



# ROOTSHIELD® PLUS<sup>+</sup> WP



## Biological Fungicide

### ACTIVE INGREDIENTS:

*Trichoderma harzianum* Rifai strain T-22\* ..... 1.15%

*Trichoderma virens* strain G-41\*\* ..... 0.61%

**OTHER INGREDIENTS:** ..... 98.24%

**TOTAL:** ..... 100.00%

\*Contains at least 1.0 x 10<sup>7</sup> colony forming units per gram

\*\*Contains at least 5.3 x 10<sup>6</sup> colony forming units per gram

### USER SAFETY RECOMMENDATIONS

Users should:

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. As soon as possible, wash thoroughly and change into clean clothing.

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

EPA Reg. No. 68539-9

EPA Est. No. 68539-NY-001

US Patent: US 9,681,668 B2

### 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 washwater 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 Tribe agency responsible for pesticide regulation.

FIRST AID	
<b>If in eyes</b>	<ul style="list-style-type: none"> <li>• Hold eye open and rinse slowly and gently with water for 15 – 20 minutes.</li> <li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>• Call a poison control center or doctor for treatment advice.</li> </ul>
<p><b>HOT LINE NUMBER:</b> Have the product container or label with you when calling a poison control center or doctor or going for treatment. For general information on this product, contact the National Pesticide Information Center (NPIC) at 1-800-858-7378, Monday through Friday 8 a.m. to 12 p.m. Pacific Time, or at <a href="http://npic.orst.edu">http://npic.orst.edu</a>. For medical emergencies, call your poison control center at 1-800-222-1222.</p>	

### 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
- Chemical-resistant gloves (made of any waterproof material)
- Shoes plus socks

### PRECAUTIONARY STATEMENTS

#### HAZARDS TO HUMAN AND DOMESTIC ANIMALS

**CAUTION:** Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

#### PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Protective eyewear
- Long-sleeved shirt and long pants
- Shoes plus socks

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

Follow 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.

### 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.

For use to control diseases on turf, ornamental plants and landscape plants intended for aesthetic purposes and being grown in ornamental gardens or parks, on golf courses, or on public or private lawns or grounds or grown for other than commercial or research purposes:

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

### PRODUCT INFORMATION

RootShield® *PLUS*<sup>+</sup> WP Biological Fungicide is a preventative biological fungicide for control of plant diseases. The active ingredients are microbes, *Trichoderma harzianum* Rifai strain T-22 and *Trichoderma virens* strain G-41, that, when applied to seeds, transplants or other propagative material, soil, planting mixes, or turf, grow onto plant roots as they develop and provide protection against plant root pathogens such as *Pythium*, *Phytophthora*, *Rhizoctonia*, *Fusarium*, *Cylindrocladium* and *Thielaviopsis*, and *Sclerotinia homeocarpa*.

RootShield *PLUS*<sup>+</sup> WP Biological Fungicide can be used alone, in combination with, or in rotation with other fungicides, insecticides, miticides, fertilizers or micronutrients in accordance with the most restrictive label limitations and precautions; consult your BioWorks, Inc. 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 RootShield *PLUS*<sup>+</sup> WP 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 RootShield *PLUS*<sup>+</sup> WP Biological Fungicide for root disease control.

Note: RootShield *PLUS*<sup>+</sup> WP Biological Fungicide contains live spores of microbes that must be used prior to disease onset. RootShield *PLUS*<sup>+</sup> WP Biological Fungicide becomes active in soil or on plants when temperatures are above 50°F and is not effective while temperatures remain cold. RootShield *PLUS*<sup>+</sup> WP Biological Fungicide can be applied to sterilized or fumigated soil but must be applied after sterilization or fumigation.

This biological fungicide is for use in soil applications (drench, in soil furrow, and potting soil), and seed treatments for all listed crops (except those mentioned below\*\*). RootShield *PLUS*<sup>+</sup> WP is for use on cutting or bare-rooted transplant dips on food crops, ornamentals, landscape plants, turf, and ornamental trees, including tree seedlings for transplanting into the forest. This biological fungicide is also for use in foliar applications (foliar spray) on turf.

### USE RESTRICTIONS

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

### APPLICATION INSTRUCTIONS

RootShield *PLUS*<sup>+</sup> WP Biological Fungicide has a 0-Day Pre-Harvest Interval (PHI) for all crops contained on this label.

