-mixed agricultural chemicals. Agitation is necessary. Use volumes that thoroughly wet the soil but that do not cause significant runoff or excessive drip from pots. Application should be continuous in sufficient water to apply the specified rate evenly to the entire treated area.

### Flushing and Cleaning the Chemical Injection System

At the end of the application period, allow time for all lines to flush the pesticide through all nozzles or emitters before turning off irrigation water. To ensure the lines are flushed and free of pesticides, a dye indicator may be injected into the lines to mark the end of the application period.

In order to apply pesticides accurately, the chemical injection system must be kept clean and free of chemical or fertilizer residues and sediments. Refer to your owner's manual or ask your equipment supplier for the cleaning procedure for your injection system.

## SEED TREATMENT USE

CROP	RATES	DISEASES CONTROLLED
Brassica Vegetables Bulb Vegetables Cereal Grains Cotton Cucurbit Vegetables Fruiting Vegetables Herbs and Spices Leafy Vegetables Legume Vegetables Oilseeds Peanuts Root and Tuber Vegetables (including potato seed piece treatment) Soybean	0.25 – 5 lbs./100 lbs. of seed	Seed and soilborne fungal diseases related to wilt, root rot and damping off caused by <i>Fusarium</i> spp., <i>Pythium</i> spp., <i>Rhizoctonia</i> spp. and <i>Phytophthora</i> spp..

### SOIL APPLICATION DIRECTIONS:

THEIA® Fungicide can be applied to soil either alone or mixed with various registered pest control products and fertilizers. Prior to making field applications of tank mixtures, determine the physical compatibility by mixing a test quantity as described in the Compatibility Testing and Tank Mix Partners section of this label. It is important to maintain agitation of the product mix throughout the application process.

### SOIL DRENCH APPLICATIONS

Complete coverage of the root zone and crown are critical for optimum performance. Make a drench application with adequate water volume to drench through the root zone. Make the application prior to infection to allow colonization of THEIA® Fungicide in the root tissues and root zone.

### SHANKED-IN AND INJECTED APPLICATIONS

THEIA® Fungicide can be applied before planting, at planting or after planting of seed or transplants when using shanked-in and injected application equipment.

### TRANSPLANT WATER APPLICATIONS

THEIA® Fungicide can be applied at transplanting by drenching the root ball and/or drenching the planting hole with a solution containing THEIA® Fungicide.

### TRAY DRENCH APPLICATIONS

Transplants can be tray drenched with a solution containing THEIA® Fungicide prior to transplanting in the field. Tray drench applications can be made in the greenhouse prior to transplanting to allow root colonization of THEIA® Fungicide.

### BANDED APPLICATIONS

Banded applications can be made after plant emergence. The width of the sprayed band and the width of the unsprayed portion of the row must be considered when calculating the appropriate rate of THEIA® Fungicide to apply.

Use the following formula to determine the appropriate rate of THEIA® Fungicide to use in a banded application:

$$\frac{\text{spray band width in inches}}{\text{total row width in inches}} \times \text{standard foliar rate/A} = \text{banded rate/A}$$

If a 7.5 inch band will be applied to 15 inch rows and the normal foliar application rate is 20 oz/A, use the following example calculation:

$$\frac{7.5 \text{ inch band}}{15 \text{ inch row}} \times 20 \text{ oz/A standard foliar rate} = 10 \text{ oz/A applied in the band}$$

### IN-FURROW APPLICATIONS

THEIA® Fungicide can be applied at planting as an in-furrow treatment. Follow the instructions listed in Table 1. Soil Application Rate. Use the appropriate amount of water for the crop.

TABLE 1. In-Furrow Soil Application Rates in the Field

RATES FOR IN-FURROW APPLICATIONS OF THEIA® FUNGICIDE										
Row Spacing (inches)										
Product Rate/ Acre (lbs.)	12	15	20	22	30	32	36	38	40	72
Rate per 1000 row feet (oz. wt. of product)										
0.5	0.2	0.2	0.3	0.3	0.5	0.5	0.6	0.6	0.6	1.1
1	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.2	1.2	2.2
1.5	0.6	0.7	0.9	1.0	1.4	1.5	1.7	1.7	1.8	3.3
2	0.7	0.9	1.2	1.3	1.8	2.0	2.2	2.3	2.4	4.4
2.5	0.9	1.1	1.5	1.7	2.3	2.5	2.8	2.9	3.1	5.5
3	1.1	1.4	1.8	2.0	2.8	2.9	3.3	3.5	3.7	6.6
3.5	1.3	1.6	2.1	2.4	3.2	3.4	3.9	4.1	4.3	7.7
4	1.5	1.8	2.5	2.7	3.7	3.9	4.4	4.7	4.9	8.8
4.5	1.7	2.1	2.8	3.0	4.1	4.4	5.0	5.2	5.5	9.9
5	1.8	2.3	3.1	3.4	4.6	4.9	5.5	5.8	6.1	11.0



# COMPATABILITY TESTING AND TANK MIX PARTNERS

## Compatibility and Order of Mixing

THEIA® Fungicide is physically and biologically compatible with many commonly used pesticides, fertilizers, adjuvants and surfactants, but has not been fully evaluated with all products. To ensure compatibility of tank-mix combinations evaluate them prior to use as follows: Using a suitable container, add proportional amounts of product to water. Add wettable powders first, followed by water dispersible granules, then by liquid flowables and lastly, emulsifiable concentrates. Mix thoroughly and let stand for at least five minutes. If the combination stays mixed or can be remixed, it is physically compatible. Test the combination on a small portion of the crop to be treated to ensure that a phytotoxic response does not occur as a result of application.

