Biologicals Information Sheets
T-22™ HC Biological Fungicide

T-22™ HC is a preventative biological fungicide for control of plant diseases. The active ingredient is a microbe, Trichoderma harzianum Strain T-22, which when applied to seeds, transplants or other propagative material, or to soil or planting mixes, grows onto plant roots as they develop and provides protection against plant root pathogens such as Pythium, Rhizoctonia, Fusarium, Cylindrocladium and Thielaviopsis. T-22 HC can be used alone or in conjunction with certain chemical fungicides; consult the T-22 HC compatibility chart for more information.

Where early season seed rot and seedling diseases are expected, use chemically treated seed or other appropriate measures for stand establishment and T-22 HC for root disease control.

NOTE: T-22 HC contains live spores of a microbe that must be used prior to disease onset. T-22 HC becomes active in soil or on plants when temperatures are above 50°F and is not effective while temperatures remain cold. T-22 HC can be applied to sterilized or fumigated soil but MUST BE APPLIED AFTER sterilization or fumigation

FEATURES and BENEFITS:
- Protects roots from damage caused by Pythium, Rhizoctonia and Fusarium
- Treated root systems are stronger, healthier and have greater soil exploration and moisture uptake
- Compatible with other seed treatments and pesticides
- Greater crop stand preservation
- Enhances Nutrient Uptake
- Increased Stress Tolerance
- Potential Yield Increases
- Cost Effective
- Soil pH tolerant: 4-8
- OMRI Listed

T-22 HC CHEMICAL COMPATIBILITY Recommendation:
T-22 HC is compatible with the many common seed treatments and can be applied before or after the application of the compound. Even though the active ingredient in T-22 HC is a fungus, extensive research has shown that it can be tank-mixed with many fungicides. For incompatible fungicides, the manufacturer recommends that strain T-22 be applied 7-10 days after chemical fungicide application. Refer to your dealer, sales representative, or www.bioworksinc.com for a current chemical compatibility list. A partial list of chemicals tested follows:

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Common Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allegiance</td>
<td>Metalaxyl</td>
</tr>
<tr>
<td>Apron XL</td>
<td>Mefenoxam</td>
</tr>
<tr>
<td>Baytan</td>
<td>Triadimenol</td>
</tr>
<tr>
<td>Captan</td>
<td>Captan</td>
</tr>
<tr>
<td>Gaucho</td>
<td>Imidacloprid</td>
</tr>
<tr>
<td>Lorsban</td>
<td>Chlopyrifos</td>
</tr>
<tr>
<td>Maxim</td>
<td>Fludioxonil</td>
</tr>
<tr>
<td>Orthene</td>
<td>Acephate</td>
</tr>
<tr>
<td>PCNB</td>
<td>Quintozene</td>
</tr>
<tr>
<td>Quadris</td>
<td>Azoxystrobin</td>
</tr>
<tr>
<td>Thiram</td>
<td>Thiram</td>
</tr>
<tr>
<td>Vitavax</td>
<td>Carboxin</td>
</tr>
</tbody>
</table>

Continued on next page
T-22 HC Application Rates:

<table>
<thead>
<tr>
<th>Crop</th>
<th>Seeding Rate per Acre</th>
<th>Seeding Rate per lb.</th>
<th>Bags of Seed treated with 1 lb. T-22</th>
<th>Acres per 1 lb. T-22</th>
<th>T-22 HC oz per cwt</th>
<th>T-22 oz per acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>300,000</td>
<td>4,000</td>
<td>46 bags</td>
<td>30 A</td>
<td>0.7</td>
<td>0.52</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>3,570,000</td>
<td>210,000</td>
<td>8 bags</td>
<td>24 A</td>
<td>4</td>
<td>0.68</td>
</tr>
<tr>
<td>Corn Field</td>
<td>28,000</td>
<td>1,600</td>
<td>16 bags</td>
<td>48 A</td>
<td>2</td>
<td>0.35</td>
</tr>
<tr>
<td>Corn; silage</td>
<td>28,000</td>
<td>1,600</td>
<td>16 bags</td>
<td>48 A</td>
<td>2</td>
<td>0.35</td>
</tr>
<tr>
<td>Corn; sweet</td>
<td>27,500</td>
<td>2,500</td>
<td>500 lbs</td>
<td>45 A</td>
<td>3</td>
<td>0.33</td>
</tr>
<tr>
<td>Cotton</td>
<td>55,000</td>
<td>4,600</td>
<td>230K bag</td>
<td>44 A</td>
<td>3</td>
<td>0.36</td>
</tr>
<tr>
<td>Peanuts</td>
<td>75,000</td>
<td>750</td>
<td>21 bags</td>
<td>11A</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Popcorn</td>
<td>27,500</td>
<td>2,750</td>
<td>11 bags</td>
<td>53A</td>
<td>3</td>
<td>0.3</td>
</tr>
<tr>
<td>Sorghum</td>
<td>50,000</td>
<td>14,000</td>
<td>16 bags</td>
<td>224A</td>
<td>2</td>
<td>0.07</td>
</tr>
<tr>
<td>Soybeans</td>
<td>180,000</td>
<td>3,000</td>
<td>21 bags</td>
<td>18A</td>
<td>1.5</td>
<td>0.9</td>
</tr>
<tr>
<td>Sugar Beets</td>
<td>57,000</td>
<td>42,000</td>
<td>86 x 100K units</td>
<td>147A</td>
<td>8</td>
<td>0.11</td>
</tr>
<tr>
<td>Sunflower</td>
<td>20,000</td>
<td>4,000</td>
<td>11 bags</td>
<td>107A</td>
<td>3</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Application Instructions for T22 HC:

