



Poinsettia Production

Disease, Insect, & Nutrition Management

Growing poinsettias requires complete protection through all stages of development. The BioWorks family of products offers a proven, cost-effective system for controlling insects and plant diseases at every stage. Give your plants a healthy start and keep them clean throughout production.

Application – Poinsettia Disease, Insect & Nutrition Management Program			
Crop Stage	Product and Application Timing	Rates	
Stock Plants	Pre-Plant Dip	Dip unrooted cuttings prior to planting to guard against undetected pests or pathogens.	BotaniGard 22WP: 1.5 oz/5 gal ON-Gard: 1.6 fl oz/5 gal RootShield PLUS+ WP: 1.5 oz/5 gal
	Root Disease Control	Stick unrooted cuttings into media containing RootShield® PLUS+ Granules, or drench with RootShield® PLUS+ WP approximately 7-10 days after sticking. Reapply RootShield® PLUS+ WP in 10-12 weeks.	RootShield PLUS+ Granules: 2 lb/cu yd RootShield PLUS+ WP: 6 oz/100 gal
	Nutrition	Apply ON-Gard® 5-0-0 with RootShield PLUS+ WP as a drench at planting. Reapply ON-Gard® 5-0-0 as a drench to stock plants at 2 week intervals. Apply ON-Gard® CALCIUM as a foliar spray to stock plants at 2 week intervals.	ON-Gard 5-0-0: 32 fl oz/100 gal ON-Gard CALCIUM: 16 fl oz/100 gal
	Fungus Gnat Control	Apply NemaShield® for fungus gnat control within the first week after potting. After 3 weeks, make a second application at the same rate for additional fungus gnat control, or under moderate to severe insect pressure.	One 100 million packet per 2200 sq ft
		Start Molt-X® applications as early as possible where history has shown fungus gnat infestation is expected. Apply to control fungus gnats using ½ pint of mixed solution per 6-inch pot every 7 days for three weeks.	8 oz/100 gallons
	Foliar Disease Control	When conditions are right for Botrytis apply BotryStop™ as a preventative.	3 lb/100 gal every 7-10 days
		Spray CEASE® as a preventative for Botrytis, powdery mildew and bacterial diseases.	4 qt/100 gal every 7 days
		If plants become infected with powdery mildew, use MilStop® at the curative rate (note precaution on label). When control is achieved, switch to the preventative rates shown above.	2.5-5 lb/100 gal every 7-10 days 1.25- 2.5 lb/100 gal every 7-10 days
	Insect Control	At the first sign of insects (egg hatch or first larval instars) apply BotaniGard® ES or 22WP at 5 to 10-day intervals. If pest pressure is high, combine initial applications with a contact insecticide and reduce the interval of BotaniGard to 3 to 5 days.	Whiteflies, Aphids, Mealybugs: 1 qt (lb)/100 gal Thrips: 1–2 qt (lb)/100 gal Other labeled insects: 0.5–2 qt (lb)/100 gal
		Apply SuffOil-X® when insects are present on an as needed basis. SuffOil-X may be tank-mixed or rotated with BotaniGard® and Molt-X®.	1% (1 gallon/100 gallons)
Apply Molt-X® early for best results or include in rotations. Two to three applications at 7 to 10-day intervals is recommended. Molt-X® may be tank-mixed or rotated with BotaniGard® or SuffOil-X®. Good coverage is essential.		Whiteflies, Leafminers, Soft scales: 10 oz/100 gal* Thrips, Aphids, Mealybugs: 8 oz/100 gal* *Use ½ rate when tank-mixed	



