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## RootShield® WP - Biological Fungicide

*For the Suppression of Root Rot caused by Pythium spp., Rhizoctonia spp. and Fusarium spp. in Greenhouse Crops, Outdoor Nursery Plants, Greenhouse Transplants, Ginseng, Hops, and Cannabis (marihuana) produced commercially indoors.*

COMMERCIAL  
WETTABLE POWDER  
**READ THE LABEL BEFORE USING**

ACTIVE INGREDIENT: *Trichoderma harzianum* Rifai strain KRL-AG2 contains a minimum of  $1.0 \times 10^7$  colony forming units per gram of dry weight

Warning, contains the allergens wheat and sulfites.

POTENTIAL SENSITIZER

LIVE ORGANISMS

REGISTRATION No. 29890 PEST CONTROL PRODUCTS ACT

NET CONTENTS: 0.45 – 90.9 kg

Manufactured by BioWorks, Inc. 100 Rawson Road, Suite 205, Victor, NY 14564  
Telephone: 1.585.924.4362

Distributed by BioWorks, Inc., P.O. Box 1125, Fonthill, Ontario, L0S 1E0  
Telephone: 800-877-9443

Lot No.:

Date of Manufacture: Use within 12 months of date of manufacture.

**GENERAL INFORMATION:** RootShield® WP - Biological Fungicide is a biological fungicide for the suppression of root rot in greenhouse crops, outdoor nursery plants, greenhouse vegetable transplants, ginseng, hops, and Cannabis (marihuana) produced commercially indoors. The active ingredient is a beneficial microbe *Trichoderma harzianum* strain T-22 (KRL-AG2). When applied to transplants, greenhouse planting mix or soil, RootShield® WP - Biological Fungicide actively grows onto plant roots as they develop and protects roots against *Pythium*, *Rhizoctonia* and *Fusarium*. RootShield® WP - Biological Fungicide can be used alone or in conjunction with certain chemical fungicides; contact manufacturer or distributor for compatibility Technical Bulletin.

For control of seed rot and damping off of internally infected cuttings, use chemical fungicides or other appropriate measures in addition to RootShield® WP - Biological Fungicide.

**Note:** RootShield® WP - Biological Fungicide contains live spores of a beneficial microbe. RootShield® WP - Biological Fungicide becomes active when soil temperatures are above 10 degrees C. Control is not effective while soils remain cold and is more effective in neutral or acidic soils than in alkaline soils.

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#### **DIRECTIONS FOR USE:**

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

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

#### **DRENCH APPLICATION TO POTTING MIX OR SOIL**

*Greenhouse Peppers, Tomatoes, Cucumbers and Eggplant*

*Greenhouse Ornamental Crops*

*Outdoor Nursery Crops*

*Greenhouse Vegetable Transplants*

*Hops*

*Ginseng*

*Cannabis (Marihuana)* produced commercially indoors

**POTTING MIX:** Suspend RootShield® WP - Biological Fungicide in sufficient water (eg. 30-45 g/100L) to achieve uniform application and apply at the rate of 55-110 g per cubic metre (loose) of greenhouse potting mix, soil or planting beds. RootShield® WP - Biological Fungicide can be applied through low pressure watering nozzles such as fan nozzles or other watering systems. Agitate to maintain suspension.

*Cannabis (marihuana)* produced commercially indoors: RootShield WP is applied to potting mix or soil as a drench prior to planting.

#### **NURSERY DRENCH:**

Suspend RootShield® WP - Biological Fungicide in sufficient water (eg. 30 – 45 g/100 L) to achieve uniform application and apply at the rate of 55 – 110 g per cubic metre (loose) of nursery potting mix, soil or planting beds. RootShield® WP - Biological Fungicide can be applied through low pressure watering nozzles such as fan nozzles or other watering systems. Agitate to maintain suspension.

**GINSENG, HOPS:** Suspend RootShield® WP - Biological Fungicide Wettable Powder in 1,000 litres of water and apply at the rate of 3-4 kg per hectare to the soil surface immediately around the ginseng plants. Use higher rates when conditions favour disease development or high disease pressure is anticipated. Sufficient irrigation or rainfall of at least 5 mm should occur within 24 hours after application to move the active ingredient into the root zone. Agitate to maintain suspension.

#### **DIP APPLICATION**

*Bulbs: All Ornamental Crops*

Dip bulbs in suspension of 60 g/L RootShield® WP - Biological Fungicide prior to planting.

It is not possible to test all ornamental varieties, and some may show delayed growth. RootShield® WP - Biological Fungicide should first be tested on small lot of plants, if the response of the variety is not known, before using it for commercial scale production.

Crops	Disease	Pathogens	Rate	Spray volume	Control/Suppression
Greenhouse Ornamental Crops	Root rot	<i>Pythium</i> spp. <i>Rhizoctonia</i> spp. <i>Fusarium</i> spp.	55-110 g/m <sup>3</sup>	30-45 g/100 L	Suppression
Outdoor Nursery Crops					
Greenhouse Vegetable Transplants					
Bulb vegetables					
Leafy vegetables					
Brassica vegetables					
Fruiting vegetables					
Cucurbit vegetables					
Herbs					
Greenhouse Peppers, Tomatoes, Cucumbers and Eggplant					
Cannabis (marihuana) produced commercially indoors					
Ginseng			3-4 kg/ha	1000 litres/ha	
Hops			3-4 kg/ha	1000 litres/ha	
Ornamental Bulbs	Root rot	<i>Pythium</i> spp. <i>Rhizoctonia</i> spp. <i>Fusarium</i> spp.	Dip bulbs in 60 g/L suspension		Suppression