Do not combine THEIA® Fungicide with pesticides, surfactants or fertilizers where there has been no previous experience or use demonstrating they are physically compatible, effective and non-injurious under your specific use conditions.

THEIA® Fungicide may be tank-mixed with other registered pesticides to enhance plant disease control or suppression. This product cannot be mixed with any product with a prohibition against such mixing. When tank-mixing THEIA® Fungicide with other registered pesticides always read and follow all use directions, restrictions and precautions of both THEIA® Fungicide and the tank-mix partner(s). Use of the resulting tank mix must be in accordance with the more restrictive label limitations and precautions. Do not exceed label dosage rates.

## PRODUCT MIXING INSTRUCTIONS:

1. Partially fill the spray tank with clean water and begin agitation.
2. Add the specified amount of THEIA® Fungicide.
3. Add other appropriately labeled agricultural products if tank mixing.
4. Finish filling the tank to the volume necessary to obtain the proper spray concentration.

**It is critical that the spray solution be agitated during mixing and application to assure a uniform suspension. Do not allow spray mixture to stand over 24 hours. Maintain a spray solution pH between 4.5 and 8.5.**

## RESTRICTIONS AND LIMITATIONS:

- Do not apply by aerial application
- Crop Rotation Restriction – none
- Preharvest Interval (PHI) – 0 Day
- Re-entry Interval (REI) – 4 hours
- Not for use in California on crops marked with an asterisk (\*) in Crop-Specific Use Directions table

## CROP-SPECIFIC USE DIRECTIONS

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<p><b>Berries and small fruit subgroups</b></p> <p><b>Bushberry subgroup</b>                      Blueberry (highbush and low bush)                      Currant                      Elderberry                      Gooseberry                      Huckleberry</p> <p><b>Caneberry subgroup</b>                      Blackberry                      Loganberry                      Raspberry                      Wild raspberry</p> <p><b>Low growing berry subgroup (except strawberry)</b>                      Bearberry                      Bilberry                      Cloudberry                      Cranberry**                      Lingonberry                      Muntries                      Partridgeberry</p> <p><b>Small fruit vine climbing sub- group (except kiwifruit and grape)</b>                      Amur river grape                      Gooseberry                      Maypop                      Schisandra berry</p>	<p><b>Foliar Diseases</b>                      Alternaria fruit rot* (<i>Alternaria</i> spp.)                      Anthracnose fruit rot* (<i>Colletotrichum</i> spp.)                      Bacterial canker* (<i>Pseudomonas</i> spp.)                      Botrytis Blight* (<i>Botrytis</i> spp.)                      Downy mildew* (<i>Peronospora</i> spp.)                      Mummy berry* (<i>Monilinia</i> spp.)                      Phomopsis* (<i>Phomopsis</i> spp.)                      Powdery mildew* (<i>Sphaerotheca</i> spp., <i>Microsphaera</i> spp., <i>Podosphaera</i> spp.)</p> <p><b>Soil Diseases</b>                      Fusarium wilt* (<i>Fusarium</i> spp.)                      Phytophthora root rot* (<i>Phytophthora</i> spp.)                      Pythium damping off* (<i>Pythium</i> spp.)                      Rhizoctonia root rot* (<i>Rhizoctonia</i> spp.)</p>	<p><b>Field Applications</b>                      1.5 – 5 lb./A</p> <p><b>Greenhouse Applications</b>                      1.5 – 5 lb./100 gallons water</p> <p><b>Field Applications</b>                      1 – 5 lb./A</p> <p><b>Greenhouse Applications</b>                      1 – 5 lb./100 gallons water</p>	<p><b>Alternaria fruit rot, Anthracnose, Botrytis blight and Powdery mildew:</b> begin applications prior to infection and continue on a 2–10 day interval as needed.</p> <p><b>Bacterial canker:</b> apply before fall rains and again during dormancy before spring growth. During growing season, apply prior to disease development and continue on a 2–10 day interval as needed.</p> <p><b>Mummy berry:</b> begin applications at bud break and continue on a 7– 10 day interval as needed.</p> <p><b>**Cranberries:</b> only make applications to non-flooded fields. Do not apply to flooded fields.</p> <p>See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.</p>

\*Not registered for use in California

## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<p><b>Brassica (cole) leafy vegetables</b></p> <p><b>Head and Stem</b>            Broccoli            Brussels sprouts            Cabbage            Cauliflower            Cavalo broccoli            Kohlrabi</p> <p><b>Leafy Greens</b>            Broccoli raab            Chinese cabbage (bok choy)            Collards            Kale            Mizuna            Mustard greens            Mustard spinach            Rape greens</p>	<p><b>Foliar Diseases</b>            Alternaria leaf spot*  <i>(Alternaria spp.)</i>            Anthracnose*  <i>(Colletotrichum spp.)</i>            Bacterial leaf spot and Bacterial blight*  <i>(Pseudomonas spp.)</i>            Black rot*  <i>(Xanthomonas campestris)</i>            Cercospora leaf spot*  <i>(Cercospora spp.)</i>            Downy mildew*  <i>(Peronospora spp.)</i>            Pin rot  <i>(Alternaria spp.)</i>            Powdery mildew*  <i>(Erysiphe polygoni)</i>            Southern blight*  <i>(Sclerotium rolfsii)</i>            Xanthomonas leaf spot*  <i>(Xanthomonas campestris)</i></p>	<p><b>Field Applications</b>            1.5 – 5 lb./A</p> <p><b>Greenhouse Applications</b>            1.5 – 5 lb./100 gallons water</p>	<p>Begin applications prior to infection and continue on a 3–10 day interval as needed.</p>
	<p><b>Soil Diseases</b>            Charcoal rot*  <i>(Macrophomina spp.)</i>            Fusarium wilt*  <i>(Fusarium spp.)</i>            Phytophthora root rot*  <i>(Phytophthora spp.)</i>            Pythium damping off*  <i>(Pythium spp.)</i>            Rhizoctonia root rot*  <i>(Rhizoctonia spp.)</i></p>	<p><b>Field Applications</b>            1 – 5 lb./A</p> <p><b>Greenhouse Applications</b>            1 – 5 lb./100 gallons water</p>	<p>See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.</p>

