



## CANNABIS PEST MANAGEMENT PROGRAM



This literature piece is to provide indoor cannabis growers with information on how to build an integrated pest management program (IPM) that caters to their needs. Not all products are allowed for use on cannabis in all states, so check with your local laws first.

### IPM BEST PRACTICES

- Start a weekly spray program in early vegetation through mid-flower
- Use proper sanitation protocols to prevent cross-contamination
- Train employees how to scout for pests & encourage them to look for pests anytime they are working with plants
- Know the economic injury level (EIL) for each pest & proactively treat before that is reached
- Tank mixing can be an effective & efficient way to maximize time & product efficacy
- Always read & follow label instructions

### CANNABIS IPM PROGRAM

An easy-to-remember approach that rotates modes of action. Apply every 7 days after transplant. Rates are per 1000 sqft.



2 tbsp. or 30 ml./gal.

+



2 tbsp. or 30 ml./gal.



0.5-1 tbsp or 3.6-7.2 grams/gal.

#### PREVENTATIVE RATES

Low pest pressure below the EIL, use the IPM program above.

#### CURATIVE RATES

Medium to high pest pressure. Increase spray rates & frequency, within allowable label rates, to bring pests to below EIL.

#### SURFACTANTS

When using Grandevo® CG Bioinsecticide & Venerate® CG Bioinsecticide include a crop oil concentrate, yucca extract, OROBOOST®, Coco-Wet® or a trusted wetting agent.

#### MIXING PRODUCTS TOGETHER

Tank-mix products when labels allow, saves time & increases efficacy. Regalia® CG Biofungicide, Venerate CG Bioinsecticide, Jet-Ag® 5% & Jet-Oxide® 5% can be added to irrigation water. When mixing Marrone products with other products, always conduct a jar test for mixing compatibility & spray a trial plant to observe for any negative effects such as phytotoxicity.

National Environmental Services Center Tech Brief Jar Testing (<https://www.nesc.wvu.edu/files/d/3cf372e5-ba40-450c-a3ad-cd774f4c3345/jar-testing.pdf>)

\*Spray Advice – To avoid phytotoxicity, treat when the plants are not under stress (Example: intense light, heat or drought). Spray immediately before lights turn off to increase contact time. Avoid spraying sulfur & oil-based products within a week of each other due to phytotoxicity risk.

#### FOGGERS

Use the same rates of Regalia CG Biofungicide, Venerate CG Bioinsecticide, and Jet-Ag 5% as in a spray application. Grandevo CG Bioinsecticide is not recommended in a fogger at this time. Make sure equipment is compatible with an oxidizer such as Jet-Ag 5%.

For a detailed guide on fogging for indoor growing visit: <https://marronebio.com/download/fogging-guide-how-to-usage-biologicals-with-fogging-equipment/>

#### MOTHER PLANTS

Healthy mother plants will provide strong, pest-free cuttings. That's why it's important to have a solid treatment program; start clean & stay clean in your grow operation. We advise treating your mother & stock plants on a 7-10-day interval.

## START CLEAN, STAY CLEAN!

### PROPAGATION (Seeding & Cloning)

Soil-Borne Diseases (e.g., *Fusarium*, *Pythium*) & Powdery Mildew (PM)

- Sanitize - Prior to seeding or sticking cuttings, drench growing media to the point of saturation with Jet-Ag 5% at a rate of 4 fl. oz./5 gal. of water (2 qts./100 gal.). Wait at least 15 minutes before seeding or sticking cuttings.

### AT TRANSPLANT

Dip transplants into a mixture of starter fertilizer water & Regalia CG Biofungicide at 1 tbsp./gal. to control root, shoot & foliar diseases & boost plant health & rooting.

### VEGETATIVE PHASE

#### Diseases

Powdery Mildew, *Fusarium* & *Pythium* Stem & Root Rots, *Botrytis*, Leaf Spots, etc.

Treat every 7-10 days:

- Regalia CG Biofungicide at 2 tbsp./gal.
- Regalia CG Biofungicide can also be added to the irrigation water to increase root health & plant vigor.
- Jet-Ag 5% at 1 fl. oz./5 gal. of water as needed.
- Stargus® Biofungicide at 1-2 tbsp./gal.
- Potassium bicarbonate & oil-based sprays can also effectively control & prevent Powdery Mildew & other diseases in cannabis & are good tank-mix or rotation partners for Regalia CG Biofungicide & Stargus Biofungicide.

#### Insects

Foliar Aphids, Caterpillar, Mites (Broad Mites, Russet Mites, Spider Mites), Thrips, etc.

- Rotate between sprays of Grandevo CG Bioinsecticide at 0.5-1 tablespoons or 3.6-7.2 grams/gal. & Venerate CG Bioinsecticide at 2-4 tbsp./gal. every 7 days.
- Other valuable tank-mix or rotation treatments include: Oil-based products, soaps, azadirachtin & biologicals like *Beauveria bassiana*, *Paecilomyces fumosoroseus*, & beneficial insects.

### FLOWERING PHASE

Growers often terminate treatment programs at end of week 4 or 5 of flower if plants are free of pests. Release beneficial insects to maintain low pest levels until harvest, if needed. Continue use of CG products (0-day pre-harvest interval restrictions) if needed, with low risk to beneficials.

#### Disease Control

Powdery Mildew, *Botrytis*, Bud Rot, & Other Diseases

- Spray Regalia CG Biofungicide at 2 tbsp. (30 ml.)/gal. every 7 days.
- Spray Jet-Ag 5% at 1 fl. oz./5 gal. as an eradicator if disease is present.
- Stargus Biofungicide at 1-2 tbsp./gal. sprayed mid-flower provides protection to developing colas for effective bud rot control.