### APPLY VIA GROUND APPLICATION ONLY.

### CROPS ON WHICH RootShield *PLUS*<sup>+</sup> WP BIOLOGICAL FUNGICIDE MAY BE USED:

CROP	USE	APPLICATION RATE OF RootShield <i>PLUS</i> <sup>+</sup> WP BIOLOGICAL FUNGICIDE
Asparagus	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Field chemigation	3.0 – 8.0 oz/100 gal water
Berries and Small Fruits, including: Blackberries, Blueberries, Currants, Elderberries, Gooseberries, Huckleberries, Loganberries, Raspberries, Strawberries, Grapes ** Refer to excluded crops above table	Cutting or bare-rooted transplant dip	0.25 – 1.5 lb/20 gal water
	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	Nursery drench	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Greenhouse chemigation	3.0 – 8.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water
Bulb Vegetables, including: Garlic, Leeks, Onions, Shallots, Ornamental Bulbs	Dust (pre-plant)	0.03 – 3.0 lb/cwt bulbs
	Bulb dip	0.25 – 1.5 lb/20 gal water
Cereal Grains, including: Buckwheat, Corn (grain, seed, sweet corn, silage, popcorn, high oil), Rye, Wheat, Sorghum, Millet **Refer to excluded crops above the tables	Field chemigation	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
Citrus Fruits, including: Citrus hybrids, Grapefruit, Kumquat, Limes, Oranges, Pummelos **Refer to excluded crops above table	Cutting or bare-rooted transplant dip	0.25 – 1.5 lb/20 gal water
	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	Nursery drench	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Greenhouse chemigation	3.0 – 8.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water

CROP	USE	APPLICATION RATE OF RootShield PLUS* WP BIOLOGICAL FUNGICIDE
<b>Conifer Tree Seedlings, Conifer Trees</b>	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	Nursery drench	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Greenhouse chemigation	3.0 – 8.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water
<b>Cucurbit Vegetables, including:</b> Cucumbers, Melons (i.e. Chinese Waxgourd, Citron Melon, Muskmelons, or Watermelon), Gourds, Pumpkins, Squash	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Greenhouse chemigation	3.0 – 8.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water
<b>Flowers, Bedding Plants, and Ornamentals</b>	Cutting or bare-rooted transplant dip	0.25 – 1.5 lb/20 gal water
	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	Nursery drench	3.0 – 8.0 oz/100 gal water
	Greenhouse chemigation	3.0 – 32.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water
<b>Fruiting Vegetables, including:</b> Eggplant, Sweet and Hot Peppers, Tomatillos, Tomatoes	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Greenhouse chemigation	3.0 – 8.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water
<b>Herbs and Spices Mints</b>	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Greenhouse chemigation	3.0 – 8.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water
<b>Leafy and Brassica (Cole) Leafy Vegetables, including:</b> 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 **Refer to excluded crops above table	Cutting or bare-rooted transplant dip	0.25 – 1.5 lb/20 gal water
	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Greenhouse chemigation	3.0 – 8.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water

<b>Legume Vegetables (Succulent or Dried), including:</b> Beans (soybean, snap, dry), Lentils, Peas **Refer to excluded crops above the table	Field chemigation	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
<b>Oilseeds, including:</b> Cotton, Canola, Safflower, Sunflower	Field chemigation	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
<b>Peanut</b>	Field chemigation	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
<b>Pome Fruits, including:</b> Pears, Quince ** Refer to excluded crops above the table	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	Nursery drench	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Greenhouse chemigation	3.0 – 8.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water
<b>Root and Tuber Vegetables, including:</b> Beets, Sugar Beets, Carrots, Celeriac, Chicory, Horseradish, Parsnip, Radish, Rutabaga, Salsify, Turnips, Ornamental Roots and Tubers Potatoes, Sweet Potatoes, Yams, Jerusalem Artichoke, Cassava, Ginger, *Ginseng	Tuber or cut potato seed piece dip	0.25 – 1.5 oz./20 gal water
	Dust (pre-plant)	0.03 – 3.0 oz./cwt seed tubers or cut potato seed pieces
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Field chemigation	3.0 – 8.0 oz/100 gal water
<b>Shadehouse and Outdoor Nursery Crops:</b> Deciduous Trees (e.g. Maple, Oak), Ornamentals, Grapes, Citrus, Pine	Cutting or bare-rooted transplant dip	0.25 – 1.5 lb/20 gal water
	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	Nursery drench	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Greenhouse chemigation	3.0 – 8.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water
<b>Stone Fruits, including:</b> Apricots, Cherries, Nectarines, Peaches, Plums, Prunes	Cutting or bare-rooted transplant dip	0.25 – 1.5 lb/20 gal water
	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	Nursery drench	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Greenhouse chemigation	3.0 – 8.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water