\*Not registered for use in California

## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Bulb vegetables</b> Chives Daylily Elegans hosta Fritillaria (bulb and leaves) Garlic Kurrat Leek Lily Onion (bulb and green) Shallot (bulb and leaves)	<b>Foliar Diseases</b> Bacterial leaf streak* <i>(Pseudomonas spp.)</i> Botrytis neck rot* <i>(Botrytis spp.)</i> Botrytis leaf blight* <i>(Botrytis squamosa)</i> Downy mildew* <i>(Peronospora spp.)</i> Powdery mildew* <i>(Erysiphe spp.)</i> Purple blotch* <i>(Alternaria porri)</i> White rot* <i>(Sclerotium cepivorum)</i> Xanthomonas leaf blight * <i>(Xanthomonas spp.)</i>	<b>Field Applications</b> 1.5 – 5 lb./A  <b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water	Begin applications prior to infection and continue on a 7–10 day interval as needed.
	<b>Soil Diseases</b> Fusarium wilt* <i>(Fusarium spp.)</i> Phytophthora root rot* <i>(Phytophthora spp.)</i> Pythium damping off* <i>(Pythium spp.)</i> Rhizoctonia root rot* <i>(Rhizoctonia spp.)</i>	<b>Field Applications</b> 1 – 5 lb./A  <b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water	

\*Not registered for use in California

**CROP-SPECIFIC USE DIRECTIONS** (continued)

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Cereal grains</b> Corn	<b>Soil Diseases</b> Fusarium wilt* ( <i>Fusarium</i> spp.) Phytophthora root rot* ( <i>Phytophthora</i> spp.) Pythium damping off* ( <i>Pythium</i> spp.) Rhizoctonia root rot* ( <i>Rhizoctonia</i> spp.)	<b>Field Applications</b> 1 – 5 lb./A <b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water	See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.

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## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Citrus fruit group</b> Calamondin Citrus citron Citrus hybrids Grapefruit Kumquat Lemon Lime Mandarin Orange (sour and sweet) Pummelo Satsuma Tangelo Tangerine Tangerine	<b>Foliar Diseases</b> Alternaria leaf spot* <i>(Alternaria alternata)</i> Bacterial blast* <i>(Pseudomonas syringae)</i> Citrus canker* <i>(Xanthomonas spp.)</i> Greasy spot* <i>(Mycosphaerella citri)</i> Melanose* <i>(Diaporthe citri)</i> Post bloom fruit drop* <i>(Colletotrichum acutatum)</i> Scab* <i>(Elsinoe fawcetti)</i> Septoria spot* <i>(Septoria citri)</i>	<b>Field Applications</b> 1.5 – 5 lb./A  <b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water	<b>Alternaria leaf spot:</b> begin applications prior to infection and continue on a 7–10 day interval as needed.  <b>Citrus canker:</b> begin applications prior to infection and continue on a 7-14 day interval as needed.  <b>Greasy spot:</b> begin applications at the start of each new flush of foliage.  <b>Melanose:</b> begin applications at petal fall and continue on a 14-21 day interval as needed.  <b>Post bloom fruit drop:</b> begin applications at early bloom and continue on a 7–10 day interval as needed.  <b>Scab:</b> begin applications at first flush of foliage and repeat at petal fall and when fruit are 1/2 inch in diameter.  <b>Septoria spot:</b> begin applications after the first fall rain. Reapply if heavy rains occur in winter.
	<b>Soil Diseases</b> Fusarium wilt* <i>(Fusarium spp.)</i> Phytophthora root rot* <i>(Phytophthora spp.)</i> Pythium damping off* <i>(Pythium spp.)</i> Rhizoctonia root rot* <i>(Rhizoctonia spp.)</i>	<b>Field Applications</b> 1 – 5 lb./A  <b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water	See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.

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**CROP-SPECIFIC USE DIRECTIONS** (continued)

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Cotton</b>	<b>Soil Diseases</b> Fusarium wilt* ( <i>Fusarium</i> spp.) Phytophthora root rot* ( <i>Phytophthora</i> spp.) Pythium damping off* ( <i>Pythium</i> spp.) Rhizoctonia root rot* ( <i>Rhizoctonia</i> spp.)	<b>Field Applications</b> 1.5 – 5 lb./A  <b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water	See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.