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Application – Poinsettia Disease, Insect & Nutrition Management Program		
Crop Stage	Product and Application Timing	Rates
Cuttings, Propagation	Pre-Plant Dip	Dip unrooted cuttings prior to planting to guard against undetected pests or pathogens. BotaniGard 22WP: 1.5 oz/5 gal ON-Gard: 1.6 fl oz/5 gal RootShield PLUS ⁺ WP: 1.5 oz/5 gal
	Root Disease Control	Stick unrooted cuttings into media containing RootShield [®] PLUS ⁺ Granules, or drench with RootShield [®] PLUS ⁺ WP approximately 7-10 days after sticking. Reapply RootShield [®] PLUS ⁺ WP in 10-12 weeks. RootShield PLUS ⁺ Granules: 2 lb/cu yd RootShield PLUS ⁺ WP: 6 oz/100 gal
	Fungus Gnat Control	Apply NemaShield [®] for fungus gnat control within the first week after sticking. After two weeks, make a second application at the same rate. One 100 million packet per 2200 sq ft
		Start Molt-X [®] applications as early as possible where history or experience has shown fungus gnat infestation is expected. Apply to control fungus gnats using ½ pint of mixed solution per 6-inch pot every 7 days for three weeks. 8 oz/100 gal
	Foliar Disease Control	Spray CEASE [®] as a preventative for Botrytis, powdery mildew and bacterial diseases. 4 qt/100 gal every 7 days
	Insect Control	At the first sign of insects (egg hatch or first larval instars) apply BotaniGard [®] ES or 22WP at 5 to 10-day intervals. If pest pressure is high, combine initial applications with a contact insecticide and reduce the interval of BotaniGard [®] to 3 to 5 days. Whiteflies, Aphids, Mealybugs: 0.5-1 qt (lb)/100 gal Thrips: 1–2 qt (lb)/100 gal Other labeled insects: 0.5–2 qt (lb)/100 gal
		Apply SuffOil-X [®] when insects are present on an as needed basis. SuffOil-X may be tank-mixed or rotated with BotaniGard and Molt-X. 1% (1 gallon/100 gallons) Apply Molt-X [®] early for best results or include in rotations. Two to three applications at 7 to 10-day intervals is recommended. Molt-X may be tank-mixed or rotated with BotaniGard [®] or SuffOil-X [®] . Good coverage is essential. Whiteflies, Leafminers, Soft scales: 10 oz/100 gal <i>(can use ½ rate when tank- mixed)</i> Thrips, Aphids, Mealybugs: 8 oz/100 gal <i>(can use ½ rate when tank-mixed)</i>



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Application – Poinsettia Disease, Insect & Nutrition Management Program			
Crop Stage		Product and Application Timing	Rates
Transplanting into finish pots	Root Disease Control	Plant clean, disease-free plants into media containing RootShield PLUS ⁺ Granules, or drench with RootShield PLUS ⁺ WP immediately after planting. Reapply RootShield PLUS ⁺ WP in 10-12 weeks.	RootShield PLUS ⁺ Granules 2 lb/cu yd RootShield PLUS ⁺ WP 6 oz/100 gal
	Nutrition	Apply ON-Gard® 5-0-0 with RootShield PLUS ⁺ WP as a drench at transplanting. Reapply ON-Gard® 5-0-0 as a drench at 2 week intervals. Apply ON-Gard® CALCIUM as a foliar spray at 2 week intervals.	ON-Gard® 5-0-0: 32 fl oz/100 gal ON-Gard® CALCIUM: 16 fl oz/100 gal
	Fungus Gnat Control	Apply NemaShield for fungus gnat control within the first week after potting. After three weeks, make a second application at the same rate for additional fungus gnat control, or under moderate to severe insect pressure.	One 100 million packet per 2200 sq ft
		Start Molt-X applications as early as possible where history or experience has shown fungus gnat infestation is expected. Apply to control fungus gnats using ½ pint of mixed solution per 6-inch pot every 7 days for three weeks. Also make 1 application to poinsettias 10 to 15 days prior to shipping to prevent adult emergence.	8 oz/100 gal
	Foliar Disease Control	When conditions are right for Botrytis apply BotryStop™ as a preventative.	3 lb/100 gal every 7-10 days
		Spray CEASE as a preventative for Botrytis, powdery mildew and bacterial diseases.	4 qt/100 gal every 7 days
		If plants become infected with powdery mildew, use MilStop® at the curative rate (note precaution on label). When control is achieved, switch to the preventative rates shown above.	2.5-5 lb/100 gal every 7-10 days 1.25- 2.5 lb/100 gal every 7-10 days
	Insect Control	At the first sign of insects (egg hatch or first larval instars) apply BotaniGard ES or 22WP at 5 to 10-day intervals. If pest pressure is high, combine initial applications with a contact insecticide and reduce the interval of BotaniGard to 3 to 5 days. Use up to bract formation. After bract formation, use Mycotrol O for continued insect control with no phytotoxicity or residue. (Same rates as BotaniGard ES)	Whiteflies, Aphids, Mealybugs: 0.5-1 qt (lb)/100 gal Thrips: 1–2 qt (lb)/100 gal Other labeled insects: 0.5–2 qt (lb)/100 gal
		Apply SuffOil-X when insects are present on an as needed basis. SuffOil-X may be tank-mixed or rotated with BotaniGard and Molt-X.	1% (1 gallon/100 gallons)
		Apply Molt-X early for best results or include in rotations. Two to three applications at 7 to 10-day intervals is recommended. Molt-X may be tank-mixed or rotated with BotaniGard or SuffOil-X. Good coverage is essential.	Whiteflies, Leafminers, Soft scales: 10 oz/100 gal <i>(can use ½ rate when tank-mixed)</i> Thrips, Aphids, Mealybugs: 8 oz/100 gal <i>(can use ½ rate when tank-mixed)</i>