**Planter Box:** Measure appropriate amount of T-22 HC and blend with seed in the planter box. The green scoop provided in the T-22 HC packaging, will measure out about 1.5 ounces of T-22 HC.

**Bulk Seed Systems:** T-22 HC can be added to seed flow when using bulk seed filling systems. Disperse appropriate amount into auger or conveyor systems, typically at the hopper, when filling planting equipment. Mechanical applicators such as the Enviropac dry applicator can be used.

**Infurrow or liquid slurry application:** T-22 HC can be slurried and suspended in water or compatible seed treatments and liquid fertilizers. Many products are compatible but check with your BioWorks representative to be sure. Agitation is recommended to avoid settling. Follow all precautions listed on the label.

This product should not be tank mixed with chemicals that contain the following active ingredients: benomyl, imazilil, propiconazole, tebuconazole, and triflumizole. Do not apply T-22 HC immediately before these pesticides are used.
**PRODUCT INFORMATION**

T-22 HC Biological Fungicide is a preventative biological fungicide for control of plant diseases. The active ingredient is a microbe, Trichoderma harzianum Rifai strain T-22, which when applied to seeds, transplants or other propagative material, or to soil or planting mixes, grows onto plant roots as they develop and provides protection against plant root pathogens such as Pythium, Rhizoctonia, Fusarium, Cylindrocladium and Thielaviopsis. T-22 HC Biological Fungicide can be used alone or in conjunction with chemical fungicides; consult the appropriate tank mix compatibility charts below or your BioWorks Representative for more information.

This product must not be tank mixed with chemicals that contain the following active ingredients: imazalil, propiconazole, tebuconazole, and trifloxizole. Do not apply T-22 HC Biological Fungicide immediately before these pesticides are used. See specific instructions for tank mixing. Where early season seed rot and seedling diseases are expected, use chemically treated seed or other appropriate measures for stand establishment and T-22 HC Biological Fungicide for root disease control.

**NOTE:** T-22 HC Biological Fungicide contains live spores of a microbe that must be used prior to disease onset. T-22 HC Biological Fungicide becomes active in soil or on plants when temperatures are above 50°F and is not effective while temperatures remain below 50°F or if treated soil is subjected to sterilized or fumigated soil but **MUST BE APPLIED AFTER STERILIZATION OR FUMIGATION.**

T-22 HC Biological Fungicide is for use in soil applications (drench and in soil furrow) and seed treatments.

**ATTENTION:** DO NOT APPLY to sugarcane, pechay, rice, mushrooms, kiwi, tobacco, barley, oats, lemon, apple and chickpea. Not for use on aquatic crops.

For food commodities: Do not apply product when above-ground harvestable food commodities are present.