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**CROP-SPECIFIC USE DIRECTIONS** (continued)

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Cucurbit vegetables</b> Cucumbers Squash (all types) Cantaloupe Muskmelon Pumpkin Watermelon	<b>Foliar Diseases</b> Angular leaf spot* ( <i>Pseudomonas syringae</i> ) Anthracnose* ( <i>Colletotrichum lagenarium</i> ) Downy mildew ( <i>Pseudoperonospora cubensis</i> ) Gummy stem blight* ( <i>Didymella bryoniae</i> ) Powdery mildew ( <i>Erysiphe</i> spp., <i>Sphaerotheca</i> spp.)	<b>Field Applications</b> 1.5 – 5 lb./A  <b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water	Begin applications prior to infection and continue on a 7–10 day interval as needed.
	<b>Soil Diseases</b> Charcoal rot* ( <i>Macrophomina</i> spp.) Fusarium wilt* ( <i>Fusarium</i> spp.) Phytophthora root rot* ( <i>Phytophthora</i> spp.) Pythium damping off* ( <i>Pythium</i> spp.) Rhizoctonia root rot* ( <i>Rhizoctonia</i> spp.)	<b>Field Applications</b> 1 – 5 lb./A  <b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water	See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.

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## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Fruiting vegetables</b> Eggplant Groundcherry Pepino <b>Pepper (all varieties)</b> Tomatillo <b>Tomato</b>	<b>Foliar Diseases</b> Anthracnose* ( <i>Colletotrichum</i> spp.) Bacterial speck* ( <i>Pseudomonas</i> spp.) Bacterial spot* ( <i>Xanthomonas</i> spp.) Brown mold and Black pit ( <i>Alternaria alternata</i> ) Buckeye rot* ( <i>Phytophthora parasitica</i> ) Early blight ( <i>Alternaria solani</i> ) Botrytis gray mold* ( <i>Botrytis</i> spp.) Powdery mildew* ( <i>Leveillula taurica</i> ) Southern blight* ( <i>Sclerotium rolfsii</i> ) Target Spot ( <i>Corynespora cassiicola</i> )	<b>Field Applications</b> 1.5 – 5 lb./A <b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water	<b>Anthracnose, Gray mold, Buck-eye rot and Powdery mildew:</b> begin applications shortly after emergence or transplanting and continue on a 7–10 day interval as needed. <b>Bacterial canker, Bacterial speck, Bacterial spot and Target spot:</b> begin applications shortly after emergence or transplanting and continue on 2–7 day interval as needed. <b>Brown spot and Early blight:</b> begin applications when plants are 4–6 inches tall and continue on a 5–10 day interval as needed.
	<b>Soil Diseases</b> Charcoal rot* ( <i>Macrophomina</i> spp.) Fusarium wilt* ( <i>Fusarium</i> spp.) Phytophthora root rot* ( <i>Phytophthora</i> spp.) Pythium damping off* ( <i>Pythium</i> spp.) Rhizoctonia root rot* ( <i>Rhizoctonia</i> spp.) Southern blight* ( <i>Sclerotium rolfsii</i> )	<b>Field Applications</b> 1 – 5 lb./A <b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water	See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.

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## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Grapes</b>	<b>Foliar Diseases</b> Black rot* <i>(Guignardia bidwellii)</i> Downy mildew* <i>(Plasmopora viticola)</i> Botrytis gray mold <i>(Botrytis spp.)</i> Phomopsis* <i>(Phomopsis viticola)</i> Powdery mildew <i>(Uncinula necator)</i>	<b>Field Applications</b> 1.5 – 5 lb./A <b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water	<b>Black rot:</b> begin applications prior to infection and continue on a 5–10 day interval as needed. <b>Downy mildew:</b> begin applications before pre-bloom and continue on a 7–10 day interval as needed.
	<b>Soil Diseases</b> Fusarium wilt* <i>(Fusarium spp.)</i> Phytophthora root rot* <i>(Phytophthora spp.)</i> Pythium damping off* <i>(Pythium spp.)</i> Rhizoctonia root rot* <i>(Rhizoctonia spp.)</i>	<b>Field Applications</b> 1 – 5 lb./A <b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water	See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.

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## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Hemp</b>	<b>Foliar Diseases</b> Anthracnose* ( <i>Colletotrichum</i> spp.) Botrytis gray mold* ( <i>Botrytis</i> spp.) Brown blight* ( <i>Alternaria alternata</i> ) Downy mildew* ( <i>Pseudoperonospora cannabina</i> ) Hemp canker* ( <i>Sclerotinia sclerotiorum</i> ) Powdery mildew* ( <i>Erysiphe</i> spp.) Yellow leaf spot* ( <i>Septoria cannabis</i> )	<b>Field Applications</b> 1.5 – 5 lb./A <b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water	Begin applications prior to infection and continue on a 7–14 day interval as needed.
	<b>Soil Diseases</b> Charcoal rot* ( <i>Macrophomina phaseolina</i> ) Fusarium wilt* ( <i>Fusarium</i> spp.) Phytophthora root rot* ( <i>Phytophthora</i> spp.) Pythium damping off* ( <i>Pythium</i> spp.) Rhizoctonia root rot* ( <i>Rhizoctonia</i> spp.)	<b>Field Applications</b> 1 – 5 lb./A <b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water	See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.

