

PlantShield® HC

Biological Fungicide

ACTIVE INGREDIENT:

Trichoderma harzianum Rifai strain T-22* 1.15%

OTHER INGREDIENTS: 98.85%

TOTAL: 100.00%

*Contains at least 1.0 X 10⁷ colony forming units per gram dry weight

EPA Reg. No. 68539-4 EPA Est. No. 068539-NY-001

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

First Aid

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

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

PRECAUTIONARY STATEMENTS HAZARD TO HUMANS & DOMESTIC ANIMALS

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

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear protective eyewear, long sleeved shirt, long pants, waterproof gloves, shoes and socks. Mixers/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 remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing. Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on 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 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 workers may be in the area during application. For any requirement 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 4 hours.

Exception: If the product is soil injected or soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas (that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil or water) is protective eyewear, coveralls, waterproof gloves, shoes, and socks.

PRODUCT INFORMATION

PlantShield 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*. PlantShield HC Biological Fungicide can be used alone or in conjunction with certain chemical fungicides; consult the appropriate tank mix compatibility charts below or your BioWorks Representative for more information.

PlantShield HC Biological Fungicide must not be tank mixed with chemicals that contain the following active ingredients: imazilil, propiconazole, tebuconazole, and triflumizole. Do not apply PlantShield 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 PlantShield HC Biological Fungicide for root disease control.

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

PlantShield HC Biological Fungicide is for use in soil applications (drench, in soil furrow, and potting soil), on ornamentals, landscape plants, turf, and ornamental trees, including tree seedlings for transplanting into the forest.

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

For food commodities: In the table immediately following this paragraph, greenhouse chemigation and field chemigation of food commodities are annotated with an asterisk (*) to indicate that these methods are limited to flood, drip, furrow, micro-irrigation, and ebb and flow systems with NO OVERHEAD SPRAY. Do not apply product when above-ground harvestable food commodities are present. Refer to Chemigation section for additional specific directions.

APPLY VIA GROUND APPLICATION ONLY.

CROPS ON WHICH PLANTSHIELD HC BIOLOGICAL FUNGICIDE MAY BE USED

CROPS	USE	APPLICATION RATE OF PLANTSHIELD HC
Cucurbit Vegetables: Cucumbers, Melons (i.e. Chinese waxgourd, Citron melon, Muskmelons, or Watermelon), Gourds, Pumpkins, Squash	Greenhouse Soil Drench	3.0 – 5.0 oz / 100 gal water
	In Furrow Spray or Transplant Starter Solution	16.0 – 32.0 oz / acre
	*Greenhouse Chemigation	3.0 – 5.0 oz / 100 gal water
	*Field Chemigation	3.0 – 5.0 oz / 100 gal water
Flowers, Bedding Plants, and Ornamentals	Cuttings or Bare-rooted transplant dip	1.0 – 3.0 lb / 20 gal water or dip directly into dry powder.
	Greenhouse & Nursery Soil Drench	3.0 – 5.0 oz / 100 gal water
	Greenhouse Chemigation	3.0 – 5.0 oz / 100 gal water
	Field Chemigation	3.0 – 5.0 oz / 100 gal water
Fruiting Vegetables: Eggplant, Sweet and Hot Peppers, Tomatillos, Tomatoes	Greenhouse Soil Drench	3.0 – 5.0 oz / 100 gal water
	In Furrow Spray or Transplant Starter Solution	16.0 – 32.0 oz / acre
	*Greenhouse Chemigation	3.0 – 5.0 oz / 100 gal water
	*Field Chemigation	3.0 – 5.0 oz / 100 gal water
Herbs, Spices, and Mints	Greenhouse Soil Drench	3.0 – 5.0 oz / 100 gal water
	In Furrow Spray or Transplant Starter Solution	16.0 – 32.0 oz / acre
	*Greenhouse Chemigation	3.0 – 5.0 oz / 100 gal water
	*Field Chemigation	3.0 – 5.0 oz / 100 gal water
Hydroponic Crops: Cucumbers, Tomatoes, Lettuce, Herbs and Spices	Greenhouse Soil Drench	3.0 – 5.0 oz / 100 gal water
	*Greenhouse Chemigation	3.0 – 5.0 oz / 100 gal water