**APPLY VIA GROUND APPLICATION ONLY.**

**CROPS ON WHICH T-22 HC BIOLOGICAL FUNGICIDE MAY BE USED**

<table>
<thead>
<tr>
<th>Crops</th>
<th>Use</th>
<th>Application Rate of T-22 HC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bulb Vegetables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garlic, Leeks, Onions, Shallots</td>
<td>Dust (pre-plant)</td>
<td>4.0 – 8.0 oz / cwt seed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cereal Grains</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buckwheat, Corn, grain, seed, sweet corn, millet</td>
<td>Commercial seed treatment</td>
<td>1.5 – 3.0 oz / cwt seed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cucurbit Vegetables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cucumbers, Melons (i.e. Chinese waxgourd, Citron melon, Muskmelons, or Watermelon), Gourds, Pumpkins, Squash</td>
<td>Commercial seed treatment</td>
<td>2.0 – 8.0 oz / cwt seed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fruiting Vegetables</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggplant, Sweet and Hot Peppers, Tomatillos, Tomatoes</td>
<td>Commercial seed treatment</td>
<td>0.0564 – 4.233 oz / lb seed 16.0 – 32.0 oz / acre</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Herbs, Spices and Mints.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial seed treatment</td>
<td>In-furrow spray or transplant starter solution</td>
<td>0.0564 – 4.233 oz / lb seed 16.0 – 32.0 oz / acre</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Leafy and Brassica (Cole)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leafy Vegetables: Arugula, Cabbage, Collards, Kale, Kohlrabi, Mustang Greens</td>
<td>Commercial seed treatment</td>
<td>0.0564 – 4.233 oz / lb seed 16.0 – 32.0 oz / acre</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Asparagus</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legume Vegetables: (Succulent or Dried): Beans (soybean, snap, dry), Lentils, Peas</td>
<td>Commercial seed treatment</td>
<td>Commercial seed treatment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nongrass Animal Feeds: (Forage, Fodder, Straw, and Hay): Alfalfa, Clover, Vetch, Trefol</td>
<td>Commercial seed treatment</td>
<td>Commercial seed treatment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oilseed Crops: Cotton, Canola, Flax, Sunflower</td>
<td>Commercial seed treatment</td>
<td>Commercial seed treatment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Root and Tubers Vegetables: Beets, Sugar Beets, Carrots, Rutabaga, Beets, Horseradish, Parsnip, Radish, Rutabaga, Salsify, Turnips.</td>
<td>Commercial seed treatment</td>
<td>Commercial seed treatment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potatoes, Sweet Potatoes, Yams, Jerusalem Artichoke, Cassava, Ginger</td>
<td>Commercial seed treatment</td>
<td>Commercial seed treatment</td>
</tr>
</tbody>
</table>

**SEED TREATMENT FOR VEGETATIVELY PROPAGATED CROPS (INCLUDING POTATOES, OTHER ROOT AND TUBER VEGETABLES, AND BULB VEGETABLES:** For planting or storage, treat at 0.5 – 3.0 ounces T-22 HC Biological Fungicide to 0.1 cubic foot of bulb or root can be treated. Alternatively, dip bulbs, tubers or cut potato seed pieces in a suspension consisting of 0.25 – 2.5 pounds of T-22 HC Biological Fungicide in 5 gallons of water.

For potatoes, apply T-22 HC Biological Fungicide with compatible chemical seed dusts. Consult your BioWorks Representative for more information. All surfaces, knives, and other equipment used to cut and plant potatoes should be thoroughly sterilized before cutting and planting and at regular intervals. The cut and treated seed pieces may be held for a week or more at cool temperatures, 45-50°F, and high relative humidity to promote suberization, or they may be planted immediately.

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**NON-AGRICULTURAL USE REQUIREMENTS**

The requirements in this box apply to uses of this 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. Keep unprotected persons out of treated areas until sprays have dried or dusts have settled.
IN-FURROW SPRAY OR TRANSPLANT STARTER SOLUTION: Apply T-22 HC Biological Fungicide as an in-furrow spray or transplant starter solution at a rate of 16.0 - 32.0 ounces /acre in sufficient water to agitate uniform application. Maintain constant agitation. T-22 HC Biological Fungicide can be tank mixed and is compatible with many commonly used fungicides, liquid fertilizers, herbicides, insecticides and biological control products registered for use on nursery plants. If tank mixes are desired, observe the most restrictive of labeling limitations and precautions of all products used in mixtures. Consult the tank mix compatibility chart below or your BioWorks representative for more information.

TANK MIXING: T-22 HC Biological Fungicide can be tank mixed and is compatible with many commonly used fungicides, liquid fertilizers, herbicides, insecticides and biological control products. If tank mixes are desired, observe the most restrictive of labeling limitations and precautions of all products used in mixtures. Consult the tank mix compatibility chart below or your BioWorks representative for more information. This product MUST NOT be tank-mixed with chemicals that contain the following active ingredients: imazalil, propiconazole, tebuconazole, and triflumizole. Do not apply T-22 HC Biological Fungicide immediately before these pesticides are used.

In accordance with the most restrictive of label limitations and precautions (for all products used in a tank mixture), this product can be mixed with specific products (see table immediately below), their active ingredient percentages and their application rates for use in in-furrow spray or transplant starter solution. Do not exceed label dosage rates. This product cannot be mixed with any product containing a label prohibition against such mixing.

