

# ACTINOVATE® AG

## ACTIVE INGREDIENT:

Streptomyces lydicus WYEC 108\* .....00.0371%

OTHER INGREDIENTS: .....99.9629%  
100.0000%

\*End-use product contains not less than  $1 \times 10^7$  colony forming units per gram Streptomyces lydicus WYEC 108

Information regarding the contents and levels of metals in this product is available on the Internet at <http://www.aapfco.org/metals.htm>

## KEEP OUT OF REACH OF CHILDREN

### CAUTION

See back panel for additional precautionary statements.

US Patent Number: 5,403,584

EPA Reg. No.: 73314-1

EPA Establishment No.: 73314-TX-001

Manufactured by:

Natural Industries, Inc.

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Houston, Texas 77066

Questions? (888) 261-4731

## Net Contents:

### PRECAUTIONARY STATEMENTS

Personal Protective Equipment (PPE):  
Applicators and other handlers must wear:  
Long-sleeved shirt and long pants  
Shoes plus socks

Mixer/loaders and applicators must wear a dust/mist filtering NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washing, use detergent and hot water. Keep and wash PPE separately from other laundry.

### User Safety Recommendations

Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.  
Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.  
Remove PPE immediately after handling this product. If gloves are worn, 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 high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate.

### 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 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 one (1) hour or until solution has dried.

Exception: If the product is soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter treated area if there is 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) is:

Coveralls  
Waterproof gloves  
Shoes plus socks

### Non-Agricultural Use Requirements

The requirements in this box apply to uses of the product that are not within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

\*Crop-unprotected persons out of treated areas until sprays have dried.

### GENERAL INFORMATION:

Actinovate® AG is a biological fungicide for the suppression of root rot and damping-off fungi and the suppression/control of foliar fungal pathogens. When used as a soil drench or seed treatment, soil borne fungi suppressed/controlled include Fusarium, Rhizoctonia, Pythium, Phytophthora, Phymatotrichum omnivorum (cotton root rot), Aphanomyces, Monosporascus, Armillaria, Sclerotinia, Gaemannomyces, Postia, Verticillium and Geotrichum. The active ingredient in Actinovate® AG colonizes the root system and protects it from harmful fungi. When used as a foliar spray, Actinovate® AG effectively suppresses/controls foliar diseases such as Powdery and Downy Mildew, Botrytis, Monilinia, Anthracnose, Greasy Spot, Sclerotinia, Alternaria, and Erwinia.

When applied to the soil, Actinovate® AG also breaks down minerals and micro nutrients making them more available to plants resulting in increased size and vitality. Plants treated with Actinovate® AG as a soil application will become harder, more vigorous and will have a robust and protected root system.

### INTEGRATED PEST MANAGEMENT (IPM):

Integrate Actinovate® AG into an overall disease and pest management strategy whenever fungicide use is necessary. Follow practices known to reduce disease development. Consult local agricultural authorities for specific IPM strategies developed for your crop(s) and location.

### USE RATE DETERMINATION:

Carefully read and follow all label directions, use rates, and restrictions. For best results, apply Actinovate® AG prior to or in the early stages of disease development. For proper foliar application, determine the number of acres to be treated, the specified label use rate, and select the appropriate gallonage to give thorough and uniform coverage of all plant parts to be protected.

For proper soil application, determine the number of acres to be treated, the specified label use rate, and select the appropriate gallonage to give good saturation of the soil in order for the product to establish itself on the root system. For best results, apply product solution to damp soil. Prepare only the amount of spray of soil drench solution to treat the measured area. Accurate spray equipment calibration is essential prior to use.

### PREHARVEST INTERVAL:

Actinovate® AG can be applied up to and including the day of harvest.

### APPLICATION DIRECTIONS:

**Compatibility:** Actinovate® AG is completely soluble and does not require agitation to keep suspended in a solution. Actinovate® AG is compatible with most chemical fungicides, insecticides and fertilizers. If tank mixes are desired, observe the most restrictive directions, precautions and limitations on labeling of all products used. Actinovate® AG can be tank mixed and dry mixed with all chemical fungicides, insecticides, and fertilizers unless otherwise restricted. Do not apply soil fumigants to the areas treated with Actinovate® AG. Consult manufacturer for compatibility questions.

