



BioWorks®
How You Grow Matters™



RootShield® Plus for Bulb Protection

RootShield® PLUS Technical Bulletin

What is RootShield® Plus?

- It is an EPA-registered, biological, dual active ingredient root protectant fungicide available in granules or wettable powder
- RootShield Plus prevents attack from diseases by growing on the roots and forming a protective “Shield” against disease and environmental stress
- It has proven efficacy that equals chemical fungicides and is nontoxic to workers
- It has a 0-hour REI when applied as a drench or incorporated (granular). REI is 4 hours when dipped or dusted.
- It is non-phytotoxic to plants and compatible with all beneficials
- RootShield® Plus Granules can be mixed into your growing media; most media companies will incorporate
- RootShield® Plus WP (a wettable powder) can be dusted, used in dips or drenched onto potted bulbs

Protection from root rots

- RootShield Plus protects bulb crops like Lilies, Tulips, Gladiolus and Narcissus
- Attacks pathogens like *Pythium*, *Fusarium*, *Rhizoctonia* and *Phytophthora*
- Stops pathogens from damaging roots

Chemical compatibility

- RootShield Plus is compatible with many chemical fungicides; See the RootShield Plus Compatibility Sheet for specific information.
- RootShield Plus has been used as stand-alone fungicide for root disease control
- RootShield Plus is a preventative fungicide. To “cure” existing problems, use appropriate chemical treatment, then follow-up with RootShield Plus WP.

Soil temperatures

- Storage conditions for the cooling period (vernalization) will not harm the active fungal ingredients, *Trichoderma harzianum* strain T-22 and *Trichoderma virens* strain G-41, found in RootShield Plus

Watering and leaching

- Heavy watering increases the risk of root disease problems, and should be avoided
- Watering will not leach RootShield Plus away from the crop’s root zone
- It will continue to grow on the roots as it expands through the growing media for up to three months

(See “Maintenance Program for Bulb Crops” on next page.)

To find out more about the BioWorks family of products, please contact us at **800-877-9443** or visit www.bioworksinc.com. ©2012 BioWorks, Inc.

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RootShield *PLUS* Maintenance Program for Bulb Crops

Crop Production Phase	Application timing	Rate
Bulb Planting, Growth and Cold Storage	Pre-blend RootShield Plus Granules into your soil mix at the time of planting or drench with RootShield Plus WP immediately after planting. Bulbs may be dusted with RootShield Plus WP immediately before planting or may be dipped into a drench slurry (dip). Treated bulbs can be pot or case cooled. Applying RootShield Plus at this time is critical for basal root protection, especially if the bulbs are placed at temperatures above 50° F for 2-3 weeks. If bulbs are immediately placed in the cooler, the most effective treatment would be with RootShield Plus granules incorporated into the media or the use of the dry bulb dust.	<i>Granules:</i> 1.5 – 3 lb/cu. yd. <i>Drench (WP):</i> 6 – 8 oz/100 gal <i>Bulb dusting:</i> 1.0 – 3.0 lbs/100 lbs. <i>Bulb dip (drench):</i> 0.5 lb/20 gal
Post-Cold Storage and Crop Growth	Apply RootShield Plus WP immediately after removing the crop from cold storage, or replant into media containing RootShield Plus Granules.	<i>Drench (WP):</i> 6 – 8 oz/100 gal <i>Granules:</i> 1.5 – 3.0 lb/cu. yd.
Additional Root Protection	A second application of RootShield Plus should be made using the WP formulation: <ul style="list-style-type: none"> • If treated before cold storage – treat within 3 weeks after placement in the greenhouse • If treated after cold storage – retreat in 10-11 weeks depending upon the crop 	<i>Drench (WP):</i> 6 – 8 oz/100 gal

Protection of the stem root system is essential for optimal plant growth and development. Long term protection of the stem root system against disease and environmental stress is optimized with a second application of RootShield *PLUS*. The root disease protection will carry over to the customer buying your product. A full application of RootShield *PLUS* costs less than 2 cents per 6-inch pot.