

COMMERCIAL

Actinovate® SP
Fungicide

For the suppression of: Botrytis fruit rot/grey mould (*Botrytis cinerea*) and powdery mildew (*Sphaerotheca macularis*) on field and greenhouse strawberry, indoor and field-grown cannabis and hemp, powdery mildew (*Erysiphe cichoracearum*) on field and greenhouse Gerber Daisy, powdery mildew (*Leveillula taurica*) on field and greenhouse pepper, powdery mildew (*Podosphaera xanthii*) on field and greenhouse cucurbit vegetables (Crop Group 9), powdery mildew (*Leveillula taurica*, *Oidium lycopersicum*) on field and greenhouse tomato, powdery mildew (*Uncinula necator*(*Erysiphe*)) on grape, seed rot, pre-emergence damping-off, post-emergence damping-off and root rot caused by *Pythium* spp. on greenhouse cucumbers, greenhouse lettuce, greenhouse fruiting vegetables, and indoor-grown cannabis and hemp, and partial suppression of mummyberry (*Monilinia vaccinii-corymbosi*) on high and lowbush blueberry. May reduce symptoms of anthracnose fruit rot (*Colletotrichum acutatum*) on strawberry. Also offers suppression of the following diseases on the listed greenhouse grown ornamentals: Fusarium wilt on cyclamen, Pythium root rot on petunia, Rhizoctonia root and crown rot on geranium and powdery mildew on verbena.

SOLUBLE POWDER

READ THE LABEL BEFORE USING

ACTIVE INGREDIENT: *Streptomyces lydicus* strain WYEC 108.....1.0 x 10⁷ CFU/g (min.) (0.0371%)

CAUTION: EYE IRRITANT

POTENTIAL SENSITIZER

REGISTRATION NO: 28672 PEST CONTROL PRODUCTS ACT

US Patent Number: 5,403,584

Canadian Patent Number: 2,166,096

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Phone: +1 306 657-8200

Net Contents: 20 g to 9.5 kg (*indicate as appropriate*)

Manufactured: dd-mm-year

Batch Code/Expiry Date: XXXX/dd-mm-year

PRECAUTIONS

KEEP OUT OF REACH OF CHILDREN

May cause sensitization. May irritate eyes. Avoid contact with eyes, skin and clothing. Avoid breathing dust and spray mist. Workers (includes mixer/loader, applicators, and early-entry workers) must wear a long sleeved shirt, long pants, shoes plus socks, waterproof gloves and a NIOSH approved respirator with any N-95, R-95, P-95 or HE filter for biological products when mixing/loading or applying the product and during all clean-up/repair activities. Restricted Entry Interval: DO NOT enter or allow worker entry into treated areas for 4 hours or until sprays have dried, unless wearing waterproof gloves, long-sleeved shirt, long pants and socks with shoes. Wash thoroughly with soap and water after handling. Remove contaminated clothing and follow manufacturer's directions for cleaning/maintaining PPE before reuse. If no such instructions are available use clothing detergent and hot water for cleaning all washable PPE. Keep and wash PPE separately from other laundry.

PRE-HARVEST INTERVAL: Actinovate SP can be applied up to the day of harvest except for foliar application on cannabis or hemp, which should be 2-3 weeks.

FIRST AID

IF SWALLOWED:

Call a poison control centre or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control centre or doctor. Do not give anything by mouth to an unconscious person.

IF ON SKIN OR CLOTHING:

Take off contaminated clothing. Rinse skin immediately with plenty of water for 15–20 minutes. Call a poison control centre 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 by mouth-to-mouth, if possible. Call a poison control centre or doctor for further 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 centre or doctor for treatment advice.

Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

TOXICOLOGICAL INFORMATION: Treat symptomatically.

ENVIRONMENTAL PRECAUTIONS:

DO NOT apply this product directly to freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs, ditches and wetlands), estuaries or marine habitats.

DO NOT contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.

Do NOT apply by aerial application equipment.

To reduce runoff from treated areas into aquatic habitats, consider the characteristics and conditions of the site before treatment. Site characteristics and conditions that may lead to runoff include, but are not limited to: heavy rainfall, moderate to steep slope, bare soil, poorly draining soil (e.g. soils that are compacted or

fine textured such as clay).

Avoid application of this product when heavy rain is forecast.

Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative strip between the treated area and the edge of the water body.

DO NOT allow effluent or runoff from greenhouses containing this product to enter lakes, streams, ponds or other waters.