COMPATIBILITY CHART FOR IN-FURROW SPRAY OR TRANSPLANT STARTER SOLUTION TANK MIXES:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>% A.I.</th>
<th>Formulation Type</th>
<th>Product Name</th>
<th>Application Rate (Amount of Product / Unit Area)</th>
<th>Dilution (Amount of Product / Amount of Water)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Captain</td>
<td>85%</td>
<td>Wettable Powder</td>
<td>Captain 85 WP</td>
<td>1.88 lb/acre</td>
<td>0.1 oz/gal</td>
</tr>
<tr>
<td>Chlorothalonil</td>
<td>82.5%</td>
<td>Water Dispersible Granules</td>
<td>Daconil Ultra 3.7 oz/1000 sq. ft.</td>
<td>0.56 oz/gal</td>
<td></td>
</tr>
<tr>
<td>Iprodione</td>
<td>23.3%</td>
<td>Flockable</td>
<td>Chipco 26019 Flo 4.0 oz/1000 sq. ft.</td>
<td>0.6 oz/gal</td>
<td></td>
</tr>
<tr>
<td>Iprodione</td>
<td>50%</td>
<td>Soluble Granules</td>
<td>Roval 0.75 lb/acre</td>
<td>0.04 oz/gal</td>
<td></td>
</tr>
<tr>
<td>Thiophanate methyl</td>
<td>50%</td>
<td>Wettable Powder</td>
<td>Cleary’s 3336 in water soluble bags 8.0 oz/1000 sq. ft.</td>
<td>1.2 oz/gal</td>
<td></td>
</tr>
<tr>
<td>Metcalfyli</td>
<td>23.3%</td>
<td>Liquid</td>
<td>Sulphur Maxx 0.25 oz/800 sq. ft.</td>
<td>0.05 oz/gal</td>
<td></td>
</tr>
<tr>
<td>Chlorpyrifos</td>
<td>50%</td>
<td>Emulsifiable Liquid</td>
<td>Lorsban 4E 3.2 oz/gal</td>
<td>3.2 oz/gal</td>
<td></td>
</tr>
</tbody>
</table>

SEED TREATMENT FOR TRUE SEED CROPS

ONSITE APPLICATION TO SEED: For protection against root diseases, apply 1.5 - 8.0 ounces of T-22 HC Biological Fungicide/hundredweight of seed. For example, for large, smooth seeds such as soybean or dry bean, and smaller or rougher seeds such as peas and field corn, apply 1.5 - 3.0 ounces of T-22 HC Biological Fungicide/hundredweight of seed. For sweet corn, apply 1.5 - 3.0 ounces of T-22 HC Biological Fungicide/hundredweight of seed. To assure uniform application, add half the required amount of T-22 HC Biological Fungicide to half the seed in the hopper, mix with a wooden paddle, and then add the remaining seed and T-22 HC Biological Fungicide. T-22 HC Biological Fungicide can also be applied in sufficient water to coat seeds. For maximum seed protection, especially in cold soils, apply T-22 HC Biological Fungicide to commercially treated seed such as seed treated with Captain, Apron and or Demasan for stand establishment.

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.

COMMERCIAL SEED TREATMENT: Apply T-22 HC Biological Fungicide as a slurry, a coating, in a pellet, or during seed priming. See table below.

Note: This product does not contain dye and is not covered by an acceptable tolerance exemption, or other clearance under the Federal Food, Drug and Cosmetic Act. To comply with 40 CFR 153.155 pellet, or during seed priming. See table below.

The Federal Seed Act requires that bags containing seed treated with this product shall be labeled with the following information: “This seed has been treated with Trichoderma harzianum Rifai strain T-22. Do not use for food, feed or oil purposes.”

AGRICULTURAL CROPS

<table>
<thead>
<tr>
<th>Seed Size (# seeds/oz.)</th>
<th>Grams of T-22 HC per lb of seed</th>
<th>Ounces of T-22 HC per lb of seed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large (1-100) as peanuts, green &amp; dry beans, field corn</td>
<td>0.0016 -- 0.32 g</td>
<td>0.00006 -- 0.00113 oz</td>
</tr>
<tr>
<td>Medium (100-1,000) as sweet corn, soybeans, sorghum</td>
<td>0.08 -- 2.4 g</td>
<td>0.0028 - 0.00847 oz</td>
</tr>
<tr>
<td>Small (1,000 - 10,000) as: cabbage, cucumbers, sugar beets</td>
<td>0.4 -- 16 g</td>
<td>0.0141 - 0.0564 oz</td>
</tr>
<tr>
<td>Fine (10,000 - 100,000) as: tomatoes</td>
<td>1.6 -- 120 g</td>
<td>0.0564 - 4.23 oz</td>
</tr>
</tbody>
</table>

PLANT SAFETY: T-22 HC Biological Fungicide has been tested on numerous plant varieties with no phytotoxic effects. However, since T-22 HC Biological Fungicide has not been tested on all plant varieties or in combination with all available tank mix the manufacturer recommends testing T-22 HC Biological Fungicide on a small number of plants to check for adverse plant effects before applying to a larger number of plants.

