Poinsettias - Disease & Insect Management

A proven system to protect your poinsettias from start to finish

www.bioworksinc.com

RESPONSIBLE :: ECONOMICAL :: PROVEN
Protection at Every Stage of Development

**Root Disease Control**

**RootShield**
- Controls: Fusarium, Pythium, Rhizoctonia, Cylindrocladium and Thielaviopsis, and more
- Active Ingredient: Trichoderma harzianum strain T-22
- Application Options: Granules and Wettable Powder
- REI: 0-hour

A healthy plant starts with a healthy root system. RootShield provides long-term root protection through every stage of poinsettia development. The active ingredient is the beneficial fungus Trichoderma harzianum strain T-22 that grows on the roots “shielding” them against harmful fungi.

**RootShield PLUS**
- Controls: Phytophthora, Fusarium, Pythium, Rhizoctonia, Cylindrocladium and Thielaviopsis, and more
- Active Ingredient: Trichoderma harzianum strain T-22, PLUS Trichoderma virens strain G-41
- Application Options: Granules and Wettable Powder
- REI: 0-hour*
  *-4-hour for WP only if using as a dip or dust

RootShield PLUS gives your poinsettias the same root protection throughout crop production as the original RootShield, but also provides preventative control of soilborne Phytophthora, and improved suppression of the aggressive hot-season Pythium (P. aphanidermatum).

- Cost effective: reduces or eliminates chemical root fungicide applications
- Grows on roots within a pH range of 4-8 at soil temperatures of 48 to 97°F
- Can be used in rotation with insecticides, rooting compounds, fertilizers and most fungicides
- No phytotoxic effects recorded
- OMRI Listed®

*RootShield PLUS is pending OMRI submission.

**Foliar Disease Control**

**CEASE & MilStop**
- CEASE – Controls: Botrytis, powdery mildew, Erwinia, Xanthomonas and Pseudomonas
- Active Ingredient: Bacillus subtilis (strain QST 713)
- Application Options: Liquid Formulation
- REI: 4-hour

The only natural way to prevent fungal and bacterial diseases. CEASE is also an effective resistance management tool. Outstanding plant and environmental safety make CEASE the right choice to protect your poinsettias - naturally. NOP Approved.

- MilStop – Controls: Botrytis, powdery mildew and more
- Active Ingredient: potassium bicarbonate
- Application Options: Soluble Powder
- REI: 1-hour

A broad spectrum foliar fungicide, MilStop kills on contact by pulling water from spores and their growing strands. It also inhibits enzymes involved in fungal cell wall formation by altering the pH on the leaf surface.

- Effective resistance management tools
- Leaves no unsightly residue
- Can be used as part of an integrated pest management program
- OMRI Listed

RESPONSIBLE :: ECONOMICAL :: PROVEN
Growing poinsettias requires complete protection through all stages of development. Our family of products offers a proven, cost-effective system for controlling insects and plant diseases at every stage of poinsettia development. At BioWorks, we also believe that how you grow is as important as what you grow. That’s why all of our products are safer and responsible for the environment. With BioWorks, your poinsettias will be “coming up roses.”

### Fungus Gnat Larval Control

**NemaShield®**

- Controls: fungus gnat larvae, thrips pre-pupa & pupae
- Active Ingredient: Steinernema feltiae, insect parasitic nematode
- Application Options: Easy-to-use dispersible formulation
- REI: No REI; exempt from EPA labeling requirements

Effectively control fungus gnat larvae with NemaShield. A single application of NemaShield beneficial nematodes is sufficient for preventing fungus gnat outbreaks or control in the beginning phase of an outbreak. NemaShield is available in 100 million, 500 million and 2 billion units. One 100 million unit of NemaShield (sprayable formulation) contains 100 million infective Steinernema feltiae on an inert carrier and will treat up to 3400 square feet.

