

Biopesticide Profile

RootShield

Active ingredient

Trichoderma harzianum T-22 (alive)

This information is not meant to be a substitute for reading the label. Always read and follow all pesticide labels. Ensure the pesticide is currently registered in your state.

PRODUCT

Formulations: Granules, WP

Pests: Soilborne and root diseases of plants

FRAC Code (Fungicide Resistance Action Committee): BM 02

Mode of Action: Eat; Poison; Keep out; Turn on resistance; Grow strong plants

APPLICATION

Where to apply: Apply to soil or potting mix (Granules or WP); WP formulation may also be applied to cuttings, bare roots, seeds, seed pieces/tubers, and bulbs of some crops

When to start applying: Before disease begins

How to apply: Mixed with soil or potting mix (Granules) or as a drench, chemigation, seed treatment, seed piece/tuber dust/dip, or bulb dust/dip (WP), in sufficiently warm environment (see Temperature Tolerance); Labels specify which application method to use on each crop

Tank mix & application compatibility: Can be used with many fertilizers and pesticides; Not compatible with (either in a tank or applied just before) products containing imazalil, propiconazole, tebuconazole, triflumizole, or – WP formulation – benomyl; See compatibility resources from BioWorks for more information: bioworksinc.com/ask-us/product-compatibility/

ENVIRONMENT

Temperature tolerance in field: Fungal active ingredient is active >50 °F, so ensure that environment where you are applying RootShield (e.g., soil) is sufficiently warm.

Rainfastness: Not applicable, since applied to roots and root zone

UV tolerance: Not applicable, since applied to roots and root zone

STORAGE

How to store: Refrigerated or frozen away from food, water, and feed

Shelf life: 10 months if refrigerated or frozen (below 40 °F); 4 (WP) or 6 (Granules) months if stored between 40 and 75 °F; < 1 (WP) or < 2 (Granules) month if stored above 75 °F

RISK

Signal word: Caution

REI (Restricted-entry interval): 4 hr

PHI (Pre-harvest interval): 0 days

Impacts on beneficial insects: No known toxicity concerns for bees or other insects; Compatible with at least 2 species of entomopathogenic nematodes, the soil-dwelling predatory mite *Stratiolaelaps scimitus*, and the soil-dwelling predatory beetle *Dalotia coriaria*; see resource from BioWorks: bioworksinc.com/wp-content/uploads/BW-BCA-Compatibility.pdf

About biopesticides





















USING BIOPESTICIDES

- Apply preventatively.
- Use as part of an IPM strategy, including cultural management practices, other pesticides, etc.
- Mix only what you need; don't leave in spray tank overnight.
- Don't expose to excessive heat in storage.
- When tank mixing, follow label instructions for all products. Check with company rep or distributor if you have questions. Do a "jar test" to determine physical compatibility if you want to mix two products for which you cannot find information on their compatibility.
- Proper cleaning of spray tanks after any pesticide application is always important. Pay special attention to tank cleaning when a biopesticide is applied after another incompatible product.

HOW BIOPESTICIDES WORK

Modes of action (MOAs)



Eat	Live microbe grows on/in pest	 	
Poison	Biopesticide (or its products) kills the pest directly	 	
Keep out	Live microbe grows on plant, leaving no room for pests		
Turn on resistance	Turns on the plant's defenses before pest attacks		
Grow strong plants	Makes plant stronger, healthier, more resilient		
Repel	Pest avoids plants treated with biopesticide		
Stop feeding	Stops pest from feeding; pest eventually starves		
Stop growth	Stops pest from growing or molting; pest eventually dies		
Stop reproduction	Hampers pests' ability to find a mate, lay eggs		

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LEARN MORE

Efficacy of biopesticides

go.nysipm.org/biopesticide-efficacy

Biocontrol Bytes blog

blogs.cornell.edu/biocontrolbytes/

Biocontrol

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