**Application Timing:** Apply Actinovate® AG throughout the growing season from early spring to late fall to the production agriculture crops listed in the "Crops on Which Actinovate® AG May Be Used" section.

**Note:** Since Actinovate® AG contains live spores of a microbe, best results will be obtained if the product is used prior to disease onset. Actinovate® AG becomes active in soil or on the plant foliage when the temperatures are above 45° F and is not effective when temperatures remain cold. Actinovate® AG can be applied to sterilized or fumigated soil, but it must be applied after sterilization or fumigation.

**Application Uses:** Actinovate® AG is a biological fungicide for use as a soil application (drench and in-furrow), seed treatment, bulb crop dusting treatment, and foliar application for production agriculture crops listed in the "Crops On Which Actinovate® AG May Be Used" section.

### GREENHOUSE VEGETABLES AND HERBS

For suppression of *Pythium*, *Phytophthora*, *Rhizoctonia*, *Verticillium*, *Fusarium*, *Sclerotinia*, *Botrytis*, *Alternaria*, *Anthracnose*, Powdery Mildew and Downy Mildew on all greenhouse vegetable and herb crops listed in the section "Crops on which Actinovate® AG may be used".

**Soil Drench:** Use 4-6 oz of Actinovate® AG in 100 gallons of water to create solution. Apply solution as a drench to plants/growing media at a rate of 1 gallon per cubic foot of growing media (this equates to enough solution to saturate soil without creating run-off).

**Hydroponic systems:** Use 0.5-1.5 oz. per 1,000 square feet of growing area. Foliar Spray: Apply 6-12 oz Actinovate® AG per acre. Dissolve Actinovate® AG in 50-100 gallons of water and apply to foliage and blossoms every 7 to 14 days depending on disease pressure. Crop size, spray equipment, and local practices will determine the volume of water needed. Spray to wet, but do not allow run-off.

*For smaller quantities: Use 1 teaspoon of Actinovate® AG per gallon of water as a dilution and apply as above.*

Actinovate® AG can be applied using hand-held backpack or ground spray equipment. Clean application equipment before use of this product and use prepared sprays within 4 hours of preparation. For best results, use a non-ionic spreader-sticker in conjunction with application. Consult manufacturer or sales representative for specific suggestions.

### AGRICULTURE PRODUCTION

For soil treatment and seed treatment for the suppression/control of *Fusarium*, *Rhizoctonia*, *Pythium*, *Phytophthora*, *Phymatotrichum omnivorum* (cotton root rot), *Aphanomyces*, *Monosporascus*, *Armillaria*, *Sclerotinia*, *Gaemannomyces*, *Postia*, *Verticillium* and *Geotrichum*.

For foliar treatment of Powdery and Downy Mildew, *Botrytis*, *Monilinia*, *Anthracnose*, Greasy Spot, *Sclerotinia*, *Alternaria*, and *Erwinia*.

**Soil Treatment At Planting:** Use at planting, in-furrow, seeding, or transplant. Apply 1-12 oz. of Actinovate® AG in 10-200 gallons of water per acre. Refer to the "Crops On Which Actinovate® AG May Be Used" section for crop-specific application rates.

**Soil Treatment Through Irrigation:** Actinovate® AG may be used in drip, overhead, or other irrigation systems listed in the "Chemigation" section at any stage of plant growth as a soil treatment. Apply 1-12 oz. of Actinovate® AG in 10-200 gallons of water per acre. See "Chemigation" section for additional information and "Crops On Which Actinovate® AG May Be Applied" section for crop-specific application rates.

**Seed Treatment:** Seed Spray or Slurry Coating: Apply this product through mist-type commercial seed treatment equipment, slurry or other comparable methods that provide thorough coverage of treated seed. Prior to planting, dissolve 1-6 oz. of Actinovate® AG in 4oz of water per acre of seed and spray directly on seed. Hopper Box Dry Coating: Apply directly to seed as a dry coating at a rate of 1-6 oz per acre of seed. Apply as to insure even coating of product on seeds.