STORAGE AND DISPOSAL

Do not contaminate food, feed, or soil with this product. PESTICIDE STORAGE: Store in a cool, dry place. Do not store at temperatures above 75°F for prolonged periods. Keep container tightly closed when not in use.

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: Nonrefillable container. Do not reuse or refill this container. Completely empty bag by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then offer for recycling if available, or dispose of empty bag in sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke. If outer box is contaminated, dispose of in same manner as required for the bag.

NOTICE TO BUYER AND SELLER: Seller warrants that this product conforms to the description on this label and is reasonable fit for the purposes stated on this label when used and stored in accordance with the directions for use. This warranty does not extend to use of this product contrary to label directions or under conditions not reasonably foreseeable by the Seller, and Buyer and User assume the risk of any such use. To the extent consistent with applicable law, Seller shall not be liable for consequential, special or indirect damages resulting from use or handling of this product, and Seller’s sole liability and Buyer’s and User’s exclusive remedy shall be limited to refund of the purchase price. This product is sold only for uses stated on its label.

Country: United States of America

In Case of Emergency, Call CHEMTREC: (800) 424-9300

Manufactured in the USA by:

BioWorks®
100 Rawson Road, Suite 205
Victor, New York 14564
(800) 377-9443

031213 S-0054.1
BIOLOGICAL FUNGICIDE

MYCOSTOP®

A safe and reliable means of protecting your crops against pathogens

Verdera

Naturally. Profitably.
MYCOSTOP® FOR PLANT PRODUCTION OF VEGETABLES, HERBS AND ORNAMENTALS

BIOLOGICAL PRODUCT — FOR ENVIRONMENTALLY FRIENDLY HORTICULTURE

- Contains a naturally occurring bacterial strain isolated from Sphagnum peat
- A reliable tool to control damping-off, wilt and root diseases
- Promotes plant growth
- Induces plant defence mechanisms
- Effective in an organic and inorganic growing medium
- Approved for organic horticulture
- Compatible with biological and integrated pest management programmes
- No risk of resistance
- Long-lasting impact on the entire plant
- Safe for humans, the environment and beneficiaries

Active ingredient
Streptomyces K61
MYCOSTOP® contains mycelium and spores of Streptomyces strain K61 actinobacterium, 5 x 10⁸ cfu/g (cfu = colony forming unit)

Mode of action
- deprives pathogenic fungi of space and nourishment by colonising plant roots
- acts as a hyperparasite, disrupting cell walls of pathogens
- produces metabolites that inhibit plant pathogens

EXTENSIVE RANGE OF USE

Effectively controls a wide range of pathogens:
- damping-off caused by various fungi, such as Alternaria and Rhizoctonia solani
- wilt and root diseases caused by Fusarium, Phytophthora and Pythium

MYCOSTOP can also be used to suppress grey mould caused by Botrytis.

Application rate
The application rate depends on the cultivation system and the growth stage when MYCOSTOP is used. Some examples of the required rate:
- drip irrigation: 5-10 g/1000 plants
- growing media treatment: use 0.01% aqueous solution
- application on cuttings or bulbs: use 0.01-0.02% aqueous solution

MYCOSTOP powder is mainly used in the form of an aqueous suspension. It is applied using one of the following methods:
- drip irrigation
- drenched or sprayed onto the growing medium
- incorporated into the growing medium
- dry seed treatment
- bulb and cutting dip

MYCOSTOP® MIX is another formulation of Streptomyces K61 fungicide.

Storage
Unopened packages stored in a cool (at or below +8°C) and dry location have a viable shelf life of 12 months.

Compatibility with other pesticides
MYCOSTOP® is safe for beneficials. It is compatible with most chemical pesticides and can be used in integrated pest management programmes. As a bacterium, MYCOSTOP® has a high tolerance to chemical fungicides.

