

# RootShield® Seed Treatment

## 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 10<sup>7</sup> 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

Manufactured in the USA by:



**BioWorks®**

100 Rawson Road, Suite 205  
Victor, New York 14564  
(800) 877-9443

05112015

S-0523

### FIRST AID

|  |   |
|--|---|
| <b>If on skin or clothing</b>  | <ul style="list-style-type: none"><li>Take off contaminated clothing.</li><li>Rinse skin immediately with plenty of water for 15-20 minutes.</li><li>Call a poison control center or doctor for treatment advice.</li></ul>   |
| <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>   |
| <b>If inhaled</b>  | <ul style="list-style-type: none"><li>Move person to fresh air.</li><li>If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.</li><li>Call a poison control center or doctor for further treatment advice.</li></ul>   |
| <b>If swallowed</b>  | <ul style="list-style-type: none"><li>Call a poison control center or doctor immediately for treatment advice.</li><li>Have person sip a glass of water if able to swallow.</li><li>Do not induce vomiting unless told to by a poison control center or doctor.</li><li>Do not give anything by mouth to an unconscious person.</li></ul> |
| 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 HAZARDS 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 the 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 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.

### 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.

### PRODUCT INFORMATION

RootShield Seed Treatment 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, grows onto plant roots as they develop and provides protection against plant root pathogens such as *Pythium*, *Rhizoctonia*, *Fusarium*, *Cylindrocladium* and *Thielaviopsis*. RootShield Seed Treatment can be used alone or in conjunction with certain chemical fungicides; consult the appropriate tank mix compatibility charts continued on the back of this page 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 RootShield Seed Treatment 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 Seed Treatment for root disease control.

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

RootShield Seed Treatment is for use in seed treatments.

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

**APPLY VIA GROUND APPLICATION ONLY.**

**CROPS ON WHICH ROOTSHIELD SEED TREATMENT MAY BE USED**

| Crops   | Use   | Application Rate of RootShield Seed Treatment  |
|---|---|--|
| <b>Cereal Grains:</b> Buckwheat, Corn (grain, seed, sweet corn, silage, popcorn, high oil), Rye, Wheat, Sorghum, Millet   | Planter Box (onsite)<br>Commercial seed treatment | 1.5–3.0 oz / cwt seed<br>0.0004 – 0.529 lb / cwt seed  |
| <b>Cucurbit Vegetables:</b> Cucumbers, Melons (i.e. Chinese waxgourd, Citron melon, Muskmelons, or Watermelon) Gourds, Pumpkins, Squash   | Planter Box (onsite)<br>Commercial seed treatment | 2.0 – 8.0 oz / cwt seed<br>0.0141–0.564 oz / lb seed   |
| <b>Flowers, Bedding Plants, and Ornamentals</b>   | Commercial seed treatment                         | 0.0141 – 4.233 oz / lb seed  |
| <b>Fruiting Vegetables:</b> Eggplant, Sweet and Hot Peppers, Tomatillos, Tomatoes   | Commercial seed treatment                         | 0.0564–4.233 oz / lb seed  |
| <b>Herbs, Spices, and Mints</b>   | Commercial seed treatment                         | 0.0564–4.233 oz / lb seed  |
| <b>Leafy and Brassica (Cole) Leafy Vegetables:</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<br><b>Asparagus</b> | Commercial seed treatment                         | 0.0141 – 4.233 oz / lb seed  |
| <b>Legume Vegetables (Succulent or Dried):</b> Beans (soybean, snap, dry), Lentils, Peas  | Planter Box (onsite)<br>Commercial seed treatment | 1.5–3.0 oz / cwt seed<br>0.0004–0.529 lb / cwt seed  |
| <b>Nongrass Animal Feeds (Forage, Fodder, Straw, and Hay):</b> Alfalfa, Clover, Vetch, Trefoil  | Planter Box (onsite)<br>Commercial seed treatment | 2.0–4.0 oz. / cwt seed<br>0.0564 – 4.233 oz / lb seed  |
| <b>Oilseed Crops:</b> Cotton, Canola, Safflower, Sunflower  | Planter Box (onsite)<br>Commercial seed treatment | 1.5–3.0 oz. / cwt seed<br>0.0176–0.529 lb / cwt seed   |
| <b>Peanuts</b>  | Planter Box (onsite)<br>Commercial seed treatment | 1.0–10.0 oz. / cwt seed<br>0.0004–0.0706 lb / cwt seed   |
| <b>Root and Tuber Vegetables:</b> Beets, Sugar Beets, Carrots, Celeriac, Chicory, Horseradish, Parsnip, Radish, Rutabaga, Salsify, Turnips<br><br>Potatoes, Sweet Potatoes, Yams, Jerusalem Artichoke, Cassava, Ginger  | Commercial seed treatment<br>Planter Box (onsite) | 0.0141 – 0.564 oz / lb seed<br>0.03 - 0.2 lb / cwt seed<br>tubers or cut potato seed pieces or 0.33 - 1.0 lb / 6.7 gal water |
| <b>Turfgrass:</b> Turf, Sports Fields, Parks, Established and New Preparation of Golf Course Tees, Greens, Fairways and Roughs, Seed Production, Sod Production   | Planter Box (onsite)<br>Commercial seed treatment | 1.0–10.0 oz / cwt seed<br>0.0564 – 4.233 oz / lb seed  |