Do not use treated seed for food or feed purposes or process for oil. Treat only those seeds needed for immediate use, minimizing the interval between treatment and planting. Do not store excess treated seeds beyond planting time.

Seed treatment on agricultural establishment in hopper-box, planted box, or other seed-treatment application at or immediately before planting is within the scope of WPS, while commercial treatment of seeds is not within the scope.

**Foliar Treatment:** Use 3-12 oz of Actinovate® AG in 20-150 gallons of water per acre. Apply initial application prior to onset of disease season. Reapply every 7-14 days depending on disease pressure and environmental conditions. For best results, use a spreader-sticker (adjuvant) in conjunction with product application. Actinovate® AG can be used in all types of spray equipment including aerial applications.

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator and grower/treatment coordinator are responsible for considering all of these factors when making decisions.

Dusting and coating of bulbs, corms, tubers, rhizomes and seeds:

Prior to planting or shipping, evenly dust bulbs at a rate of 2-6 oz. of Actinovate® AG per 100-lbs. of bulbs, corms, tubers, rhizomes or seeds.

CROPS	Soil Drench Rate	Foliar Spray Rate
<p><b>Agronomic Field and Row Crops:</b> Cotton, succulent and dry peas, and other agronomic field and row crops</p> <p><b>Cucurbit Vegetables:</b> cucumbers, melons, gourds, squash, cantaloupe, and other cucurbits</p> <p><b>Fruiting Vegetables:</b> Eggplant, sweet peppers, hot peppers, tomatoes, tomatillos, and other fruiting vegetables</p> <p><b>Herbs, Spices and Mints:</b> Sage, rosemary, thyme, peppermint, dill, basil, oregano and other herbs and spices</p> <p><b>Leafy Vegetables and Cole Crops:</b> Broccoli, brussel sprouts, cabbage, cauliflower, celery, collards, endive, kale, kohlrabi, lettuce, mustard greens, parsley, spinach and other leafy vegetable crops</p> <p><b>Legume and Vegetable Crops:</b> Snap and dry beans, lentils, succulent and dry peas.</p> <p><b>Small Grains:</b> Rice*</p> <p><b>Root/Tuber and Bulb Crops:</b> Garlic, onions, carrot, ginger, ginseng, horseradish, turnip, radish and other root/tuber/bulb crops</p> <p><b>Berry Crops:</b> Strawberries, blueberries, blackberry, raspberry, loganberry, huckleberry, gooseberry, elderberry, currant, caneberry and other berry crops</p> <p><b>Asparagus</b></p> <p><b>Citrus:</b> Orange, grapefruit, lemon, tangerine, tangelo, lime, pummelo and other citrus crops</p> <p><b>Corn:</b> Sweet corn and other corn crops</p> <p><b>Grape:</b> Wine grapes, table grapes, raisins and other grape crops</p> <p><b>Hops</b></p> <p><b>Pome Fruit:</b> Apple, crabapple, pear, quince, mayhaw and other pome fruit</p> <p><b>Stone Fruit:</b> Apricot, cherry, nectarine, peach, plum, prune and other stone fruit</p> <p><b>Tree Nuts:</b> Almond, pistachio, pecan, walnut, filberts and other tree nuts</p> <p><b>Tropical Fruits:</b> Avocado, mango, papaya and other tropical fruits</p> <p><b>Bananas / Plantains</b></p> <p><b>Watercress*</b></p> <p><b>Mushrooms</b></p> <p><b>Ginseng</b></p> <p><b>Olives</b></p>	<p>3-12 oz of Actinovate® AG per acre</p>	<p>3-12 oz of Actinovate® AG per acre</p> <p>Reapply every 7-14 days</p> <p>For best results, use with a spreader-sticker.</p>

\* Spray only when there is not standing water in bed.