DIRECTIONS FOR USE

General Information: Actinovate SP is a biological fungicide for the suppression of Botrytis fruit rot/grey mould and powdery mildew on field and greenhouse grown strawberry, indoor and field-grown cannabis and hemp, powdery mildew on field and greenhouse grown peppers, powdery mildew in field and greenhouse grown Gerber daisy, powdery mildew on field and greenhouse cucurbit vegetables (crop group 9), powdery mildew on field and greenhouse tomato, powdery mildew (*Uncinula necator*(*Erysiphe*)) on grape, seed rot/pre-emergence damping-off, post-emergence damping-off and root rot caused by *Pythium* spp. on greenhouse cucumbers, greenhouse lettuce, greenhouse fruiting vegetables, and indoor-grown cannabis and hemp, and partial suppression of mummyberry (*Monilinia vaccinii-corymbosi*) on high and lowbush blueberry. Actinovate SP may also reduce symptoms of anthracnose fruit rot on strawberry. Actinovate SP also offers suppression of the following diseases on the listed greenhouse grown ornamentals: Fusarium wilt on cyclamen, Pythium root rot on petunia, Rhizoctonia root and crown rot on geranium and powdery mildew on verbena.

Directions for Use:

Strawberries (field and greenhouse): For suppression of Botrytis fruit rot (*Botrytis cinerea*) and powdery mildew (*Sphaerotheca macularis*).

Dissolve 425 g Actinovate SP in 1100 L water per hectare, and apply as foliar spray to leaves and blossoms. Spray to wet, but avoid run-off. Make the first application when conditions are conducive to disease development, and repeat applications every 7-14 days. Use the shorter application interval under high disease pressure. Actinovate SP 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.

Crop	Diseases	Actinovate SP Rate per ha	Remarks
Strawberry (field and greenhouse)	Botrytis Fruit Rot (<i>Botrytis cinerea</i>) powdery mildew (<i>Sphaerotheca macularis</i>)	425 g/1100 L water	Make the first application when conditions are conducive to disease development. Apply to foliage and blossoms. Repeat application every 7-14 days.

Gerber Daisy (field and greenhouse): For suppression of powdery mildew (*Erysiphe cichoracearum*)

Dissolve 170 g Actinovate SP in 380 L water (or 500 g in 1100 L water per ha) and apply as a foliar spray. Spray to wet, but avoid run-off. Begin at transplant and apply two subsequent sprays at seven day intervals. Clean application equipment before use of this product, and use prepared sprays within 4 hours of preparation.

Crop	Diseases	Actinovate SP Rate per ha	Remarks
Gerber Daisy (field and greenhouse)	powdery mildew (<i>Erysiphe cichoracearum</i>)	170 g/380L water (500 g/ 1100 L water/ha)	Begin applications at transplant and make two subsequent sprays at seven day intervals.

Pepper (field and greenhouse): For suppression of powdery mildew (*Leveillula taurica*)

Dissolve 425 g Actinovate SP in 1100 L water and apply as a foliar spray to leaves and blossoms. Make the first applications at transplant, and repeat every 7-14 days. Use the shorter application interval under high disease pressure. Spray to wet, but avoid run-off. Actinovate SP can be applied using hand-held backpack or ground spray equipment. Clean equipment before use of this product, and use prepared sprays within 4 hours of preparation.

Crop	Diseases	Actinovate SP Rate per ha	Remarks
Peppers (field and greenhouse)	powdery mildew (<i>Leveillula taurica</i>)	425 g/1100 L water	Begin applications at transplant and make subsequent sprays at seven day intervals.

Grape: For suppression of powdery mildew ((*Uncinula (Erysiphe) necator*))

Dissolve 425 to 840 g/ha of Actinovate SP in 500 to 1000 L/ha of water and apply as foliar spray. Use a higher rate when conditions are favorable for disease development. Choose a water volume which will provide thorough uniform coverage of the plant parts to be protected. Spray to wet, but avoid run-off. Make the first application when conditions are conducive to disease development, and repeat applications every 7-14 days. Use the shorter application interval under high disease pressure. Actinovate SP 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.

Crop	Diseases	Actinovate SP Rate per ha	Remarks
Grape	powdery mildew ((<i>Uncinula (Erysiphe) necator</i>))	425 g to 840 g	Make the first application when conditions are conducive to disease development and repeat application every 7-14 days.