#### Insect Control

Spider Mites, Broad Mites, Russet Mites, Foliar Aphids, Thrips, Lepidopterans, etc.

- Rotate between sprays of Grandevo CG Bioinsecticide & Venerate CG Bioinsecticide every 7 days at 2-4 tbsp./gal.
- Other cannabis approved products may include: Oil-based products, soaps, Azadirachtin, biologicals *Beauveria bassiana* and *Paecilomyces fumosoroseus*, & beneficial insects. These products may have restrictions for use in late flower so read labels & follow all local laws.

### GREENHOUSE SANITATION

Jet-Ag 5% can also be used to keep irrigation systems & benches clean & algae-free.

#### FREE GROWER RESOURCES:

- ➔ **IPM Guides:** [MarroneBio.com/Resources/](https://MarroneBio.com/Resources/)
- ➔ **Webinars:** [MarroneBio.com/Resources/Webinars/](https://MarroneBio.com/Resources/Webinars/)





**FUNGICIDE PLANT HEALTH**

Better Yield & Harvest Quality  
 Stimulates Plant Immunity & Fights Disease  
 Tank Mix Friendly



**REDUCE DISEASE INCIDENCE & SEVERITY**

Broad Spectrum Control  
 Multiple Modes of Action  
 Harvest Flexibility & Worker Friendly



**MODERN PEST MANAGEMENT**

Prevents Crop Damage  
 Reduces Reproduction, Induces Mortality,  
 Stops Feeding & Repels Insects  
 Soft on Beneficials



**IMPROVE INSECT CONTROL**

Increases Yield  
 Protects Against Insects & Mites  
 Soft on Beneficials

**PREVENTATIVE RATES FOR WEEKLY SPRAY PROGRAM**

<b>MOTHER STOCK</b>							
<i>Recommended spray schedule for mother stock is 7 days apart; drench schedule is 14 days apart.</i>							
<b>SPRAY 1</b>		<b>SPRAY 2</b>		<b>SPRAY 3</b>		<b>PRE-CLONING SPRAY</b> (Day Before Cutting Clones)	
Regalia CG Biofungicide	30 ml./gal.	Stargus Biofungicide	30 ml./gal.	Regalia CG Biofungicide	30 ml./gal.	Regalia CG Biofungicide	20 ml./gal.
Venerate CG Bioinsecticide	30 ml./gal.	Venerate CG Bioinsecticide	30 ml./gal.	Grandevo CG Bioinsecticide	7.2 gm./gal.	Stargus Biofungicide	20 ml./gal.
OROBOOST	2.5 ml./gal.	OROBOOST	2.5 ml./gal.	OROBOOST	2.5 ml./gal.	Venerate CG Bioinsecticide	20 ml./gal.
						OROBOOST	2.5 ml./gal.
<b>DRENCH 1</b>				<b>DRENCH 2</b>			
Stargus Biofungicide	30 ml./gal.			Regalia CG Biofungicide	30 ml./gal.		
<b>VEGETATIVE CYCLE</b>							
<b>TRANSPLANT WATER</b>		<b>SPRAY 1 - DAY 3</b>		<b>SPRAY 2 - DAY 8</b>		<b>SPRAY 3 - DAY 13</b>	
Regalia CG Biofungicide	15 ml./gal.	Regalia CG Biofungicide	30 ml./gal.	Regalia CG Biofungicide	30 ml./gal.	Regalia CG Biofungicide	30 ml./gal.
Stargus Biofungicide	15 ml./gal.	Venerate CG Bioinsecticide	30 ml./gal.	Grandevo CG Bioinsecticide	7.2 gm./gal.	Venerate CG Bioinsecticide	45 ml./gal.
		OROBOOST	2.5 ml./gal.	OROBOOST	2.5 ml./gal.	OROBOOST	2.5 ml./gal.
<b>EARLY FLOWER CYCLE</b>							
<b>SPRAY 1 - DAY 5</b>		<b>SPRAY 2 - DAY 10</b>		<b>SPRAY 3 - DAY 15</b>		<b>SPRAY 4 - DAY 20</b>	
Regalia CG Biofungicide	30 ml./gal.	Regalia CG Biofungicide	30 ml./gal.	Regalia CG Biofungicide	30 ml./gal.	Stargus Biofungicide	30 ml./gal.
Grandevo CG Bioinsecticide	30 ml./gal.	Venerate CG Bioinsecticide	30 ml./gal.	Grandevo CG Bioinsecticide	7.2 gm./gal.	Venerate CG Bioinsecticide	30 ml./gal.
OROBOOST	2.5 ml./gal.	OROBOOST	2.5 ml./gal.	OROBOOST	2.5 ml./gal.	OROBOOST	2.5 ml./gal.
<b>LATE FLOWER CYCLE</b>							
<b>SPRAY 5 - DAY 25</b>		<b>SPRAY 6 - DAY 33</b>		<b>SPRAY 7 - DAY 40</b>		<b>SPRAY 8 - DAY 47</b>	
Regalia CG Biofungicide	30 ml./gal.	Stargus Biofungicide	30 ml./gal.	Stargus Biofungicide	30 ml./gal.	Stargus Biofungicide	30 ml./gal.
Venerate CG Bioinsecticide	30 ml./gal.					Venerate CG Bioinsecticide	30 ml./gal.

**MORE DATA, CROP BULLETINS,  
 LABELS & SAFETY DATA SHEETS**



**VISIT  
 MARRONEBIO.COM**

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Learn more at [www.MarroneBio.com/CG/Cannabis](http://www.MarroneBio.com/CG/Cannabis)

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