NEW YORK STATE INTEGRATED PEST MANAGEMENT
Biopesticide Profile

RootShield PLUS

Active ingredient
Trichoderma harzianum T-22 and T. virens G-41 (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) or to cuttings, bare roots, seed pieces or tubers, or bulbs (of some crops), or foliage of turf (WP only)

When to start applying: Before disease begins

How to apply: Mixed with soil or potting mix (Granules) or as a soil/potting mix drench, soil injection, foliar spray (turf only), in-furrow spray, transplant starter solution, through chemigation, or as a dust or dip treatment to seed pieces, seed tubers, or bulbs (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 products containing imazalil, propiconazole, tebuconazole, or triflumizole (either in a tank or applied just before these products); See compatibility resources from BioWorks for more information: bioworksinc.com/ask-us/product-compatibility/

ENVIRONMENT

Temperature tolerance in field: Fungal cultures in RootShield PLUS are active >50˚F, so ensure that environment where you are applying RootShield PLUS (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 water, food, 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

Cornell Cooperative Extension

New York State Integrated Pest Management Program

About biopesticides

Written by Amara Dunn-Silver, NYSIPM using information from product labels, manufacturers, the EPA and other sources; last reviewed Nov 2023.

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.

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NYS Department of Agriculture & Markets

NY farm viability INSTITUTE

HOW BIOPESTICIDES WORK

Modes of action (MOAs)

Disease
Insect
Active ingredient may be alive
Active ingredient is alive!

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		

LEARN MORE

Efficacy of biopesticides
go.nysipm.org/biopesticide-efficacy

Biocontrol Bytes blog
blogs.cornell.edu/biocontrolbytes/

Biocontrol
go.nysipm.org/biocontrol