Effect of Mycostop on the flower yield of various gerbera cultivars infected by Fusarium

Effect of Mycostop on dill roots infected by Pythium

Photo: Finnish Horticultural Products Society / Slidemania, Tommy Selin
MYCOSTOP® and MYCOSTOP® MIX are part of Verdera's range of biological products for horticulture, forestry and green areas

www.verdera.com
ACTIVE INGREDIENT:
Streptomyces lydicus WYEC 108*

OTHER INGREDIENTS:....99.9629%(by wt.)
TOTAL....100.0000%(by wt.)

*End-use product contains not less than 1X10^7 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.
6223 Theall Road
Houston, Texas 77066
Questions? (888) 261-4731

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 respirator meeting 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 washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

User Safety Recommendations

Users Should:
* 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.

Keep unprotected persons out of treated areas until sprays have dried.

PRODUCT 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, Gaeumannomyces, 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.

Actinovate® AG is also effective against Walnut Blight (Xanthomonas arboricola pv. juglandis), Bacterial Spot (Xanthomonas perforans), Citrus Canker (Xanthomonas axonopodis pv citri), Sclerotium rolfsii (Southern Blight), Xanthomonas fragariae (Angular leaf spot), Macrophomina phaseolina (Charcoal rot) and Club Root (Plasmодiophora brassicae).

When applied to the soil, Actinovate® AG also breaks down minerals and micronutrients making them more available to plants resulting in increased 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 & 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).

Hydroponics systems: Use 0.5-1.5 oz. per 1,000 square feet of growing area.

Foliar Spray: Apply 6-12 oz Actinovate® Soluble per acre. Dissolve Actinovate® Soluble 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 wet to 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 handheld 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, Phytophthora omnivorum (cotton root rot), Aphanomyces, Monosporascus, Armillaria, Sclerotinia, Gaeumannomyces, Postia, Verticillium and Geotrichum. For foliar treatment of Powdery and Downy Mildew, Botrytis, Monilinia, Anthracnose, Greasy Spot, Sclerotinia, Alternaria, Erwinia, Bacterial Spot, Walnut Blight and Citrus Canker.

**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 4 oz 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 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 in not within the scope.

**Foliar Treatment:**

Use 3-12 oz of Actinovate® AG in 10-150 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-
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 of at least twice the inside diameter of the fill pipe.
3) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection.
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.
6) 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.
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:

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. [For the 300 or 500 gallons] Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate 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.

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: 7202011
Not for sale or use after ___________
Actinovate® AG is a high concentration of patented beneficial bacteria on a 100% water soluble powder. This powerful new product effectively controls and/or suppresses a wide range of soil borne diseases (when applied as a soil drench) and foliar diseases (when applied as a spray). Soil diseases controlled/suppressed include Pythium, Phytophthora, Fusarium, Rhizoctonia, Cotton Root Rot and other root decay fungi. Foliar diseases controlled/suppressed include powdery, Botrytis, Alternaria and others. In fact, when used as a preventative, researchers have seen Actinovate® AG work as well or better than most chemicals.

How it Works
Actinovate® AG contains a high concentration of the microorganism Streptomyces lydicus strain WYEC 108. When introduced into the root zone or applied to foliage this microbe colonizes and grows around the structure of the plant. While settling in the foliage or the root's rhizosphere the Actinovate® microbe forms a synergetic relationship, feeding off the plant's waste materials while secreting beneficial and protective by-products. This combination of the colonization and the protective secretions forms a defensive barrier around the plant which in turn suppresses and controls soil pathogens. S. lydicus also has been shown to prey on certain pathogens, disrupting their cell walls and disabling them in the process.

Benefits
- As a foliar spray Actinovate® SP controls/suppresses powdery mildew and Botrytis
- As a soil drench Actinovate® SP controls/suppresses Pythium, Rhizoctonia, Fusarium, Phytophthora, Verticillium, and more

Trials & Research
Streptomyces lydicus WYEC 108 is currently used in products by thousands of turf, agriculture and horticulture professionals around the world. Streptomyces lydicus WYEC 108 has been extensively researched by many industry professionals in the lab and in the field. To request both published and unpublished research please contact the Natural Industries corporate office or your local products supplier.

Actinovate® AG is labeled for use on:
- Leafy Vegetables
- Fruiting Vegetables
- Fruits and Nuts
- Berries
- Grapes
- Cotton and other row crops
- Citrus
- Mint, Herbs and Spices
- Potatoes and other root crops
- and many more...