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**CROP-SPECIFIC USE DIRECTIONS** (continued)

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Hops</b>	<b>Foliar Diseases</b> Downy mildew* ( <i>Peronospora</i> spp.) Powdery mildew* ( <i>Sphaerotheca macularis</i> )	<b>Field Applications</b> 1.5 – 5 lb./A <b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water	Begin applications prior to infection and continue on a 5–10 day interval as needed.
	<b>Soil Diseases</b> Fusarium wilt* ( <i>Fusarium</i> spp.) Phytophthora root rot* ( <i>Phytophthora</i> spp.) Pythium damping off* ( <i>Pythium</i> spp.) Rhizoctonia root rot* ( <i>Rhizoctonia</i> spp.)	<b>Field Applications</b> 1 – 5 lb./A <b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water	See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.

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## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<p><b>Leafy vegetables (except <i>Brassica</i>)</b></p> <p>Arugula  <b>Celery</b>                      Endive                      Fennel  <b>Lettuce (head and leaf)</b>                      Parsley                      Radicchio                      Rhubarb  <b>Spinach</b>                      Swiss chard</p>	<p><b>Foliar Diseases</b>                      Anthracnose*                      (<i>Colletotrichum</i> spp.)</p> <p>Bacterial blight/bacterial leaf spot*                      (<i>Xanthomonas</i> spp.)</p> <p>Botrytis gray mold*                      (<i>Botrytis</i> spp.)</p> <p>Downy mildew*                      (<i>Bremia lactucae</i>,  <i>Peronospora</i> spp.)</p> <p>Powdery mildew*                      (<i>Erysiphe cichoracerarum</i>)</p> <p>Sclerotinia head and leaf drop/Pink rot*                      (<i>Sclerotinia</i> spp.)</p> <p>Spinach bacterial leaf spot*                      (<i>Pseudomonas syringae</i>)</p>	<p><b>Field Applications</b>                      1.5 – 5 lb./A</p> <p><b>Greenhouse Applications</b>                      1.5 – 5 lb./100 gallons water</p>	<p><b>Bacterial blight/ bacterial leaf spot:</b> begin application prior to infection and continue on a 2–10 day interval as needed.</p> <p><b>Botrytis gray mold, Downy mildew and Powdery mildew:</b> begin applications prior to infection and continue on a 5–10 day interval as needed.</p> <p><b>Sclerotinia head and leaf drop and Pink rot:</b> apply before emergence as a banded spray 4–6 inches wide. Apply again at thinning or cultivation and continue on a 10–14 day interval as needed.</p>
	<p><b>Soil Diseases</b>                      Fusarium wilt*                      (<i>Fusarium</i> spp.)</p> <p>Phytophthora root rot*                      (<i>Phytophthora</i> spp.)</p> <p>Pythium damping off*                      (<i>Pythium</i> spp.)</p> <p>Rhizoctonia root rot*                      (<i>Rhizoctonia</i> spp.)</p> <p>Sclerotinia wilt*                      (<i>Sclerotinia</i> spp.)</p>	<p><b>Field Applications</b>                      1 – 5 lb./A</p> <p><b>Greenhouse Applications</b>                      1 – 5 lb./100 gallons water</p>	<p>See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.</p>

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## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Peanut</b>	<b>Foliar Diseases</b> Early leaf spot* <i>(Cercospora arachidicola)</i> Late leaf spot* <i>(Cercosporidium personatum)</i> White mold* <i>(Sclerotium rolfsii)</i>	<b>Field Applications</b> 1.5 – 5 lb./A <b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water	Begin applications prior to infection and continue on a 7–14 day interval as needed.
	<b>Soil Diseases</b> Cythindrocladium black rot* <i>(Cythindrocladium crotalariae)</i> Fusarium wilt* <i>(Fusarium spp.)</i> Phytophthora root rot* <i>(Phytophthora spp.)</i> Pythium damping off* <i>(Pythium spp.)</i> Rhizoctonia limb rot* <i>(Rhizoctonia spp.)</i> White mold* <i>(Sclerotium rolfsii)</i>	<b>Field Applications</b> 1 – 5 lb./A <b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water	See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.

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## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<p><b>Pome Fruits</b></p> <p><b>Apple</b> Crabapple Loquat Mayhaw <b>Pear</b> Quince</p>	<p><b>Foliar Diseases</b> Alternaria blotch* (<i>Alternaria mali</i>) Bitter rot* (<i>Colletotrichum</i> spp.) Bot rot* (<i>Botryosphaeria dothidea</i>) Botrytis gray mold* (<i>Botrytis</i> spp.) Brooks spot* (<i>Mycosphaerella pomi</i>) Cedar apple rust* (<i>Gymnosporangium juniper-virginianae</i>) Fire blight* (<i>Erwinia amylovora</i>) Flyspeck* (<i>Schizothyrium pomi</i>) Powdery mildew* (<i>Podosphaera leucotricha</i>) Scab* (<i>Venturia</i> spp.) Sooty blotch* (<i>Gloeodes pomigena</i>)</p>	<p><b>Field Applications</b> 1.5 – 5 lb./A</p> <p><b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water</p>	<p><b>Alternaria blotch:</b> begin applications prior to infection and continue on a 7–10 day interval as needed.</p> <p><b>Bitter rot, Bot rot, Brooks spot, Bull’s eye rot, Cedar apple rust, Flyspeck and Sooty blotch:</b> begin applications prior to bloom and repeat on a 7–14 day interval as needed.</p> <p><b>Botrytis gray mold:</b> make 1-2 applications in the two weeks prior to harvest. Applications can be made until the day of harvest.</p> <p><b>Fire blight:</b> begin applications at 1–5% bloom and continue on a 2- 7 day interval during the rapid bloom period. Continue applications on a 7 day interval after petal fall when conditions are favorable for fire blight.</p> <p><b>Scab:</b> begin applications at green tip and continue on a 7-10 day interval as needed.</p> <p><b>Powdery mildew:</b> begin applications at tight cluster or earlier if needed. Continue applications on a 7-10 day interval as needed.</p>
	<p><b>Soil Diseases</b> Fusarium wilt* (<i>Fusarium</i> spp.) Phytophthora root rot* (<i>Phytophthora</i> spp.) Pythium damping off* (<i>Pythium</i> spp.) Rhizoctonia root rot* (<i>Rhizoctonia</i> spp.)</p>	<p><b>Field Applications</b> 1 – 5 lb./A</p> <p><b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water</p>	<p>See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.</p>

