



Calla Lilies – Cut Flowers and Pot Production: Disease & Insect Management

When planning your next crop of calla lilies, give your plants a healthy start and keep them clean throughout production with the BioWorks family of products. BioWorks products can help you control a wide variety of diseases and insects. (See chart for timing and rates.)

Root Disease Control

RootShield® and RootShield® PLUS⁺ (4-hour REI, 0-day PHI, OMRI Listed)

- Provides long-term (up to 12 weeks) root protection for all stages of growth.
- 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
- RootShield is VeriFlora Certified
- Granular formulation for media incorporation or wettable powder for drenching
- 4-hour REI. 0-day PHI. Exception: 0-hour REI if product is soil injected or soil incorporated; workers may enter the area without PPE if they will not contact anything that has been treated.

Foliar Disease Control

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

- Prevents both fungal and bacterial disease
- Controls *Botrytis*, powdery mildew, *Erwinia* and *Xanthomonas*
- Leaves no unsightly residues
- Active ingredients: *Bacillus subtilis* (strain QST 713)
- Safe for beneficial insects and bees
- 0-day pre-harvest interval

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

- Kills powdery mildew on contact and prevents other disease
- 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 stand-alone fungicide
- Compatible with many beneficial insects
- 0-day pre-harvest interval



Insect & Mite Control

NemaShield® for Fungus Gnat Larval Control

- Controls fungus gnat larvae and the soil stages of thrips
- 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

BotaniGard® (4-hr REI, Organic formulation available: Mycotrol®)

- 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

SuffOil-X® (4-hr REI, 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
- Multiple modes of action
- No phytotoxicity on most plants
- Generally safe on beneficial insects and bees
- Excellent for tank mixing or rotating with BotaniGard and SuffOil-X



Product and Application		Rates	
Root Disease Prevention Use on Stock Plants, in Propagation/ Cuttings/Seeds & when Finishing Crops*	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>)		
	Sow seed or plant clean, disease-free plants into media containing RootShield Granules	1.25 lb/cu yd	
	Sow seed or plant clean, disease-free plants into media containing RootShield PLUS+ Granules	1.5 to 2.0 lb/cu yd	
	Drench immediately after seeding/planting with RootShield WP	4 oz/100 gal	
	Drench immediately after seeding/planting with RootShield PLUS+ WP	6 oz/100 gal	
	Re-apply RootShield WP* again in 10-12 weeks at 1/2 the rate.	2 oz/100 gal	
	* RootShield WP and RootShield PLUS+ WP can be applied at any stage of the crop to prevent disease.		
Product and Application		Rates	
Foliar Disease Prevention Use on Stock Plants, in Propagation/ Cuttings/Seeds & when Finishing Crops	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® – 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 .	1.25 to 2.5 lb/ 100 gal	
	If plants become infected with powdery mildew, use MilStop at the curative rate (note precautions on label). When control is achieved, switch to the preventative rates shown above.	3 lbs/100 gal. every 7-10 days	
	Product and Application		Rates
	Insect Control Use on Stock Plants, in Propagation/ Cuttings/Seeds & when Finishing Crops	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.	One 100 million packet/ 3,400 sq.ft.
Re-application 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/ 1,100-2,200 sq. ft.	
BotaniGard® 22WP and ES (Mycotrol® WPO and ESO – organic formulations)** Controls: whiteflies, aphids, thrips, etc.			
At first sign of insects (egg hatch or small larval instars) apply BotaniGard ES or WP at 3 to 10 day intervals. If pest pressure is high, combine initial applications with a contact insecticide or IGR and follow with another BotaniGard spray in 3 to 5 days and make at least 2 applications at this interval. Continue with applications, including recommended tank mixes, at the longer interval indicated above. Can be tank mixed or alternated with Molt-X.		Whiteflies, Aphids, Mealybugs	½ to 1 qt (lb)/ 100 gal.
		Thrips:	1 to 2 qt (lb)/ 100 gal.
		Other labeled	½ to 2 qt (lb)/ 100 gal.
**Use caution when making applications to open blooms, especially on varieties known to be sensitive; Recommended that a small group of plants be tested for effects on open blooms before making applications to the whole crop.			
SuffOil-X®** – OMRI-Listed Controls: mites, whiteflies, aphids, etc. Follow all precautions and recommendations for applying horticultural oils.		1 to 2 gal/100 gal.	
Molt-X®** – OMRI-Listed Controls both 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.		8 to 10 oz/100 gal.	

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.