Other Features
- Can be applied up to and including the day of harvest
- Non-phytotoxic, will not burn plants
- 100% Soluble, does not clog machinery, does not need agitation to keep suspended in solution
- Survives in soil even when plant is not present
- Multiple modes of anti-fungal action
- OMRI certified for organic use

Technical Information
Organism (Active Ingredient):
Streptomyces lydicus strain WYEC 108
Patented worldwide
General Description:
Saprophytic rhizosphere colonizing actinomycete
Modes Of Action: Exclusionism, Anti-fungal Metabolites,
Parasitism
Soil Diseases Suppressed/Controlled:
Pythium, Phytophthora, Fusarium, Rhizoctonia, Verticillium, Postia, Geotrichum, Schlerotinia, and other root decay fungi
Foliar Diseases Suppressed/Controlled:
Powdery Mildew, Downy Mildew, Botrytis, Alternaria and others
Origin:
Isolated from the roots of a linseed plant
Temperature Tolerance:
Spores of S. lydicus WYEC 108 are regularly frozen at very low temperatures for storage. Temperatures above 140°F will sterilize the spores. Germinated spores (which occur, for instance, when spores are added to growing media) survive the same temperature range as long as there is adequate moisture and a food source such as peat, bark or humates available.

PH Tolerance:
S. lydicus can survive a pH range 4.0-10.0. The organism is active between 5.0 and 9.1
Longevity:
The spore shelf life is guaranteed at 12 months. Germinated spores can survive much longer if there is a food source, moisture and minimal microbial competition (such as in bagged potting soil). Storing in refrigerated conditions may extend the shelf life.

Chemical Compatibility:
S. lydicus is compatible with all chemical fungicides and fertilizers. Bactericides at levels above 75 ppm should not be used in conjunction with it.

UV Sensitivity:
The bacterium is not UV sensitive.
By-Products:
Siderophile, chitinase, and several antibiotics
**ACTINOVATE® AG**

**ACTIVE INGREDIENT:**
*Streptomyces lydicus* WYEC 108* 

**OTHER INGREDIENTS:**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Percentage (by wt.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Streptomyces lydicus</em> WYEC 108*</td>
<td>0.0371%</td>
</tr>
<tr>
<td>Other ingredients</td>
<td>99.9629%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>100.0000%</td>
</tr>
</tbody>
</table>

*End-use product contains not less than 1X10^7 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](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.  
6223 Theall Road  
Houston, Texas 77066

Questions? (888) 261-4731

**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 respirator meeting 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 washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

**User Safety Recommendations**

**Users Should:**

* 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.

**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 requires that 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 only 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.

Keep unprotected persons out of treated areas until sprays have dried.

**PRODUCT 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*, *Rhizoctonia omnivorum* (cotton root rot), *Aphanomyces*, *Monosporascus*, *Armillaria*, *Sclerotinia*, *Gaeumannomyces*, *Postia*, *Verticillium* and *Geotrichum*. The active ingredient in Actinovate® AG colonizes the root system and
Actinovate® AG is also effective against Walnut Blight (Xanthomonas arboricola pv. juglandis), Bacterial Canker (Xanthomonas axonopodi pv citri), Sclerotium rolfsii (Southern Blight), Xanthomonas fragariae (Angular leaf spot), Macrophomina phaseolina (Charcoal rot) and Club Root (Plasmodiophora brassicae).

When applied to the soil, Actinovate® AG also breaks down minerals and micronutrients making them more available to plants resulting in increased 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 & 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).

Hydroponics systems: Use 0.5-1.5 oz. per 1,000 square feet of growing area.

Foliar Spray: Apply 6-12 oz Actinovate® Soluble per acre. Dissolve Actinovate® Soluble 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 wet to 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 handheld backpack or ground spray equipment. Clean application equipment before use of this product and use prepared sprays within

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.
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*, *Phytophthora omnivorum* (cotton root rot), *Aphanothece*, *Monosporascus*, *Armillaria*, *Sclerotinia*, *Gaumannomyces*, *Postia*, *Verticillium* and *Geotrichum*.


**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 4 oz 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 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 in not within the scope.

**Foliar Treatment:**

Use 3-12 oz of Actinovate® AG in 10-150 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-

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

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. or 2) sprayers 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. Then mix in supply tank, fill tank half way with water and add product. Stir until completely dissolved. Fill tank with remaining amount of water.

1) The system must contain a functional check valve, vacuum relief valve and low pressure drain appropriately located on the irrigation system 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) Continuous agitation is not required in pesticide supply tanks unless the 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.

7) Do not apply when wind speed favors drift beyond the area intended for treatment.

8) The system 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.

Pipe Design: 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 or for the use by individuals daily at least 60 days out of the year. If such system has at least 1 service connection 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, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

3) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

4) The system must contain functional inter-locking controls to automatically shut off the pesticide injection pump when the water pump motor stops.