Blueberry (high and lowbush): For partial suppression of mummyberry (*Monilinia vaccinii-corymbosi*)

Dissolve 425 to 840 g/ha of Actinovate SP in 200 to 1400 L/ha of water and apply as foliar spray. Use a higher rate when conditions are favorable for disease development. Choose a water volume which will provide thorough uniform coverage of the plant parts to be protected. Spray to wet, but avoid run-off. Make the first application when conditions are conducive to disease development, and repeat applications every 7-14 days. Use the shorter application interval under high disease pressure. Actinovate SP 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.

Crop	Diseases	Actinovate SP Rate per ha	Remarks
Blueberry (high and lowbush)	Mummyberry (<i>Monilinia vaccinii-corymbosi</i>)	425 g to 840 g	Make the first application when conditions are conducive to disease development and repeat application every 7-14 days.

INDOOR-GROWN AND FIELD-GROWN CANNABIS AND HEMP

FOLIAR APPLICATION

For suppression of Botrytis grey mould (*Botrytis cinerea*) and powdery mildew (*Sphaerotheca macularis*) on Indoor-grown and field-grown cannabis and hemp

Dissolve 425 g Actinovate SP in 1100 L water per hectare, and apply as foliar spray to leaves and blossoms. Spray to wet, but avoid run-off. Make the first application when conditions are conducive to disease development, and repeat applications every 7-14 days. Use the shorter application interval under high disease pressure. Actinovate SP 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.

HYDROPONIC SYSTEMS AND SOIL DRENCHES ON INDOOR-GROWN CANNABIS AND HEMP

For suppression of seed rot/pre-emergence damping-off, post-emergence damping-off and root rot caused by *Pythium* spp. on Indoor-grown cannabis and hemp

Dissolve recommended rate of Actinovate SP per 1100 L of water to create a solution. Apply solution as a drench or through hydroponic systems to plants/growing media until the pot is thoroughly wetted without creating run-off. Make the first preventative application immediately after seeding or transplanting or when conditions are conducive to disease development. Repeat application every 7 to 14 days. Use the shorter application interval under high disease pressure. Actinovate SP can be applied using low pressure watering nozzles such as fan nozzles, through overhead boom type sprayers or sprinklers, hydroponics systems, injectors, flood benches or other drench watering systems. Clean application equipment before use of this product, and use prepared sprays within 4 hours of preparation.

Application method	Diseases	Actinovate SP Rate per ha	Remarks
Indoor-grown and field-grown cannabis and hemp			
Foliar	Botrytis grey mould (<i>Botrytis cinerea</i>) Powdery mildew (<i>Sphaerotheca macularis</i>)	425 g/1100 L water	Make the first application when conditions are conducive to disease development. Apply to foliage and blossoms. Repeat application every 7-14 days.
Indoor-grown cannabis and hemp			
Hydroponic Systems	Seed rot/pre-emergence damping-off, post-emergence damping-off and root rot caused by <i>Pythium</i> spp.	420 to 840 g/ha	Apply solution to the growing media. Repeat application every 7-14 days.
Soil Drenches		42 to 84 g/100 L water/1 m ³ of growing media	Apply as a soil drench. Repeat application every 7-14 days.

The DIRECTIONS FOR USE for the uses described in this section of the label were developed by persons other than Novozymes BioAg Ltd. under the User Requested Minor Use Label Expansion program. For these uses, Novozymes BioAg Ltd. has not fully assessed performance (efficacy) and/or crop tolerance (phytotoxicity) under all environmental conditions or for all crop varieties when used in accordance with the label. The user should test the product on a small area first, under local conditions and using standard practices, to confirm the product is suitable for widespread application.

Directions for Use – Foliar sprays

Cucurbit Vegetables (field and greenhouse): Crop Group 9 – Chayote, Chinese waxgourd, Citron melon, Cucumber, Gherkin, Edible gourd, Momordica species, Muskmelon, Pumpkin, Winter and Summer squash, Watermelon: For suppression of powdery mildew (*Podosphaera xanthii*).

Dissolve 420 g Actinovate SP in 470 to 800 L water per hectare (select a water volume which will ensure thorough, uniform coverage of the plants), and apply as foliar spray. Spray to wet, but avoid run-off. Make the first application when conditions are conducive to disease development, and repeat applications every 7-14 days. Use the shorter application interval under high disease pressure. Actinovate SP 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.

