



Vegetables, Transplants & Herbs: Disease, Insect & Nutrition Management

When planning your next vegetable or herb crop, give your plants a healthy start and keep them clean throughout production with the BioWorks family of products (see chart on last page for timing and rates).

Root Disease Control

RootShield® and RootShield® PLUS⁺ (4-hr REI, OMRI Listed)

- Provides long-term (12 weeks) root protection for all stages of growing
- Grows on the roots “shielding” them against root damaging fungi such as *Fusarium*, *Pythium*, *Rhizoctonia*, *Cylindrocladium* and *Thielaviopsis*. With RootShield PLUS⁺, *Phytophthora ssp.* is also prevented.
- RootShield active ingredient: Unique beneficial fungus *Trichoderma harzianum*, strain T-22 that “eats” pathogens; RootShield PLUS⁺ has added *Trichoderma virens* strain G-41.
- Cost effective: reduces or eliminates chemical root fungicide applications
- Grows on the roots within a pH range of 4 – 8 at soil temperatures of 48° to 97° F
- Granular formulation for media incorporation or wettable powder for drenching

Foliar Disease Control

CEASE® for covered production (4-hr REI, 0-day PHI, OMRI Listed)

- Prevents both fungal & bacterial diseases
- Controls *Botrytis*, powdery mildew, *Pseudomonas*, *Xanthomonas*, *Erwinia*
- Leaves no unsightly residues
- Active ingredients: *Bacillus subtilis* (strain QST 713)
- Safe for beneficial insects and bees

MilStop® SP (1-hr REI, 0-day PHI, OMRI Listed)

- Kills powdery mildew on contact
- Leaves no residues; dries quick, clean
- Active ingredient: Potassium Bicarbonate
- Cost effective, pre-formulated with surfactants
- Can be used in rotation with most chemical pesticides or as a standalone fungicide
- Compatible with many beneficial insects

Insect & Mite Control

NemaShield® for Fungus Gnat Larval Control

- Especially useful in greenhouse production and transplant production
- Easy to use dispersible formulation; apply with a sprayer or through an injector
- Active ingredient: *Steinernema feltiae* insect parasitic nematode
- No REI; No human toxicity; exempt from EPA labeling requirements
- Compatible with many pesticides, including insecticides



Insect & Mite Control (continued)

BotaniGard®, Mycotrol® (4-hr REI, 0-day PHI)

- Controls whiteflies, thrips, aphids, etc.
- Mycoinsecticide with unique mode of action from *Beauveria bassiana* strain GHA
- Spores work by direct contact with insect
- Compatible with IPM programs and beneficial insects
- Ideal resistance management tool
- Use BotaniGard 22WP or Mycotrol WPO on tomatoes

SuffOil-X® (4-hr REI, 0-day PHI, OMRI Listed)

- Suffocates and kills eggs, larvae, nymphs and soft bodied insects, mites
- Unique pre-emulsified formulation stays in suspension better than other oils
- Smaller oil particles provide uniform coverage with less chance of phytotoxicity

Molt-X® (4-hr REI, 0-day PHI, OMRI Listed)

- Protects against both foliar and soil-borne pests
- No phytotoxicity on most plants
- Excellent for tank mixing or rotating with BotaniGard, Mycotrol and SuffOil-X
- Multiple modes of action
- Generally safe on beneficial insects and bees

Nutrition Management

Verdanta® Organic and Organic-based Fertilizers for Nutrition – Carefully developed from high quality ingredients to ensure gradual, longer lasting nutrient release to enhance plant growth and quality; improves the soil environment, increasing the amount of soil organic matter to boost the activity of microorganisms, enabling optimum root growth.

Proprietary MINIGRAN® Technology featured in granular products provides dust-free, organic and organo-mineral microgranules with a uniform nutrient content for better controlled nutrient delivery. Products flow freely through all types of application equipment and offer better control of nutrient release.

- **RM-1 - MINIGRAN®** – Homogeneous, granular, compound fertilizer; high phosphorus mixture (4-30-0) of organic and mineral nutrient sources; stimulates rooting, enhances flowering in short-term crops with initial application or on longer crops with a second top-dressed application. Longevity: Approximately 3 months at 60° F.
- **K-Vita® - MINIGRAN®**, OMRI Listed – Homogeneous, granular, compound, organic fertilizer derived from 100% organic sources (2-0-20) provides extra potassium to assist in producing stockier, more robust plants with shorter internodes. Longevity: Approximately 3 months at 60° F.
- **Eco-Vita® - MINIGRAN®**, OMRI Listed – A general purpose mix derived from 100% organic sources (7-5-10) including organic phosphorus for better rooting; provides a gentle, continuous release of nutrition to ornamental or vegetable crops; also useful as a top dressing for fruiting vegetables and as base nutrition for potted plants. Longevity: Approximately 3 months at 60° F.
- **PL-2 (Liquid Suspension)**, OMRI Listed – Derived from 100% organic ingredients (2-0-6); can be used as an organic liquid feed to supplement potassium for any crop; low salt index means lower ECs in the growing medium; stimulates the existing microbial populations in field soils or potting media.
- **OFE (Liquid formulation)** – A chelated iron foliar spray (3-0-0 +3% iron) derived from both organic and mineral sources; contains urea to help move iron into plant leaf tissue and contributes to greening up leaves; doesn't burn leaves or leave a residue, therefore does not require washing off after application like most powdered sources of chelated iron; contains 3% seaweed extract - an excellent foliar feed producing better greening and growth of all plants.