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## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Root and Tuber vegetables</b> <b>Artichoke</b> <b>Carrot</b> <b>Potato</b> <b>Radish</b> <b>Sugar beet</b> <b>Sweet potato</b> Cassava Ginger True yam Dasheen (taro)	<b>Foliar Diseases</b> Aerial stem rot* ( <i>Erwinia carotovora</i> ) Alternaria leaf spot* ( <i>Alternaria</i> spp.) Bacterial crown rot* ( <i>Erwinia chrysanthemi</i> ) Bacterial leaf spot/Leaf blight* ( <i>Xanthomonas campestris</i> pv. <i>carotae</i> ) Black dot* ( <i>Colletotrichum coccodes</i> ) Black rot/Black crown rot* ( <i>Alternaria</i> spp.) Botrytis gray mold ( <i>Botrytis</i> spp.) Brown spot and black pit ( <i>Alternaria alternata</i> ) Downy mildew* ( <i>Peronospora</i> spp.) Early blight ( <i>Alternaria solani</i> ) Powdery Mildew* ( <i>Erysiphe</i> spp. and <i>Leveillula taurica</i> ) Rhizoctonia stem canker and crown rot* ( <i>Rhizoctonia solani</i> ) White mold* ( <i>Sclerotinia sclerotiorum</i> )	<b>Field Applications</b> 1.5 – 5 lb./A  <b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water	<b>Aerial stem rot:</b> begin applications prior to infection and continue on a 5–10 day interval as needed.  <b>Alternaria leaf spot, Black dot, Brown spot and black pit, Cercospora leaf spot, Downy mildew, Early blight and Powdery mildew:</b> begin applications prior to infection and continue on a 7-14 day interval as needed.  <b>Bacterial crown rot, Black rot/Crown rot, Bacterial leaf spot and Botrytis gray mold:</b> begin applications shortly after emergence or transplanting and continue on a 7-10 day interval as needed.  <b>Rhizoctonia stem canker and crown rot:</b> begin applications at the 2 leaf stage and continue on a 3-10 day interval until the 8 leaf stage.  <b>White mold:</b> begin applications shortly after emergence or transplanting and continue on a 7-10 day interval as needed.
<i>(continued)</i>			

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**CROP-SPECIFIC USE DIRECTIONS** (continued)

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Root and Tuber vegetables</b> (continued) <b>Artichoke</b> <b>Carrot</b> <b>Potato</b> <b>Radish</b> <b>Sugar beet</b> <b>Sweet potato</b> Cassava Ginger True yam Dasheen (taro)	<b>Soil Diseases</b> Black scurf* ( <i>Rhizoctonia solani</i> ) Cavity spot* ( <i>Pythium</i> spp.) Cottony soft rot* ( <i>Sclerotinia sclerotiorum</i> ) Fusarium wilt* ( <i>Fusarium</i> spp.) Phytophthora root rot* ( <i>Phytophthora</i> spp.) Pythium damping off* ( <i>Pythium</i> spp.) Silver scurf* ( <i>Helminthosporium</i> spp.) Sclerotium stem rot* ( <i>Sclerotium rolfsii</i> )	<b>Field Applications</b> 1 – 5 lb./A <b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water	See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.

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**CROP-SPECIFIC USE DIRECTIONS** (continued)

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Stevia</b>	<b>Foliar Diseases</b> Alternaria leaf spot* ( <i>Alternaria</i> spp.) Botrytis gray mold* ( <i>Botrytis</i> spp.) Sclerotinia stem rot* ( <i>Sclerotinia sclerotiorum</i> )	<b>Field Applications</b> 1.5 – 5 lb./A <b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water	Begin foliar applications prior to infection and continue on a 7-10 day interval as needed.
	<b>Soil Diseases</b> Sclerotium stem and root rot* ( <i>Sclerotium rolfsii</i> )	<b>Field Applications</b> 1 – 5 lb./A <b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water	See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.