**CHEMIGATION**

**General Requirements:**

Apply Actinovate® AG at 1-12 oz per 20 -200 gallons of water.

Apply Actinovate® AG only through 1) overhead boom and mist-type systems, 2) sprinklers including impact or micro-sprinklers, central pivot, lateral move, end tow, side wheel roll, traveler, solid set, or hand move systems 3) pressurized drench (flood) or drip (trickle) systems, 4) micro irrigation such as spaghetti tube or individual tube irrigation, 5) hand-held calibrated irrigation equipment such as hand-held wand with injector, and 6) ebb and flow systems. Do not apply this product through any other type of irrigation system.

Plant injury or lack of effectiveness can result from non-uniform distribution of treated water.

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.

**Requirements for Chemigation Systems Connected to 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, 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 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.
- 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 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) Continuous agitation is not required in pesticide supply tanks unless tank mixing with other products or fluid fertilizers that require it.
  - 9) Application of the product may be made continuously for the duration of the water application or can be applied at the end or after the water application.
  - 10) To mix in supply tank, fill tank half way with water and add product. Stir until completely dissolved. Fill tank with remaining amount of water.
  - 11) Use product with 10-200 gallons of water per acre. Use enough water so as not to create excessive leaching or run off.
- Sprinkler Chemigation Requirements:**
- 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.
  - 8) Continuous agitation is not required in pesticide supply tanks unless tank mixing with other products or fluid fertilizers that require it.
  - 9) Application of the product may be made continuously for the duration of the water application or can be applied at the end or after the water application.
  - 10) To mix in supply tank, fill tank half way with water and add product. Stir until completely dissolved. Fill tank with remaining amount of water.
  - 11) Use product with 10-200 gallons of water per acre. Use enough water so as not to create excessive leaching or run off.

**Drip Chemigation Requirements:**

- 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 inter-locking 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) Continuous agitation is not required in pesticide supply tanks unless tank mixing with other products or fluid fertilizers that require it.
- 8) Application of the product may be made continuously for the duration of the water application or can be applied at the end or after the water application.
- 9) To mix in supply tank, fill tank half way with water and add product. Stir until completely dissolved. Fill tank with remaining amount of water.
- 10) Use product with 10-200 gallons of water per acre. Use enough water so as not to create excessive leaching or run off.

**Flood Chemigation Requirements:**

- 1) Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity such as a drop structure or weir box to decrease potential for water source contamination from back flow if water flow stops.
- 2) Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:
  - a. 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.
  - b. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
  - c. 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.
  - d. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
  - e. 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.
  - f. 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.
- 3) Use of a supply tank is recommended. Continuous agitation is not required in pesticide supply tanks unless tank mixing with other products or fluid fertilizers that require it.
- 4) Application of the product may be made continuously for the duration of the water application or can be applied at the end or after the water application.
- 5) To mix in supply tank, fill tank half way with water and add product. Stir until completely dissolved. Fill tank with remaining amount of water.
- 6) Use product with 10-200 gallons of water per acre. Use enough water so as not to create excessive leaching or run off.

**STORAGE AND DISPOSAL**

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

**Pesticide Storage:**

Store only in original containers under refrigerator conditions. Keep refrigerated until used. Pesticide

**Disposal:**

To avoid wastes use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments by industry).

**Container Disposal:**

Non-refillable container. Do not reuse or refill this container. Clean container promptly after emptying. Triple rinse as follows: Empty/remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinse into application equipment or a mix tank or store rinse for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in sanitary landfill, or by incineration. Do not burn unless allowed by state and local ordinances.

Batch Code: \_\_\_\_\_

**LIMITED WARRANTY/DISCLAIMER**

Manufacturer warrants that this product is suited for the labeled uses when applied according to label directions. Manufacturer makes no warranty of merchantability. To the extent consistent with applicable law, there are no warranties that extend beyond the description on this label and in no event shall manufacturer be liable for any consequential damages.

Manufactured By:  
Natural Industries, Inc.  
Houston Tx (888) 261-4731  
Label Version: 20:2