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.



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BioWorks Product Information - Poinsettia Disease, Insect & Nutrition Management Program

Root Disease Control

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

- Provides long-term (up to 12 weeks) root protection for all stages of growth
- Grows on roots “shielding” them against root damaging fungi such as *Pythium*, *Rhizoctonia*, *Fusarium*, *Thielaviopsis* and *Phytophthora spp.*
- Dual active ingredients: *Trichoderma harzianum* strain T-22 and *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 or as a pre-plant dip
- Combine with ON-Gard to increase plant natural immunity to root pathogens

Foliar Disease Control

BotryStop™ (*Ulocladium oudemansii* U3 strain; 4-hr REI, 0-day PHI, OMRI Listed)

- Biofungicide used to prevent and control *Botrytis*
- Excellent tool for resistance management
- Non-invasive and causes no harm to live plant tissue
- Storage and Shelf Life: Store in refrigerator. Do not freeze. With proper storage, shelf life is 12 month

CEASE® (*Bacillus subtilis* strain QST713; 4-hr REI, 0-day PHI, OMRI Listed)

- Prevents both fungal and bacterial diseases: controls *Botrytis*, powdery mildew, *Erwinia* and *Xanthomonas*
- Compatible in a tank mix with MilStop for foliar applications
- Safe for beneficial insects and bees

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

- Kills powdery mildew on contact and prevents other foliar diseases
- 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

General Sanitation

PERpose Plus™ (0-1-hour REI, 0-day PHI, OMRI Listed)

- Prevention and control of algae, fungal and bacterial diseases
- General sanitation of surfaces, equipment, tools, pots
- Algae and disease control in mist propagation, as a pre-plant dip, soil drench, or foliar spray



BioWorks®

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Insect & Mite Control

NemaShield® (No REI; No human toxicity; exempt from EPA labeling requirements)

- Control root-damaging fungus gnat larvae (commonly *Bradysia* species) and the soil stages of thrips
- Especially useful in greenhouse propagation and transplant production
- Easy to use dispersible formulation; apply with a sprayer or through an injector
- Active ingredient: *Steinernema feltiae* insect parasitic nematode

BotaniGard®/Mycotrol® (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
- Generally safe on beneficial insects and bees
- Excellent for tank mixing or rotating with BotaniGard and SuffOil-X

Nutrition Management

ON-Gard® 5-0-0

- Plant derived protein hydrolysate organic input
- Use as a drench, foliar spray, fog or dip application

ON-Gard® CALCIUM 1-0-0 + 5%Calcium

- Unique organic liquid calcium formulated with plant derived protein hydrolysate and calcium chloride
- Use as a foliar spray for the treatment and prevention of calcium deficiency in poinsettias
- Shelf life 2 years when stored at room temperature or refrigerated