CROP	USE	APPLICATION RATE OF RootShield PLUS <sup>®</sup> WP BIOLOGICAL FUNGICIDE
<b>Tree Nuts, including:</b> Almonds, Beech Nuts, Brazil Nuts, Butternuts, Cashews, Chestnuts, Filberts, Hickory Nuts, Macadamia Nuts, Pecans, Pistachios, Walnuts	Cutting or bare-rooted transplant dip	0.25 – 1.5 lb/20 gal water
	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	Nursery drench	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Greenhouse chemigation	3.0 – 8.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water
<b>*Tobacco</b>	Cutting or bare-rooted transplant dip	0.25 – 1.5 lb/20 gal water
	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	Nursery drench	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Greenhouse chemigation	3.0 – 8.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water
<b>*Tropical and Subtropical Fruits Inedible Peel, including:</b> Passionfruit, Banana, Plantain <b>Edible Peel, including:</b> Starfruit	Cutting or bare-rooted transplant dip	1.0 – 3.0 lb/20 gal water or dip directly into dry powder
	Greenhouse drench	3.0 – 8.0 oz/100 gal water
	Nursery drench	3.0 – 8.0 oz/100 gal water
	In-furrow spray or transplant starter solution	16.0 – 32.0 oz/acre
	Greenhouse chemigation	3.0 – 8.0 oz/100 gal water
	Field chemigation	3.0 – 8.0 oz/100 gal water

\* Not for use in California

### TURF USES

For Turf Uses, DO NOT APPLY this product through any type of irrigation system.

PLANT	USE	APPLICATION RATE OF RootShield PLUS <sup>®</sup> WP BIOLOGICAL FUNGICIDE
<b>Turf:</b> Golf courses; sports fields; seedbed preparation of golf course tees, greens, fairways and roughs; seed production, sod production	Soil surface spray	0.5 – 1.5 oz/1,000 sq ft turf
	Foliar spray	0.5 – 1.5 oz/1,000 sq ft turf

### LANDSCAPE USES

For Landscape Uses, DO NOT APPLY this product through any type of irrigation system.

PLANTS ON WHICH RootShield PLUS<sup>®</sup> WP BIOLOGICAL FUNGICIDE MAY BE USED:

PLANT	USE	APPLICATION RATE OF RootShield PLUS <sup>®</sup> WP BIOLOGICAL FUNGICIDE
<b>Berries and Small Fruits:</b> Blackberries, Blueberries, Currants, Elderberries, Gooseberries, Huckleberries, Loganberries, Raspberries, Strawberries, Grapes *Refer to excluded crops above table	Landscape drench	3 – 8 oz/1,000 sq ft landscape plantings
	Soil injection	3 – 8 oz/1,000 sq ft shrubs
<b>Ornamental Bulbs</b>	Landscape drench	3 – 8 oz/1,000 sq ft landscape plantings
<b>Citrus Fruits:</b> Citrus hybrids, Grapefruit, Kumquat, Limes, Oranges, Pummelos **Refer to excluded crops above the tables	Landscape drench	3 – 8 oz/1,000 sq ft landscape plantings
	Soil injection	3 – 8 oz/1,000 sq ft trees
<b>Conifer trees</b>	Landscape drench	3 – 8 oz/1,000 sq ft landscape plantings
	Soil injection	3 – 8 oz/1,000 sq ft trees
<b>Flowers, Bedding Plants, and Ornamentals</b>	Landscape drench	3 – 8 oz/1,000 sq ft landscape plantings
	Soil injection	3 – 8 oz/1,000 sq ft shrubs
<b>Herbs and Spices Mints</b>	Landscape drench	3 – 8 oz/1,000 sq ft landscape plantings
	Soil injection	3 – 8 oz/1,000 sq ft shrubs
<b>Pome fruits:</b> Pears, Quince **Refer to excluded crops above the table	Landscape drench	3 – 8 oz/1,000 sq ft landscape plantings
	Soil injection	3 – 8 oz/1,000 sq ft trees
<b>Trees and Shrubs:</b> Deciduous Trees (e.g. Maple, Oak), Ornamentals, Grapes, Citrus, Pine	Landscape drench	3 – 8 oz/1,000 sq ft landscape plantings
	Soil injection	3 – 8 oz/1,000 sq ft trees and shrubs
<b>Stone Fruits:</b> Apricots, Cherries, Nectarines, Peaches, Plums, Prunes	Landscape drench	3 – 8 oz/1,000 sq ft landscape plantings
	Soil injection	3 – 8 oz/1,000 sq ft trees
<b>Tree Nuts:</b> Almonds, Beech Nuts, Brazil Nuts, Butternuts, Cashews, Chestnuts, Filberts, Hickory Nuts, Macadamia Nuts, Pecans, Pistachios, Walnuts	Landscape drench	3 – 8 oz/1,000 sq ft landscape plantings
	Soil injection	3 – 8 oz/1,000 sq ft trees