**SEED TREATMENT FOR VEGETATIVELY PROPAGATED CROPS (INCLUDING POTATOES, OTHER ROOT AND TUBER VEGETABLES, AND BULB VEGETABLES:** For planting or storage, treat at 0.03 – 0.20 pounds RootShield Seed Treatment to 100 lbs (1 cwt) of bulbs, seed tubers or cut potato seed pieces. Alternatively, dip bulbs, seed tubers or cut potato seed pieces in a suspension consisting of 1.0 – 3.0 pounds of RootShield Seed Treatment in 20 gallons of water.

For potatoes, apply RootShield Seed Treatment 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.

**TANK MIXING:** RootShield Seed Treatment 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 Representative for more information. Do not exceed label dosage rates.

This product cannot be mixed with any product containing a label prohibition against such mixing. This product MUST NOT be tank-mixed with chemicals that contain the following active ingredients: imazalil, propiconazole, tebuconazole, and triflumizole. Do not apply RootShield Seed Treatment immediately before these pesticides are used.

**SEED TREATMENT FOR TRUE SEED CROPS**

**ONSITE APPLICATION TO SEED:** For protection against root diseases, apply 1.5–10.0 ounces of RootShield Seed Treatment/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 RootShield Seed Treatment/hundredweight of seed. For sweet corn, apply 1.5 – 3.0 ounces of RootShield Seed Treatment / hundredweight of seed. To assure uniform application, add half the required amount of RootShield Seed Treatment to half the seed in the hopper, mix with a wooden paddle, and then add the remaining seed and RootShield Seed Treatment. RootShield Seed Treatment can also be applied in sufficient water to coat seeds. For maximum seed protection, especially in cold

soils, apply RootShield Seed Treatment to commercially treated seed such as seed treated with Captan, Apron and or Demosan 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 RootShield Seed Treatment 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 appropriate tolerance exemption, or other clearance under the Federal Food, Drug and Cosmetic Act. To comply with 40 CFR 153.155 therefore, all seeds treated commercially with this product must be colored with an EPA-approved dye or colorant of suitable color to prevent accidental use as food for man or feed for animals.

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**

| Seed Size (#seeds/oz)  | Grams of RootShield Seed Treatment per lb of seed | Ounces of RootShield Seed Treatment per lb of seed |
|--|---|--|
| Large (1-100) such as: peanuts, green & dry beans, field corn  | 0.0016 -- 0.32 g                                  | 0.00006 – 0.0113 oz                                |
| Medium (100 -1,000) such as: sweet corn, soybeans, sorghum     | 0.08 - 2.4 g                                      | 0.0028 - 0.0847 oz                                 |
| Small (1,000 -10,000) such as: cabbage, cucumbers, sugar beets | 0.4 – 16 g  | 0.0141 – 0.564 oz                                  |
| Fine (10,000 -100,000) such as: tomatoes                       | 1.6 – 120 g                                       | 0.0564 – 4.233 oz                                  |

**ORNAMENTAL CROPS**

| Seed Size (#seeds/oz)                                      | Grams of RootShield Seed Treatment per lb of seed | Ounces of RootShield Seed Treatment per lb of seed |
|--|---|--|
| Small (1,000 – 10,000) such as: Echinacea, Cosmos          | 0.4 – 16 g  | 0.0141 – 0.564 oz                                  |
| Fine (10,000 – 100,000) such as: Texas bluegrass, ryegrass | 1.6 – 120 g                                       | 0.0564 – 4.23 oz                                   |
| Very Fine (100,000 – 500,000) such as: bentgrass           | 8.0 – 80 g  | 0.282 – 2.82 oz                                    |

**PLANT SAFETY:** RootShield Seed Treatment has been tested on numerous plant varieties with no phytotoxic effects. However, since RootShield Seed Treatment has not been tested on all plant varieties or in combination with all available tank mixes, the manufacturer recommends testing RootShield Seed Treatment 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 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.

Country: United States of America

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