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

LBS. OF BULBS, CORNS, TUBERS, RHIZOMES OR SEEDS.

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: 7202011
Not for sale or use after __________
Organic Certification

ASCO Certificate Number: 066

Agricultural Services Certified Organic has determined that this operation meets the requirements and is Certified Organic under the US National Organic Program Standards 7 CFR part 205. Once certified a production or handling operation's organic certificate continues to be in effect until surrendered, suspended or revoked, NOP 205.404(c).

Business Name: Germains Seed Technology  Contact Name: Bobby Garcia

Address: 8333 Swanston Lane  City: Gilroy  State: CA  Zip Code: 95020

Phone #: (408) 848-8120  Email: bgarcia@germains.com

Site Location Certified: 8333 Swanston Lane Gilroy, CA 95020

Category of Organic Certification: Handler

Crops/Commodity: Vegetable Seeds

This operation is certified as: Organic

Certificate effective: April 23, 2009

Certificate issue date: May 17, 2016

Certificate anniversary date: April 23, 2017

Certificate authorization: [Signature]

USDA ORGANIC

Agricultural Services Certified Organic, LLC
P.O. Box 4871 * Salinas, CA * Phone: (831) 449-6365 * Fax: (831) 975-4414
## Germaine's Seed Technology Client Summary

<table>
<thead>
<tr>
<th>Service</th>
<th>Product</th>
<th>Compliance</th>
<th>Date added</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio Proflo&quot; Organic Lettuce, Onion seed encrusting. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>4/23/09</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio Proflo E&quot; Organic Lettuce, Onion seed priming and encrusting. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>4/23/09</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio Priming Emergis&quot; Organic Carrots, Chicory, Endive, Escarole, lettuce, Radicchio, Parsley, Pepper, Squash and Tomato seed priming, Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>4/23/09</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio ProPellet L&quot; Organic carrots, Celery, Lettuce, Onion, Pepper and Tomato seed pelleting. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>4/23/09</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio ProPellet L E&quot; Organic Lettuce, Lettuce, Pepper, and Tomato seed prime and pelleting. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>4/23/09</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio T-22&quot; Organic Arugula, Beet, Broccoli, Onion, Cabbage, Carrot, Caiiflower, Celery, Cucumber, Endive, Fava beans, Melon, Peas, Pumpkin, Radish, Chicory, Raddish, Peppers, Spinach, Squash, Swiss chard, Tomato. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>5/7/09</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio ProPellet H&quot; Organic Chicory, Endive, Escarole, Lettuce, Radicchio seed pelleting. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>6/25/09</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio Oxykote EXT&quot; Organic Lettuce seed priming and pelleting Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>1/13/11</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio ProPellet EXT&quot; Organic Lettuce seed priming. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>3/22/11</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio EXT&quot; Organic Lettuce seed priming. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>3/22/11</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio Proflo Precise EXT&quot; Organic Lettuce seed priming and seed encrusting. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>3/22/11</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio ProPellet L EXT&quot; Organic Lettuce seed priming and pelleting. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>3/22/11</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio ProPellet H EXT&quot; Organic Lettuce, seed priming and pelleting. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>3/22/11</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio ProPellet EXT&quot; Organic Lettuce seed priming, Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>3/22/11</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio Oxykote&quot; Organic Lettuce seed pelleting. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>4/23/11</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio Mycospoil Film Coating for Vegetables&quot;. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>3/27/12</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio gourps Swiss Chard&quot; Organic Swiss Chard, Beet, Cilantro &amp; Kale seed disinfection. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>8/14/12</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio SE Pellet&quot;. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>7/30/12</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio Amiravate AG&quot;. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>3/30/15</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Filroil&quot;. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>3/30/15</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio Copt&quot;. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>3/30/15</td>
</tr>
<tr>
<td>Seed Processing</td>
<td>&quot;Probio Safeguard&quot; Organic Spinach seed treatment only. Certification applicable to organic seed processing only.</td>
<td>NOP &amp; NOP/COR Equivalent</td>
<td>11/20/15</td>
</tr>
</tbody>
</table>

*Certified in compliance with the terms of the US-Canada Organic Equivalency Arrangement.
The above information is provided as a narrative of the organic system plan under certification. This document is not a substitute for the organic certificate. It is provided as additional information to assist in the representation of the certified organic products.

Certificate effective date: April 23, 2009 - Certificated anniversary date: April 23, 2017
Certificate issue date: May 17, 2016

Agricultural Services Certified Organic, LLC
P.O. Box 4871 * Salinas, CA * Phone: (831) 449-6365 * Fax: 831.975-4414