## **SEED TREATMENT FOR VEGETATIVELY PROPAGATED CROPS (INCLUDING POTATOES, OTHER ROOT AND TUBER VEGETABLES, AND BULB VEGETABLES)**

For planting or storage, treat at 0.03 – 3.0 oz. of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide to 100 pounds (1 cwt) of bulbs, seed tubers or cut potato seed pieces. Apply to bulbs, seed tubers or cut potato seed pieces so surfaces are thoroughly covered with dust. Alternatively, dip bulbs, seed tubers or cut potato seed pieces in a suspension consisting of 0.25 – 1.5 pounds of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide in 20 gallons of water.

For potatoes, apply RootShield *PLUS*<sup>+</sup> WP Biological Fungicide with compatible chemical seed dusts. Consult your BioWorks, Inc. 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.

## **DIP FOR CUTTINGS AND BARE-ROOTED TRANSPLANTS**

Dip cuttings and bare-rooted transplants in a suspension of 0.25 – 1.5 pounds of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide in 20 gallons of water. Submerge for approximately 30 seconds. Unrooted cuttings may be dipped in dry RootShield *PLUS*<sup>+</sup> WP Biological Fungicide powder before or after a rooting hormone dip. Plant treated cuttings and bare-rooted transplants in potting mix or soil in the usual manner.

## **GREENHOUSE DRENCH:**

Suspend 3.0 – 8.0 ounces of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide in 100 gallons of water with agitation, and apply prepared suspension as a 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, 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 RS *PLUS*<sup>+</sup> WP Biological Fungicide through low pressure watering nozzles such as fan nozzles, other drench watering systems, handheld sprayers or backpack sprayers.

Constant agitation is required to maintain RootShield *PLUS*<sup>+</sup> WP Biological Fungicide in suspension. RootShield *PLUS*<sup>+</sup> WP 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 the mixtures. Consult your BioWorks, Inc. representative for more information.

## **NURSERY DRENCH:**

Suspend 3.0 – 8.0 ounces of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide in 100 gallons of water with agitation, and apply prepared suspension as a 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 RootShield *PLUS*<sup>+</sup> WP Biological Fungicide directly to the soil through low pressure watering nozzles such as fan nozzles, other drench watering systems, handheld sprayers or backpack sprayers.

Constant agitation is required to maintain RootShield *PLUS*<sup>+</sup> WP Biological Fungicide in suspension. RootShield *PLUS*<sup>+</sup> WP 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 your BioWorks, Inc. representative for more information.

## **LANDSCAPE DRENCH:**

Apply 3 – 8 ounces of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide per 1,000 square feet of landscape plantings. Mix required dosage in sufficient water (50 – 75 gallons of water per 1,000 square feet of landscape plantings), and apply prepared suspension as a drench to landscape plantings. Apply RootShield *PLUS*<sup>+</sup> WP Biological Fungicide through low pressure watering nozzles such as fan nozzles, other drench watering systems, or hydraulic, handheld or backpack sprayers. Overhead spray/irrigation equipment can only be used for pre-plant applications. Constant agitation of the spray tank is required. After application, lightly irrigate landscape plantings with 1/8 – 1/4 inch of water to move product below soil surface.