**Bulb vegetables:** chive, Chinese chive, daylily, Elegans hosta, fritillaria, garlic (bulb, great-headed, serpent), onion (bulb, green), kurrat, leek, lady's leek, wild leek, lily, onion (bulb, Chinese, green, macrostem, pearl, potato, tree, Welsh), shallot

**Leafy vegetables:** amaranth, arugula, cardoon, celery, Chinese celery, celtuce, chervil, chrysanthemum (edible-leaved, garland), corn salad, cress (garden, upland), dandelion, dock, endive, fennel, lettuce (head, leaf), orach, parsley, purslane (garden, winter), radicchio, rhubarb, spinach, New Zealand spinach, vine spinach, swiss chard

**Brassica vegetables:** broccoli (Chinese, raab), Brussels sprouts, cabbage, Chinese cabbage, cauliflower, cavolo broccoli, collards, kale, kohlrabi, mizuna, mustard greens, mustard spinach, rape greens

**Fruiting vegetables:** cocona, eggplant (including African, pea, scarlet), groundcherry, martynia, okra, pepino, pepper (bell, non-bell), sunberry, tomatillo, tamarillo, goji berry, tomato (including bush, currant)

**Cucurbit vegetables:** Chinese waxgourd, citron melon, cucumber, gherkin, gourd (edible), momordica, muskmelon (cantaloupe, casaba, crenshaw, golden pershaw, honeydew, honey balls, mango Persian, pineapple, Santa Claus, snake), pumpkin, squash (winter, summer), watermelon

**Herbs:** angelica, anise (anise seed), balm (lemon balm), basil, borage, burnet, chamomile, caraway, black caraway, catnip, celery seed, chervil (dried), chive, Chinese chive, clary, coriander (cilantro or Chinese parsley), costmary, culantro, cumin, dill, fennel, fenugreek, horehound, hyssop, juniper berry, lavender, lemongrass, lovage, marigold, marjoram, mustard, nasturtium,

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parsley, pennyroyal, poppy, rosemary, rue, sage, savory (summer, winter), sweet bay (bay leaf), tansy, tarragon, thyme, wintergreen, woodruff, wormwood.

### **GENERAL APPLICATION INSTRUCTIONS**

RootShield® WP - Biological Fungicide can be applied using hand-held backpack or ground spray equipment. AGITATION IS REQUIRED TO MAINTAIN SUSPENSION. Application equipment should be cleaned before use of this product, and prepared sprays should be used within 4 hours of preparation. To prevent nozzle tip clogging the manufacturer recommends using 50 – 100 mesh inlet screens in all spray equipment. Use higher rates when conditions favour disease development or high disease pressure is anticipated.

### **PRECAUTIONS: KEEP OUT OF REACH OF CHILDREN.**

May cause sensitization. Avoid contact with skin, eyes or clothing. Avoid breathing dust or spray mist. Workers and handlers (includes mixer/loader and applicators) must wear a long sleeved shirt, long pants, shoes plus socks, waterproof gloves and eye goggles as well as a dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C) or a NIOSH approved respirator with any N-95, R-95, P-95 or HE filter for biological products when mixing/loading or applying the product and until mists have settled and during all clean-up/repair activities. Wash thoroughly with soap and water after handling product. Remove contaminated clothing and follow manufacturer's directions for cleaning/maintaining personnel protective equipment (PPE) before use. If no such instructions are available use clothing detergent and hot water for cleaning all washable PPE. Keep and wash PPE separately from other laundry. Wash hands after use.

Apply only when the potential for drift to areas of human habitation or areas of human activity such as houses, cottages, schools and recreational areas is minimal. Take into consideration wind speed, wind direction, temperature inversions, application equipment and sprayer settings.

### **ENVIRONMENTAL HAZARDS:**

As this pesticide is not registered for the control of pests in aquatic systems, DO NOT use to control aquatic pests.

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

To reduce runoff from treated areas into aquatic habitats, avoid application to areas with a moderate to steep slope, compacted soil, or clay.

- Avoid application when heavy rain is forecast.
- Contamination of aquatic areas as a result of runoff may be reduced by including a vegetative strip between the treated area and the edge of the water body.

DO NOT apply by air.

### **FIRST AID:**

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

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**If on skin or clothing:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control centre or doctor for treatment advice.

**If inhaled:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control centre or doctor for further treatment advice.

**If in eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control centre or doctor for treatment advice.

**GENERAL:** Seek medical attention immediately if irritation or signs of toxicity occur and persist or is severe. Take container, label or product name and Pest Control Product Registration Number with you when seeking medical attention.

**TOXICOLOGICAL INFORMATION:** Treat symptomatically.

**STORAGE:**

Store in a secure dry place at temperatures between 2°C and 5°C. Do not contaminate water, food, or feed during storage. Keep product in original container during storage and keep container lid tightly closed when not in use. This product should be used within 12 months of the date of manufacture when stored under refrigerated conditions.

**DISPOSAL/ DECONTAMINATION:**

1. Thoroughly empty the contents of the container into the application device or medium.
2. Make the empty container unsuitable for further use.
3. Dispose of the container in accordance with provincial requirements.
4. For information on disposal of unused, unwanted product, contact the manufacturer or the provincial regulatory agency. Contact the manufacturer and the provincial regulatory agency in case of a spill, and for clean-up of spills.

**NOTICE TO USER:**

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