



# Mums/Pansies Production Disease, Insect, & Nutrition Management

When planning your next crop of mums or pansies, give your plants a healthy start and keep them clean throughout production with the BioWorks family of products. BioWorks products can also help you deal with the high summer temperature stress experienced by fall pansies.

**Use on Stock Plants, in Propagation/Cuttings/Seeds and when Finishing Crops**

Application – Mums/Pansies Disease, Insect & Nutrition Management Program		
Crop Stage	Product and Application Timing	Rates
<b>Pre-Plant Dip</b>	<b>BotaniGard® 22WP, RootShield® PLUS+ WP, ON-Gard®, NemaShield®</b> Dip unrooted or rooted cuttings, plugs or liners prior to planting to guard against incoming pests or pathogens.	See 'Utilizing Dips' on website for rates
<b>Root Disease Control</b>	<b>RootShield® PLUS+ WP and Granules – OMRI Listed</b> 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.	RS+ Granules: 2 lb/cu yd RS+ WP: 6 oz/100 gal
<b>Nutrition</b>	<b>ON-Gard® 5-0-0</b> Apply with RootShield PLUS+ WP as a drench at transplanting. Reapply ON-Gard® 5-0-0 as a drench at 2 week intervals.	ON-Gard® 5-0-0: 32 fl oz/100 gal
<b>Foliar Disease Control</b>	<b>CEASE® – OMRI-Listed</b> Spray as a preventative for Botrytis, powdery mildew and bacterial diseases.	4 qts./100 gal every 5-7 days
	<b>MilStop® – OMRI-Listed</b> When conditions are right for powdery mildew or Botrytis, 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.	1.25-2.5 lb/100gal every 7-10 days 3 lb/100 gal every 7-10 days
	<b>BotryStop™ – OMRI-Listed</b> Spray as a preventative for Botrytis.	3 lb/100 gal every 7-10 days
<b>Insect Control</b>	<b>NemaShield®</b> Apply NemaShield for fungus gnat control within the first week after seeding or transplant, or immediately after seeing adults flying. 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/ 3,400 sq ft  One 100 million packet/ 1,100-2,200 sq. ft
	<b>BotaniGard® ES and 22WP (Mycotrol® – organic formulation)**</b> At first sign of insects apply BotaniGard ES or WP at 5 to 10 day intervals. If pest pressure is high, combine initial applications with a contact insecticide or Molt-X and reduce intervals to 3 to 5 days. Can be tank mixed or alternated with Molt-X.	Whiteflies, Aphids, Mealybugs: ½-1 qt (lb)/100 gal  Thrips: 1 to 2 qt (lb)/100 gal
	<b>SuffOil-X®** – OMRI-Listed</b> Follow all precautions and recommendations for applying horticultural oils.	1 to 2 gal/100 gal
	<b>Molt-X®** – OMRI-Listed</b> Controls both foliar and soil borne pests. Combine or rotate with BotaniGard for an effective control strategy. Maintain pH of diluted mixture between pH 5.5 - 6.5.	8 to 10 oz/100 gal

\*\*Use caution when making applications to open blooms, especially on varieties known to be sensitive. It is recommended that a small group of plants be tested for effects on open blooms before making applications to the whole crop. Always read and follow label directions.



**BioWorks®**

## Mums/Pansies Production

Always Refer to product labels for complete application details. Additional technical information is available on our website.

### BioWorks Product Information – Mums/Pansies Disease, Insect & Nutrition Management Program

#### Root Disease Control

##### RootShield® PLUS<sup>+</sup> 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



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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