Crop	Diseases	Actinovate SP Rate per ha	Remarks
Cucurbit Vegetables (field and greenhouse): Crop Group 9 – Chayote, Chinese waxgourd, Citron melon, Cucumber, Gherkin, Edible gourd, Momordica species, Muskmelon, Pumpkin, Winter and Summer squash, Watermelon	powdery mildew (<i>Podosphaera xanthii</i>)	420 g/470 to 800 L water	Make the first application when conditions are conducive to disease development and repeat application every 7-14 days.

Tomato (field and greenhouse): For suppression of powdery mildew (*Leveillula taurica*, *Oidium lycopersicum*).

Dissolve 425 to 840 g Actinovate SP in 700 L water per hectare, and apply as foliar spray. Spray to wet, but avoid run-off. Make the first application when conditions are conducive to disease development, and repeat applications every 7-14 days. Use the shorter application interval under high disease pressure. Actinovate SP 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.

Crop	Diseases	Actinovate SP Rate per ha	Remarks
Tomato (field and greenhouse)	powdery mildew (<i>Leveillula taurica</i> , <i>Oidium lycopersicum</i>)	425 to 840 g /700 L water	Make the first application when conditions are conducive to disease development and repeat application every 7-14 days.

Strawberry: May reduce symptoms of Anthracnose fruit rot (*Colletotrichum acutatum*).

Dissolve 425 g Actinovate SP in 1100 L water per hectare, and apply as foliar spray. Spray to wet, but avoid run-off. Make the first application when conditions are conducive to disease development, and repeat applications every 7-14 days. Use the shorter application interval under high disease pressure. Actinovate SP 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.

Crop	Diseases	Actinovate SP Rate per ha	Remarks
Strawberry	Anthracnose fruit rot (<i>Colletotrichum acutatum</i>)	425 g/1100 L water	Make the first application when conditions are conducive to disease development and repeat application every 7-14 days.

Cyclamen (greenhouse grown): For suppression of fusarium wilt (*Fusarium oxysporum*).
Dissolve 500 g of Actinovate SP per 1000 L of water to create a solution. Apply solution as a drench to plants/growing media until the pot is thoroughly wetted without creating run-off. Make the first preventative application as early in the plant's life as possible, preferably when sticking cuttings, transferring starters or sowing seeds. Repeat applications every 4-12 weeks or when disease pressure increases. Use the shorter application interval under high disease pressure. Actinovate SP can be applied using low pressure watering nozzles such as fan nozzles, through overhead boom type sprayers or sprinklers, hydroponics systems, injectors, flood benches or other drench watering systems. Clean application equipment before use of this product, and use prepared sprays within 4 hours of preparation.

Crop	Diseases	Actinovate SP Rate	Remarks
Cyclamen (greenhouse grown)	fusarium wilt (<i>Fusarium oxysporum</i>)	500 g/1000 L water	Make the first application as early in the plant's life as possible and repeat applications every 4-12 weeks depending on disease pressure.

Petunia (greenhouse grown): For the suppression of pythium root rot (*Pythium spp.*).
Dissolve 500 g of Actinovate SP per 1000 L of water to create a solution. Apply solution as a drench to plants/growing media until the pot is thoroughly wetted without creating run-off. Make the first preventative application as early in the plant's life as possible, preferably when sticking cuttings, transferring starters or sowing seeds. Repeat applications every 4-12 weeks or when disease pressure increases. Use the shorter application interval under high disease pressure. Actinovate SP can be applied using low pressure watering nozzles such as fan nozzles, through overhead boom type sprayers or sprinklers, hydroponics systems, injectors, flood benches or other drench watering systems. Clean application equipment before use of this product, and use prepared sprays within 4 hours of preparation.

Crop	Diseases	Actinovate SP Rate	Remarks
Petunia (greenhouse grown)	pythium root rot (<i>Pythium spp.</i>)	500 g/1000 L water	Make the first application as early in the plant's life as possible and repeat applications every 4-12 weeks depending on disease pressure.

Directions for Use – Seed Treatments

Greenhouse Cucumber, Greenhouse Lettuce and Greenhouse Fruiting Vegetables (African eggplant, currant tomato, eggplant, garden huckleberry, goji berry, groundcherry, martynia, okra, pea eggplant, pepino, pepper, bell, pepper, non-bell, scarlet eggplant, sunberry, tomatillo, tomato and cultivars, varieties and/or hybrids of these): Suppression of seed rot/pre-emergence damping-off, post-emergence damping-off and root rot caused by *Pythium spp.*

Do not use treated seed for food and 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. Conduct seed treatment only on the agricultural establishment at or immediately before planting.