- Safe and easy to apply
- Compatible with many pesticides, including insecticides
- Fast delivery for fresh nematodes as needed

### Insect Control

**BotaniGard®**

- Controls: whiteflies, thrips, aphids and more
- Active Ingredient: Beauveria bassiana GHA
- Application Options: Liquid, Wettable Powder
- REI: 4-hour

Get rid of bad bugs for good with BotaniGard®. It effectively controls difficult insects including Q-Biotype whitefly by delivering a high concentration of living spores from the powerful fungus Beauveria bassiana GHA strain that works in direct contact with the insect. BotaniGard is available as a liquid (ES) or a wettable powder 22WP.

- Compatible with IPM programs and beneficial insects
- An ideal resistance management tool
- Compatible with most insecticides when tank mixed or used in rotation
- Use BotaniGard ES up until bract formation

**Molt-X®**

- Controls: a wide-variety of insect pests
- Active Ingredient: Azadirachtin - 3%
- Application Options: Liquid Formulation
- REI: 4-hour

Molt-X works primarily as an insect growth regulator (IGR) that disrupts the molting process in insects. Once treated with Molt-X, insects become sluggish, stop feeding, and fail to mature and reproduce. Molt-X also acts as an insect repellent, antifeedant, and ovipositional deterrent; these multiple modes of action make it a highly effective tool for use in a resistance management program.

- Leaves no residue on plant foliage and flowers
- Compatible with most commonly used insecticides, fungicides and fertilizers
- OMRI Listed

**SuffOil-X®**

- Controls: a wide variety of mites and insect pests
- Active Ingredient: Petroleum Oil
- Application Options: Spray oil emulsion
- REI: 4-hour

SuffOil-X is a unique concentrate of pre-emulsified, highly refined, high paraffinic, low aromatic oil. Its pre-emulsification process breaks down the oil particle to 1/14th its original size before emulsifiers are added. The small oil droplets assure that a very thin, uniform coating of oil is applied to the plant, which effectively smothers and kills pests while maintaining plant safety.

- Suffocates eggs, larvae, nymphs and adult soft bodied insects and mites
- Uniform coverage to suffocate pests without causing burn or stress
- Works well in high or low pressure spray applications
- OMRI Listed
### Application – BioWorks Poinsettia Disease and Insect Management Program