CROPS	USE	APPLICATION RATE OF PLANTSHIELD HC
Leafy and Brassica (Cole) Leafy Vegetables: Arugula, Celery, Chervil, Endive, Fennel, Lettuce (head and leaf), Parsley, Radicchio, Rhubarb, Spinach, Swiss Chard, Broccoli, Brussels sprouts, Cabbage, Cauliflower, Collards, Kale, Kohlrabi, Mustard Greens	Greenhouse Soil Drench	3.0 – 5.0 oz / 100 gal water
	In Furrow Spray or Transplant Starter Solution	16.0 – 32.0 oz / acre
	*Greenhouse Chemigation	3.0 – 5.0 oz / 100 gal water
Asparagus	*Field Chemigation	3.0 – 5.0 oz / 100 gal water
Pome Fruits: Pears, Quince	Greenhouse & Nursery Soil Drench	3.0 – 5.0 oz / 100 gal water
Shadehouse and Outdoor Nursery Crops: Deciduous trees (e.g., Maple, Oak), Ornamentals, Grapes, Citrus, Pine	Greenhouse & Nursery Soil Drench	3.0 – 5.0 oz / 100 gal water
	In Furrow Spray or Transplant Starter Solution	16.0 – 32.0 oz / acre
	*Field Chemigation	3.0 – 5.0 oz / 100 gal water
Stone Fruit: Apricots, Cherries, Nectarines, Peaches, Plums, Prunes	Cuttings or Bare-rooted transplant dip	1.0 – 3.0 lb / 20 gal water or dip directly into dry powder.
	Greenhouse & Nursery Soil Drench	3.0 – 5.0 oz / 100 gal water
	In Furrow Spray or Transplant Starter Solution	16.0 – 32.0 oz / acre
Tree Nuts: Almonds, Beech Nuts, Brazil Nuts, Butternuts, Cashews, Chestnuts, Filberts, Hickory Nuts, Macadamia Nuts, Pecans, Pistachios, Walnuts	Greenhouse & Nursery Soil Drench	3.0 – 5.0 oz / 100 gal water
	In Furrow Spray or Transplant Starter Solution	16.0 – 32.0 oz / acre

DIP FOR CUTTINGS AND BARE-ROOTED TRANSPLANTS

Dip cuttings and bare-rooted transplants in PlantShield HC Biological Fungicide dry powder or in a suspension of 1.0 – 3.0 pounds of PlantShield HC Biological Fungicide in 20 gallons of water. Plant treated cuttings and bare-rooted transplants in potting mix or soil in the usual manner.

SOIL DRENCH

GREENHOUSE SOIL DRENCH: Suspend 3.0 – 5.0 ounces of PlantShield HC Biological Fungicide in 100 gallons of water with agitation, and apply prepared suspension as a soil drench to greenhouse planting mixes. For seeding flats or shallow (up to 4-inch depth) beds or pots, apply prepared suspension at a rate of 50-100 gallons per 800 square feet. For deeper beds or pots, apply prepared suspension at a rate of 100 gallons per 400 square feet, ½ cup (4 fluid ounces) for pots with a 3-inch diameter, or 1 cup (8 fluid ounces) for pots with a 6-inch diameter. Apply PlantShield HC Biological Fungicide directly to the soil through low pressure watering nozzles such as fan nozzles or other drench watering systems. Constant agitation is required to maintain PlantShield HC Biological Fungicide in suspension. PlantShield 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 greenhouse/ornamental 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 BioWorks representative for more information.

NURSERY SOIL DRENCH: Suspend 3.0 – 5.0 ounces of PlantShield HC Biological Fungicide in 100 gallons of water with agitation, and apply prepared suspension as a soil drench to container nursery crops. For shallow (up to 4-inch depth) beds or pots, apply prepared suspension at a rate of 50 - 100 gallons per 800 square feet. For deeper beds or pots, apply prepared suspension at a rate of 100 gallons per 400 square feet, 1/2 cup (4 fluid ounces) for pots with a 3-inch diameter, or 1 cup (8 fluid ounces) for pots with a 6-inch diameter. Apply PlantShield HC Biological Fungicide directly to the soil through low pressure watering nozzles such as fan nozzles, other drench watering systems, handheld or backpack sprayers. Constant agitation is required to maintain PlantShield HC Biological Fungicide in suspension. PlantShield 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.