Crops	Disease	Actinovate SP Application Rate	Application type and remarks
Greenhouse cucumber	Seed rot/pre-emergence damping-off, post-emergence damping-off and root rot caused by <i>Pythium</i> spp.	7.5 to 42 g/300mL water/kg of seed	Seed Spray or Slurry Coating Apply through mist-type commercial seed treatment equipment, slurry, or other comparable methods that provide thorough coverage of treated seeds. Prior to planting, dissolve Actinovate SP in water and spray directly on seed.
Greenhouse lettuce			
Greenhouse fruiting vegetables		7.5 to 42 g/kg of seed	Hopper Box Dry Coating Apply directly to seed as a dry coating. Apply as to insure even coating on the seeds.

Directions for Use – Hydroponic Systems and Soil Drenches

Greenhouse Cucumber, Greenhouse Lettuce and Greenhouse Fruiting Vegetables (African eggplant, currant tomato, eggplant, garden huckleberry, goji berry, groundcherry, martynia, okra, pea eggplant, pepino, pepper, bell, pepper, non-bell, scarlet eggplant, sunberry, tomatillo, tomato and cultivars, varieties and/or hybrids of these): Suppression of seed rot/pre-emergence damping-off, post-emergence damping-off and root rot caused by *Pythium* spp.

Apply Actinovate immediately after the seed is planted and then repeat application every 7 to 14 days.

Crops	Disease	Actinovate SP Application Rate	Application type and remarks
Greenhouse cucumber	Seed rot/pre-emergence damping-off, post-emergence damping-off and root rot caused by <i>Pythium</i> spp.	420 to 840 g/ha	Hydroponic Systems Apply solution to the growing media.
Greenhouse lettuce			
Greenhouse fruiting vegetables		42 to 84 g/100 L water/1 m ³ of growing media	Soil Drenches Apply as a soil drench.

Geranium (greenhouse grown): For the suppression of Rhizoctonia root and crown rot (*Rhizoctonia solani*).

Dissolve 500 g of Actinovate SP per 1000 L of water to create a solution. Apply solution as a drench to plants/growing media until the pot is thoroughly wetted without creating run-off. Make the first preventative application as early in the plant's life as possible, preferably when sticking cuttings, transferring starters or sowing seeds. Repeat applications every 4-12 weeks or when disease pressure increases. Use the shorter application interval under high disease pressure. Actinovate SP can be applied using low pressure watering nozzles such as fan nozzles, through overhead boom type sprayers or sprinklers, hydroponics systems, injectors, flood benches or other drench watering systems. Clean application equipment before use of this product, and use prepared sprays within 4 hours of preparation.

Crop	Diseases	Actinovate SP Rate	Remarks
Geranium (greenhouse grown)	rhizoctonia root and crown rot (<i>Rhizoctonia solani</i>)	500 g/1000 L water	Make the first application as early in the plant's life as possible and repeat applications every 4-12 weeks depending on disease pressure.

Verbena (greenhouse grown): For suppression of powdery mildew (*Podosphaera xanthii*).

Dissolve 500 g of Actinovate SP per 1000 L of water and apply as foliar spray. Spray plants to wet, but avoid run-off. Choose a water volume which will provide thorough uniform coverage of the plant parts to be protected. Make the first application when conditions are conducive to disease development, and repeat applications every 7-14 days. Use the shorter application interval under high disease pressure. Actinovate SP 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.

Crop	Diseases	Actinovate SP Rate	Remarks
Verbena (greenhouse grown)	powdery mildew (<i>Podosphaera xanthii</i>)	500 g/1000 L water	Make the first application to foliage and blossoms when conditions are conducive to disease development and repeat application every 7-14 days depending on disease pressure.

STORAGE:

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

Store at room temperature for no more than 12 months. Store out of direct sunlight and away from heat sources. Keep from overheating or freezing. To prevent contamination store this product away from food or feed.

DISPOSAL

1. Triple- or pressure-rinse the empty container. Add the rinsings to the spray mixture in the tank.
2. Follow provincial instructions for any required additional cleaning of the container prior to its disposal.
3. Make the container unsuitable for further use.
4. Dispose of the container in accordance with provincial requirements.
5. For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

NOTICE TO USER: This pest control product is to be used only in accordance with the directions on the label. It is an offence under the Pest Control Products Act to use this product in a way that is inconsistent with the directions on the label.

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