<table>
<thead>
<tr>
<th>Crop Stage</th>
<th>Product and Application Timing</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Root Disease Control</strong></td>
<td>Plant clean, disease-free plants into media containing RootShield® Granules, RootShield PLUS Granules, or Drench with RootShield® WP or RootShield PLUS WP immediately after planting. Reapply RootShield WP again in 10-12 weeks at ½ rate, or RootShield PLUS WP at full rate.</td>
<td>RootShield® 1.25 lb/100 gal 2 oz/100 gal RootShield PLUS® 5 lb/100 gal 2 oz/100 gal</td>
</tr>
<tr>
<td><strong>Fungus Gnat Control</strong></td>
<td>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.</td>
<td>One 100 million packet/2200 sq ft</td>
</tr>
<tr>
<td></td>
<td>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 3 weeks.</td>
<td>8 oz/100 gallons</td>
</tr>
<tr>
<td><strong>Foliar Disease Control</strong></td>
<td>When conditions are right for Botrytis or powdery mildew apply MillStop® as a preventative.</td>
<td>1.25 lb to 2.5 lb/100 gal every 7-10 days</td>
</tr>
<tr>
<td></td>
<td>Spray CEASE® as a preventative for Botrytis, powdery mildew and bacterial diseases.</td>
<td>4 qt/100 gal every 7-10 days</td>
</tr>
<tr>
<td><strong>Insect Control</strong></td>
<td>At the first sign of insects (egg hatch or first larval instars) apply BotaniGard® ES or 22WP at 5 to 10 days intervals. If pest pressure is high, combine initial applications with a contact insecticide and reduce the interval of BotaniGard to 3 to 5 days.</td>
<td>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</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>1% (1 gallon/100 gallons)</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>Whiteflies, Leafminers, Soft scales – 10 oz/100 gal (can use ¼ rate when tank-mixed) Thrips, Aphids, Mealybugs – 8 oz/100 gal (can use ¼ rate when tank-mixed)</td>
</tr>
<tr>
<td><strong>Cuttings, Propagation</strong></td>
<td>Stick unrooted cuttings into media containing RootShield® Granules, RootShield PLUS Granules, or Drench with RootShield® WP or RootShield PLUS WP approximately 7-10 days after sticking. Reapply RootShield WP again in 10-12 weeks at ½ rate, or RootShield PLUS WP at full rate.</td>
<td>RootShield® 1.25 lb/100 gal 4 oz/100 gal RootShield PLUS® 5 lb/100 gal 6 oz/100 gal</td>
</tr>
<tr>
<td><strong>Fungus Gnat Control</strong></td>
<td>Apply NemaShield® for fungus gnat control within the first week after sticking. After two weeks, make a second application at the same rate.</td>
<td>One 100 million packet/2200 sq ft</td>
</tr>
<tr>
<td></td>
<td>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 3 weeks.</td>
<td>8 oz/100 gal</td>
</tr>
<tr>
<td><strong>Foliar Disease Control</strong></td>
<td>Spray CEASE® as a preventative for Botrytis, powdery mildew and bacterial diseases.</td>
<td>4 qt/100 gal every 7-10 days</td>
</tr>
<tr>
<td><strong>Insect Control</strong></td>
<td>At the first sign of insects (egg hatch or first larval instars) apply BotaniGard ES or 22WP at 5 to 10 days intervals. If pest pressure is high, combine initial applications with a contact insecticide and reduce the interval of BotaniGard to 3 to 5 days.</td>
<td>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</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>1% (1 gallon/100 gallons)</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>Whiteflies, Leafminers, Soft scales – 10 oz/100 gal (can use ¼ rate when tank-mixed) Thrips, Aphids, Mealybugs – 8 oz/100 gal (can use ¼ rate when tank-mixed)</td>
</tr>
<tr>
<td><strong>Transplanting into finish pots</strong></td>
<td>Plant clean, disease-free plants into media containing RootShield® Granules, RootShield PLUS Granules, or Drench with RootShield® WP or RootShield PLUS WP immediately after planting. Reapply RootShield WP again in 10-12 weeks at ½ rate, or RootShield PLUS WP at full rate.</td>
<td>RootShield® 1.25 lb/100 gal 2 lb/100 gal RootShield PLUS® 5 lb/100 gal 2 lb/100 gal</td>
</tr>
<tr>
<td><strong>Fungus Gnat Control</strong></td>
<td>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.</td>
<td>One 100 million packet/2200 sq ft</td>
</tr>
<tr>
<td></td>
<td>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 3 weeks. Also make 1 application to poinsettias 10 to 15 days prior to shipping to prevent adult emergence.</td>
<td>8 oz/100 gal</td>
</tr>
<tr>
<td><strong>Foliar Disease Control</strong></td>
<td>When conditions are right for Botrytis or powdery mildew apply MillStop® as a preventative.</td>
<td>1.25 lb to 2.5 lb/100 gal every 7-10 days</td>
</tr>
<tr>
<td></td>
<td>Spray CEASE® as a preventative for Botrytis, powdery mildew and bacterial diseases.</td>
<td>4 qt/100 gal every 7-10 days</td>
</tr>
<tr>
<td><strong>Insect Control</strong></td>
<td>At the first sign of insects (egg hatch or first larval instars) apply BotaniGard ES or 22WP at 5 to 10 days 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)</td>
<td>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</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>1% (1 gallon/100 gallons)</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>Whiteflies, Leafminers, Soft scales – 10 oz/100 gal (can use ¼ rate when tank-mixed) Thrips, Aphids, Mealybugs – 8 oz/100 gal (can use ¼ rate when tank-mixed)</td>
</tr>
</tbody>
</table>

Please refer to product labels for complete application details. Additional technical information is available from either our website: www.bioworksinc.com, or your BioWorks sales representative. Always read and follow label directions. RootShield®, CEASE®, SuffOil-X®, Molt-X® and NemaShield® are registered trademarks of BioWorks, Inc., Victor, NY, USA. BotaniGard® and Mycotrol® O are registered trademarks of Laverlam International Corp. Oasis® is a registered trademark of Smithers-Oasis Company. ©2012, BioWorks, Inc. All rights reserved.