## **SOIL INJECTION FOR TREES AND SHRUBS**

Apply 3 – 8 ounces of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide per 1,000 square feet of trees and shrubs. Mix required dosage in sufficient water (50 – 75 gallons of water per 1,000 square feet of trees and shrubs) to inject an equal amount of solution in each hole. Constant agitation of the spray tank is required. Use a grid system for soil injection of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide by spacing holes on 2 – 3 foot centers, in a grid pattern, extending at least to the drip line of the tree. Inject prepared solution into the soil at least 3 inches deep for shrubs and 6 inches deep for trees.

## **TURF APPLICATION**

Begin application of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide when soil temperature reaches 46° F - 48° F or when turf begins to grow. Reapply at 14 – 28-day intervals at the application rates given directly below until turf becomes dormant. The first two applications of the season must be thoroughly watered into the soil with at least 1/2 inch of rainfall or irrigation to ensure adequate root colonization.

#### First and second applications:

1.5 ounces of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide per 1,000 square feet of turf

#### Subsequent applications at 14 – 28 day intervals on greens:

1.0 ounce of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide per 1,000 square feet of turf

#### Subsequent applications at 14 – 28 day intervals on turf other than greens:

0.5 ounce of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide per 1,000 square feet of turf

Mix the above application rates in a minimum of 1 – 5 gallons of water per 1,000 square feet of turf. RootShield *PLUS*<sup>+</sup> WP Biological Fungicide is fully compatible with fertilizers and can be tank mixed and applied when making fertilizer applications. Apply tank mixes containing RootShield *PLUS*<sup>+</sup> WP Biological Fungicide and fertilizers within 4 hours of mixing. Constant agitation of the spray tank is required.

For new turf seedings, apply RootShield *PLUS*<sup>+</sup> WP Biological Fungicide at 1.5 ounces per 1,000 square feet of turf just after seeding. Follow application with at least 1/8 inch of irrigation water.

Apply RootShield *PLUS*<sup>+</sup> WP Biological Fungicide directly to turf through low pressure watering nozzles such as fan nozzles, other drench watering systems, handheld sprayers or backpack sprayers.

#### **IN-FURROW SPRAY OR TRANSPLANT STARTER SOLUTION**

Apply RootShield *PLUS*<sup>+</sup> WP Biological Fungicide as an in-furrow spray or transplant starter solution at a rate of 16.0 – 32.0 ounces per acre in sufficient water to achieve uniform application. Maintain constant agitation. RootShield *PLUS*<sup>+</sup> WP 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 the crops listed on this label. If tank mixes are desired, observe the most restrictive of labeling limitations and precautions of all products used in mixtures. Consult your BioWorks, Inc. representative for more information.

#### **TANK MIXING**

RootShield *PLUS*<sup>+</sup> WP 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 your BioWorks, Inc. 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 RootShield *PLUS*<sup>+</sup> WP Biological Fungicide immediately before these pesticides are used. Do not combine RootShield *PLUS*<sup>+</sup> WP Biological Fungicide in the spray tank with pesticides, surfactants, adjuvants, or fertilizers if there has been no previous experience or use of the combination to show it is

physically compatible, effective and non-injurious under your use conditions.

RootShield *PLUS*<sup>+</sup> WP Biological Fungicide is compatible with many commonly used pesticides, fertilizers, adjuvants and surfactants but has not been fully evaluated with all of these. To ensure compatibility of tank-mix combinations, evaluate them prior to use as follows: Using a suitable container, add proportional amounts of products to water. Add wettable powders first, followed by water dispersible granules, then by liquid flowables and lastly, emulsifiable concentrates. Mix thoroughly and let stand for at least five minutes. If the combination stays mixed or can be remixed, it is physically compatible. Do not exceed label dosage rates.

This product cannot be mixed with any product containing a label prohibition against such mixing.