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## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<p><b>Stone Fruits</b>                      Apricot                      Cherry (sweet and tart)                      Nectarine                      Peach                      Plum (all varieties)                      Plumcot                      Prune</p>	<p><b>Foliar Diseases</b>                      Alternaria spot/Fruit rot*  <i>(Alternaria alternata)</i>                      Anthracnose*  <i>(Colletotrichum spp.)</i>                      Bacterial canker*  <i>(Pseudomonas spp.)</i>                      Bacterial leaf spot/                      bacterial spot*  <i>(Xanthomonas spp.)</i>                      Blossom blight*  <i>(Monilinia spp.)</i>                      Botrytis gray mold*  <i>(Botrytis spp.)</i>                      Brown rot of fruit*  <i>(Monilinia spp.)</i>                      Powdery mildew*  <i>(Sphaerotheca spp.,</i>  <i>Podosphaera spp.)</i>                      Rusty spot*  <i>(Podosphaera</i>  <i>leucotricha)</i>                      Scab*  <i>(Cladosporium</i>  <i>carpophilum)</i>                      Shot hole*  <i>(Wilsonomyces</i>  <i>carpophilus)</i></p>	<p><b>Field Applications</b>                      1.5 – 5 lb./A  <b>Greenhouse Applications</b>                      1.5 – 5 lb./100 gallons water</p>	<p><b>Alternaria spot, Anthracnose, Botrytis gray mold, Brown rot of fruit, Cherry leaf spot, Scab and Shot hole:</b> begin applications prior to infection and continue on a 7– 10 day interval as needed.  <b>Bacterial canker:</b> begin applications after harvest to trees prior to fall rain events. Re-apply during dormancy in early spring.  <b>Bacterial leaf spot:</b> begin applications at bud break and continue on a 7-14 day interval as needed.  <b>Blossom blight:</b> begin application at early bloom and continue through the end of petal fall on a 7 day interval as needed.  <b>Powdery mildew and Rusty spot:</b> begin applications at popcorn stage and continue on a 7-14 day interval as needed.</p>
	<p><b>Soil Diseases</b>                      Fusarium wilt*  <i>(Fusarium spp.)</i>                      Phytophthora root rot*  <i>(Phytophthora spp.)</i>                      Pythium damping off*  <i>(Pythium spp.)</i>                      Rhizoctonia root rot*  <i>(Rhizoctonia spp.)</i></p>	<p><b>Field Applications</b>                      1 – 5 lb./A  <b>Greenhouse Applications</b>                      1 – 5 lb./100 gallons water</p>	<p>See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.</p>

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## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
Strawberry	<p><b>Foliar Diseases</b> Angular leaf spot* (<i>Xanthomonas fragariae</i>)</p> <p>Anthracnose* (<i>Colletotrichum acutatum</i>)</p> <p>Botrytis gray mold (<i>Botrytis</i> spp.)</p> <p>Common leaf spot* (<i>Mycosphaerella fragariae</i>)</p> <p>Leaf scorch* (<i>Diplocarpon earliana</i>)</p> <p>Powdery mildew (<i>Sphaerotheca macularis</i>, <i>Erysiphe</i> spp.)</p>	<p><b>Field Applications</b> 1.5 – 5 lb./A</p> <p><b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water</p>	<p><b>Angular leaf spot, Anthracnose, Common leaf spot and Leaf scorch:</b> begin applications prior to infection and continue on a 7–10 day interval as needed.</p> <p><b>Botrytis gray mold and Powdery mildew:</b> begin applications at or before flowering and continue on a 7-10 day interval as needed.</p>
	<p><b>Soil Diseases</b></p> <p>Charcoal rot* (<i>Macrophomina</i> spp.)</p> <p>Fusarium wilt* (<i>Fusarium</i> spp.)</p> <p>Phytophthora root rot* (<i>Phytophthora</i> spp.)</p> <p>Pythium damping off* (<i>Pythium</i> spp.)</p> <p>Rhizoctonia root rot* (<i>Rhizoctonia</i> spp.)</p>	<p><b>Field Applications</b> 1 – 5 lb./A</p> <p><b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water</p>	<p>See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.</p>

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## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<b>Tobacco</b> including: <b>Flue Cured Tobacco</b> <b>Burley Tobacco</b>	<b>Foliar Diseases</b> Angular leaf spot* <i>(Pseudomonas spp.)</i> Anthracnose* <i>(Colletotrichum spp.)</i> Barnspot/Frogeye leaf spot* <i>(Cercospora nicotianae)</i> Brown spot* <i>(Alternaria alternata)</i> Blue mold* <i>(Peronospora tabacina)</i> Botrytis gray mold <i>(Botrytis spp.)</i> Collar rot* <i>(Sclerotinia sclerotiorum)</i> Powdery mildew* <i>(Erysiphe cichoracearum)</i> Target spot* <i>(Rhizoctonia solani)</i>	<b>Field Applications</b> 1.5 – 5 lb./A <b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water	Begin applications prior to infection and continue on a 7–14 day interval as needed.
	<b>Soil Diseases</b> Charcoal rot* <i>(Macrophomina phaseolina)</i> Fusarium wilt* <i>(Fusarium spp.)</i> Pythium damping off* <i>(Pythium spp.)</i> Rhizoctonia root rot* <i>(Rhizoctonia spp.)</i> Southern blight* <i>(Sclerotium rolfsii)</i>	<b>Field Applications</b> 1 – 5 lb./A <b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water	See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.