IN-FURROW SPRAY OR TRANSPLANT STARTER SOLUTION: Apply PlantShield 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 achieve uniform application. Maintain constant agitation. PlantShield 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.

TANK MIXING: PlantShield 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: imazilil, propiconazole, tebuconazole, and trifluzazole.** Do not apply PlantShield 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 greenhouse soil drench, nursery soil drench, in-furrow spray and 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 FOR GREENHOUSE SOIL DRENCH, NURSERY SOIL DRENCH, IN-FURROW SPRAY OR TRANSPLANT STARTER SOLUTION/TANK MIXES:

NOTE: While the information presented in this table is believed to be up-to-date, the user must always read the label of the other products used in a tank mix to confirm application rates and dilutions.

Chemical Name	% A.I., Formulation Type	Product Name	Application Rate (Amount of Product / Unit Area)	Dilution (Amount of Product / Amount of Water)
Captan	85%, Wettable Powder	Captan 85 WP	1.88 lb/Acre	0.1 oz/gal
Chlorothalonil	82.5%, Water Dispersible Granules	Daconil Ultrex	3.7 oz/1000 ft ²	0.56 oz/gal
Iprodione	23.3%, Flowable	Chipco 26019 Flo	4 oz/1000 ft ²	0.6 oz/gal
Thiophanate methyl	50%, Wettable Powder	Cleary's 3336 in water soluble bags	8 oz/ 1000 ft ²	1.2 oz/gal
Iprodione	50%, Soluble Granules	Rovral	0.75 lb/Acre	0.04 oz/gal
Metalaxyl	21.3%, Liquid	Subdue Maxx	0.25 oz/800 ft ²	0.05 oz/gal
Chlorpyrifos	50%, Emulsifiable Liquid	Lorsban 4E	3.2 oz/ gallon	3.2 oz/gal

GREENHOUSE AND FIELD CHEMIGATION

Suspend 3.0 – 5.0 ounces PlantShield HC Biological Fungicide in 100 gallons of water with agitation and apply only through the following systems: 1) pressurized drench (flood) or drip (trickle), 2) furrow, 3) micro-irrigation such as spaghetti-tube or individual tube irrigation, 4) hand-held calibrated irrigation equipment such as the hand-held wand with injector, and 5) ebb and flow. Do not apply this product through any other type of irrigation system.

Crop 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 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 a 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 pump.
- 4) 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.
- 5) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g. diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment.
- 8) Apply PlantShield HC Biological Fungicide during the last half of the water application period. Mix PlantShield HC Biological Fungicide in enough water to be able to draw through the system for the last half of the water application. Maintain constant agitation.
- 9) Apply enough water to move PlantShield HC Biological Fungicide into the root zone. Amounts will vary depending on soil type and existing moisture level. Do not apply water volumes that would cause runoff or excessive leaching.

Drip (Trickle) Chemigation and Micro-irrigation Requirements:

- 1) The system must contain a functional check valve, vacuum relief valve and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
- 2) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 3) The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the

system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

- 4) The system must contain functional inter-locking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7) Apply PlantShield HC Biological Fungicide during the last half of the water application period. Mix PlantShield HC Biological Fungicide in enough water to be able to draw through the system for the last half of the water application. Maintain constant agitation.
- 8) Apply enough water to move PlantShield HC Biological Fungicide into the root zone. Amounts will vary depending on soil type and existing moisture level. Do not apply water volumes that would cause runoff or excessive leaching.

Flood and Furrow Chemigation Requirements:

- 1) Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity, such as a drop structure or weir box, to decrease potential for water source contamination from back flow if water flow stops.
- 2) Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:
 - a. The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
 - b. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
 - c. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
 - d. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
 - e. The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
 - f. Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 3) Apply PlantShield HC Biological Fungicide during the last half of the water application period. Mix PlantShield HC Biological Fungicide in enough water to be able to draw through the system for the last half of the water application. Maintain constant agitation.
- 4) Apply enough water to move PlantShield HC Biological Fungicide into the root zone. Amounts will vary depending on soil type and existing moisture level. Do not apply water volumes that would cause runoff or excessive leaching.

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

STORAGE AND DISPOSAL

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

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 reasonably 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 disclaims all other warranties, express or implied, including any warranty of fitness or merchantability. 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.

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

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