#### **GREENHOUSE AND FIELD CHEMIGATION**

Suspend 3.0 – 8.0 ounces of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide in 100 gallons of water with agitation, and apply only through the following systems: 1) Over head boom-type sprayers or sprinklers, mist-type irrigation systems, sprinklers such as impact or micro-sprinklers, center pivot, lateral move, end tow, side (wheel) roll, traveler, solid set or hand move (Pre-plant only) 2) pressurized drench (flood) or drip (trickle) systems, 3) furrow, 4) micro-irrigation such as spaghetti-tube or individual tube irrigation, 5) hand-held calibrated irrigation equipment such as the hand-held wand with injector, and 6) ebb and flow systems. 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 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 pipe.
  - 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 RootShield *PLUS*<sup>+</sup> WP Biological Fungicide during the last half of the water application period. Mix RootShield *PLUS*<sup>+</sup> WP 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 RootShield *PLUS*<sup>+</sup> WP 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.

#### **Sprinkler Chemigation Requirements:**

- 1) The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
- 2) The pesticide injection pipeline must contain a functional, automatic, quick closing check valve to prevent the flow of fluid back towards the injection pump.
- 3) The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- 4) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment.

- 8) Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank, void of scale or residues may cause product to lose effectiveness or strength.

#### **Center-pivot, Lateral Move, End Tow, and Traveler Irrigation Equipment (Pre-plant only): Use only with electric or oil hydraulic drive systems which provide a uniform water distribution):**

- 1) Determine size of area to be treated.
- 2) Determine the time required to apply no more than 1/4 inch of water (6,750 gallons water per acre) over the area to be treated when the system and injection equipment are operated at normal pressures recommended by the equipment manufacturer. Run system at 80 to 95% of manufacturer's rated capacity.
- 3) Using only water, determine the injection pump output when operated at normal line pressure.
- 4) Determine the amount of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide required to treat area.
- 5) Add required amount of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide and sufficient water to meet the injection time requirements of the solution tank.
- 6) Maintain constant solution tank agitation during the injection period.
- 7) Stop injection equipment after treatment is completed. Continue to operate the system until RootShield *PLUS*<sup>+</sup> WP Biological Fungicide solution has cleared the sprinkler head.

#### **Solid-set, Side (wheel) Roll, and Hand Move Irrigation Equipment (Pre-plant only):**

- 1) Determine acreage covered by sprinkler.
- 2) Fill injector solution tank with water and adjust flow rate to use contents over a 10- to 30-minute interval.
- 3) Determine the amount RootShield *PLUS*<sup>+</sup> WP Biological Fungicide required to treat area.
- 4) Add the required amount of RootShield *PLUS*<sup>+</sup> WP Biological Fungicide into the same quantity of water used to calibrate the injection equipment.
- 5) Maintain constant solution tank agitation during the injection period.
- 6) Operate system at normal pressures recommended by the manufacturer of the injection equipment and used for the time interval established during calibration.
- 7) Inject RootShield *PLUS*<sup>+</sup> WP Biological Fungicide at the end of the irrigation cycle or as a separate application to maximize foliar fungicide retention.
- 8) Stop injection equipment after treatment is completed. Continue to operate the system until RootShield *PLUS*<sup>+</sup> WP Biological Fungicide solution has cleared the last sprinkler head.

#### **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 interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g. diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7) Apply RootShield *PLUS*<sup>+</sup> WP Biological Fungicide during the last half of the water application period. Mix RootShield *PLUS*<sup>+</sup> WP 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 RootShield *PLUS*<sup>+</sup> WP 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 RootShield *PLUS*<sup>+</sup> WP Biological Fungicide during the last half of the water application period. Mix

RootShield *PLUS*<sup>+</sup> WP 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 RootShield *PLUS*<sup>+</sup> WP 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:** RootShield *PLUS*<sup>+</sup> WP Biological Fungicide has been tested on numerous plant varieties with no phytotoxic effects. However, since RootShield *PLUS*<sup>+</sup> WP Biological Fungicide has not been tested on all plant varieties or in combination with all available tank mixes, the manufacturer recommends testing RootShield *PLUS*<sup>+</sup> WP 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 water, food or feed by storage or disposal.

**PESTICIDE STORAGE:** Store in original container under refrigerated conditions. Short periods at room temperatures below 75° F will not affect performance. 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 a 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 it in the same manner as required for the bag.

**WARRANTY:** 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 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. No express or implied license is granted to use or sell this product under any patent in any country except as specified.

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