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## CROP-SPECIFIC USE DIRECTIONS *(continued)*

CROP	TARGET DISEASES	PRODUCT USE RATE PER APPLICATION	APPLICATION DIRECTIONS
<p><b>Tree Nuts</b></p> <p>Almond Filbert (Hazelnut) Pecan Pistachio Walnut</p>	<p><b>Foliar Diseases</b> Almond scab* (<i>Cladosporium</i> spp.) Alternaria leaf spot* (<i>Alternaria alternata</i>) Anthracnose* (<i>Colletotrichum</i> spp.) Bacterial spot* (<i>Xanthomonas</i> spp.) Botryosphaeria blight* (<i>Botryosphaeria dothidea</i>) Botrytis gray mold* (<i>Botrytis</i> spp.) Blossom blight/Brown rot* (<i>Monilinia</i> spp.) Hull rot* (<i>Sclerotinia sclerotiorum</i>) Pecan scab* (<i>Cladosporium caryigenum</i>) Shot hole* (<i>Wilsonomyces carpophilus</i>)</p>	<p><b>Field Applications</b> 1.5 – 5 lb./A</p> <p><b>Greenhouse Applications</b> 1.5 – 5 lb./100 gallons water</p>	<p>Begin applications prior to infection and continue on a 7–14 day interval as needed.</p>
	<p><b>Soil Diseases</b> Fusarium wilt* (<i>Fusarium</i> spp.) Phytophthora root rot* (<i>Phytophthora</i> spp.) Pythium damping off* (<i>Pythium</i> spp.) Rhizoctonia root rot* (<i>Rhizoctonia</i> spp.)</p>	<p><b>Field Applications</b> 1 – 5 lb./A</p> <p><b>Greenhouse Applications</b> 1 – 5 lb./100 gallons water</p>	<p>See application instructions for in-furrow, shanked-in, injected, tray drench, transplant water or soil drench applications.</p>

\*Not registered for use in California

## STORAGE AND DISPOSAL

### DO NOT CONTAMINATE WATER, FOOD OR FEED BY STORAGE OR DISPOSAL.

**Pesticide Storage:** Store in original containers only. Store in a cool, dry place and avoid excess heat. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

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

#### CONTAINER HANDLING

For Plastic Drums/Totes: Nonrefillable container. Do not reuse or refill this container. Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into formulation equipment. Recycle if facilities for recycling are available, otherwise, dispose of in a sanitary landfill or by incineration. If drum/tote is contaminated and cannot be reused, dispose of it in the manner required for its liner.

For Bags/Pouches: Nonrefillable container. Do not reuse or refill this container. Completely empty bag or pouch into formulation equipment. Recycle if facilities for recycling are available, otherwise, 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.

## CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

**NOTICE:** Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the unopened product at once, and the purchase price will be refunded.

The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risk inherently associated with the use of this product. Plant injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather, plant conditions, presence of other materials or other influencing factors in the use of this product, which are beyond the control of Certis Biologicals or Seller. To the extent consistent with applicable law, Buyer and User agree to hold Certis Biologicals and Seller harmless for any claims relating to such factors.

Certis Biologicals warrants that this product conforms to the description on this label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to the above, when used in accordance with the directions under normal use conditions. To the extent consistent with applicable law, (1) this warranty does not extend to the use of this product contrary to this label or under conditions not reasonably foreseeable to or beyond the control of the Seller or Certis Biologicals, and (2) Buyer and User assume the risk of any such use. **TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, CERTIS BIOLOGICALS MAKES NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE THAT EXTEND BEYOND THE STATEMENTS MADE ON THIS LABEL.**

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER AND THE EXCLUSIVE LIABILITY OF CERTIS BIOLOGICALS AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF CERTIS BIOLOGICALS OR SELLER, THE REPLACEMENT OF PRODUCT.**

Certis Biologicals and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitation of Warranty and Liability, which may not be modified except by the written agreement signed by a duly authorized representative of Certis Biologicals.

THEIA® Fungicide is produced by AFS32321 Crop Protection, Inc. for Certis Biologicals.

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Group	BM02	Fungicide
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**THEIA**<sup>®</sup>  
f u n g i c i d e

**ACTIVE INGREDIENT:**

*Bacillus subtilis* strain AFS032321†.....100.0%

**TOTAL**.....100.0%

†Contains not less than  $1.0 \times 10^9$  CFU/g of product.

## KEEP OUT OF REACH OF CHILDREN CAUTION

SEE INSIDE FOR ADDITIONAL PRECAUTIONARY STATEMENTS.

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

**HOTLINE NUMBER**

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-222-1222 for emergency medical treatment information.

For information on this pesticide product (including general health concerns or pesticide incidents), call the National Pesticide Information Center at 1-800-858-7378, Monday through Friday, 8:00 AM to 12:00 PM Pacific Standard Time. In the event of a medical emergency, call your poison control center at 1-800-222-1222.

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

Harmful if absorbed through skin, swallowed, or inhaled. Avoid contact with skin, eyes or clothing. Causes moderate eye irritation. Avoid breathing dust. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse.

**STORAGE AND DISPOSAL****DO NOT CONTAMINATE WATER, FOOD OR FEED BY STORAGE OR DISPOSAL.**

**Pesticide Storage:** Store in original containers only. Store in a cool, dry place and avoid excess heat. Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal.

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

**CONTAINER HANDLING**

**For Plastic Drums/Totes:** Nonrefillable container. Do not reuse or refill this container. Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into formulation equipment. Recycle if facilities for recycling are available, otherwise, dispose of in a sanitary landfill or by incineration. If drum/tote is contaminated and cannot be reused, dispose of it in the manner required for its liner.

**For Bags/Pouches:** Nonrefillable container. Do not reuse or refill this container. Completely empty bag or pouch into formulation equipment. Recycle if facilities for recycling are available, otherwise, 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.

**See label booklet for complete Precautionary Statements, Directions for Use, and Storage and Disposal.**

**EPA Registration No.:** 94713-2-92488

**EPA Est. No.:** 99016-MEX-1

**Net Weight:** 15 lbs.

**Manufactured for:**  
Certis Biologicals  
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Suite 175  
Columbia, MD 21046