Product and Application		Rates	
Root Disease Prevention Use in Propagation and in the Greenhouse or in the Field	RootShield® WP, RootShield® PLUS® WP, RootShield® Granules, RootShield® PLUS® Granules – OMRI-Listed Use RootShield if your problem is limited to <i>Rhizoctonia</i> , <i>Pythium</i> , <i>Fusarium</i> , <i>Thielaviopsis</i> and <i>Cylindrocladium</i> . Use RootShield PLUS® if you need added protection against <i>Phytophthora</i> and hot season <i>Pythium</i> (<i>P. aphanadermatum</i>)	5-12 lb/acre (G) 16-32 oz/acre (WP) 1.25 lb/cu yd 2.0 - 3.0 lb/cu yd 4 oz/100 gal 6 - 8 oz/100 gal 2 oz/100 gal 6 oz/100 gal *RootShield PLUS® WP and RootShield WP can be applied at any stage of the crop to prevent disease.	
	Field production in furrow		
	Sow seed or plant clean, disease-free plants into media containing RootShield Granules		
	Sow seed or plant clean, disease-free plants into media containing RootShield PLUS® Granules		
	Drench immediately after seeding/planting with RootShield WP*		
	Drench immediately after seeding/planting with RootShield PLUS® WP*		
	Re-apply RootShield WP* again in 10-12 weeks at 1/2 the rate.		
	Re-apply RootShield WP* again in 10-12 weeks at the full rate.		
Product and Application		Rates	
Foliar Disease Prevention Use in Propagation and in the Greenhouse or in the Field	CEASE® – OMRI-Listed Controls: <i>Botrytis</i> , powdery mildew, <i>Erwinia</i> , <i>Pseudomonas</i> , <i>Xanthomonas</i> and more Spray as a preventative for <i>Botrytis</i> , powdery mildew and bacterial diseases.	4 qts./100 gal every 5-7 days	
	MilStop® SP – OMRI-Listed Controls: Powdery mildew, <i>Botrytis</i> and other diseases of vegetable crops When conditions are right for powdery mildew or <i>Botrytis</i> , apply MilStop as a preventative. If plants become infected with powdery mildew, use MilStop at the curative rate. When control is achieved, switch to the preventative rates shown above.		1.25 lb to 2.5 lb/100 gal 3 lbs/100 gal 1.25 lb + 2 qt 3.0 lb + 6 qt
	For an effective 1 – 2 punch combine CEASE and MilStop as a tank mix to control bacterial and fungal diseases	Preventative (MilStop + CEASE)	
		Curative (MilStop + CEASE)	
	Product and Application		Rates
Insect Control Use in Propagation and in the Greenhouse or in the Field	NemaShield® Controls: Fungus gnat larvae and Thrips (WFT) pupae and pre-pupae Apply NemaShield for insect control within the first week after seeding or transplant, or immediately after seeing adults flying. NemaShield Reapplication rates and intervals: For light or heavy infestations. Re-apply in 14 to 21 day intervals at the light infestation rate. For heavy infestations on highly susceptible crops or newly propagated cuttings, follow the rate recommended above and re-apply at the light infestation rate when necessary after 5 to 6 weeks.	One 100 million packet per 3,400 sq ft One 100 million packet per 1,100-2,200 sq ft	
	BotaniGard® ES, BotaniGard® 22WP, Mycotrol® WPO and Mycotrol® ESO Controls: many pests including whitefly, aphid, thrips, etc. At first sign of insects (egg hatch or small larval instars) apply BotaniGard ES, BotaniGard 22WP or Mycotrol O at 3 to 10 day intervals. If pest pressure is high, combine initial applications with a contact insecticide or IGR, such as Molt-X, and follow with another BotaniGard or Mycotrol O spray in 3 to 5 days, making at least 2 applications before returning to the longer spray interval. Can be tank mixed or alternated with Molt-X.		Whiteflies, Aphids, Mealybugs: ½ to 1 qt(lb) per 100 gal Thrips: 1 to 2 qt(lb) per 100 gal Other labeled insects: ½ to 2 qt(lb) per 100 gal
	SuffOil-X® – OMRI-Listed Controls: many pests including mites, whitefly, aphids, etc. At first sign, apply SuffOil-X to suffocate all life stages of many soft-bodied insect and mite pests of vegetables and transplants. Also effective on powdery mildew. Follow all precautions and recommendations for applying horticultural oils. (Note: Herbs are currently not labeled)	1 to 2 gal/100 gal	
	Molt-X® – OMRI-Listed Controls many foliar and soil borne pests Combine or rotate with BotaniGard for an effective control strategy. Maintain pH of diluted mixture at between pH 5.5 - 6.5.		

Refer to product labels for complete application details. Additional technical information is available on our website (bioworksinc.com) or from your BioWorks Biological Solutions Advisor. Always read and follow label directions.