



IMPROVE YOUR IPM PROGRAM with BIOUNITE™

Harness the Power of Biology with the Performance of Chemistry

Why trust us with your citrus crop? ProFarm has more than 15 years of experience in the innovation of crop protection products for the modern-day farmer. Our library of 18,000 microbial organisms, 500+ global issued or pending patents, & data from over 3,000 field trials is why you can trust Pro Farm Group, formerly Marrone Bio Innovations.

PROTECT CITRUS FROM: Citrus Red Mites Citrus Thrips Post-Harvest Decay

BEST PRACTICES FOR INSECT MANAGEMENT IN CITRUS

CITRUS THRIPS: IPM BEST PRACTICES

Scouting: Start monitoring for citrus thrips at petal fall & continue for approximately 8 weeks, depending on the variety.

Treatment: Venerate XC Bioinsecticide 2-4 qts./A; Grandevo WDG Bioinsecticide 2-3 lbs./A; Use an oil or surfactant to enhance coverage & efficacy. Use caution when applying oils under high temperatures.

Timing: Treatments should be applied from petal fall through when fruit is no longer susceptible to scarring. This is when fruit reaches 1.5 inches for navels & Valencias; mandarins often require longer treatment regimens.

TIPS:

- **Thrips Flare Ups:** Typically occur following applications of organophosphates, carbamates, pyrethroids, & neonicotinoids.
- **Resistance Management:** Can develop rapidly among populations of citrus thrips. Use different modes of action throughout the season.
- **Beneficial Arthropods:** Are often adversely affected by most insecticides. Always read & follow label directions.



CITRUS EXPERT

Diligent scouting along with using a variety of active ingredients - rotating modes of action – throughout the season are the best ways to reduce insecticide resistance in citrus. – *Melissa O'Neal, PhD, Senior Product Development Manager, Western Region, Pro Farm Group*

Former experience: PCA & CCA with Booth Ranches; Employee with Dr. Beth Grafton-Cardwell's Citrus Entomology Laboratory at Lindcove/Kearney Agricultural Research and Extension Center

WEBSPINNING SPIDER MITES: IPM BEST PRACTICES

Citrus Red Mites:

Scouting: Begin monitoring for citrus red mites in early spring. Look for:

1. Stippling of the leaves leading to reduced photosynthesis
2. Silvering of the fruit
3. A reduction of rind pigment which will downgrade your fruit

Treatment: Venerate XC Bioinsecticide 2-4 qts./A

Timing: Applications should begin when the population is first noticed & nymphs are present.

Twospotted Spider Mite & Texas Citrus Mites:

Scouting: Start scouting as these pests are present when conditions are hot & dry. Their populations increase even more in situations where dust is present on the leaves of citrus trees.

Treatment: Venerate XC Bioinsecticide 2 qts./A below 250 GPA; Venerate XC Bioinsecticide 4 qts./A between 250-400 GPA. Use an oil or surfactant to enhance coverage & efficacy. Use caution when applying oils under high temperatures.

Timing: Applications should begin when the population is first noticed & nymphs are present.

Tips:

- **Resistance Management:** Can develop rapidly among populations of citrus thrips. Use different modes of action throughout the season.
- **Beneficial Arthropods:** Are often adversely affected by most insecticides. Always read & follow label directions.



**Haven is not OMRI listed; *Jet-Ag 5% is not Minimal PPE.



A broad spectrum bioinsecticide & excellent addition to existing IPM & resistance management programs.

APPLICATION:

Foliar (Ground), Backpack/Hand Sprayer

ACTIVE INGREDIENT:

Burkholderia spp. strain A396 cells & spent fermentation media

MAIN PESTS:

- Citrus Thrips
- Citrus Red Mites

BENEFITS:

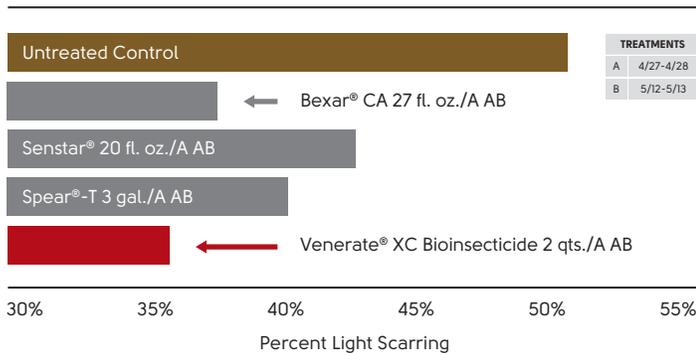
- Broad spectrum protection against sucking & chewing insects & mites
- Low impact on pollinators & beneficial insects when used as directed
- Tolerance exempt – never worry about MRLs
- Mode of Action: Ingestion

ART OF USE:

- Apply 2-4 qts./A on a 7-day interval.
- Under heavy populations, Venerate® XC Bioinsecticide can be rotated with other insecticides/miticides & can be tank mixed with contact or systemic insecticides/miticides. No limit on number of applications per season.
- Use an oil or surfactant to enhance coverage & efficacy. Use caution when applying oils under high temperatures.

VENERATE® XC BIOINSECTICIDE FOR ORANGES

5-17% Less Citrus Thrips Damage than Alternatives
Sandipa Gautam, UCCE, 2022 • Variety: 'Washington' Navel



TALK TO AN EXPERT PCA



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A broad spectrum bioinsecticide & excellent addition to existing IPM & resistance management programs.

APPLICATION:

Foliar (Ground), Backpack/Hand Sprayer

ACTIVE INGREDIENT:

Chromobacterium subtsugae PRAA4-IT & spent fermentation media

MAIN PESTS:

- Citrus Thrips
- Citrus Red Mites

BENEFITS:

- Broad spectrum protection against sucking & chewing insects & mites
- Low impact on pollinators & beneficial insects when used as directed
- No effect on pollination & fruit set
- Multiple modes of action:
 - Repellency
 - Ingestion
 - Reproduction Disruption

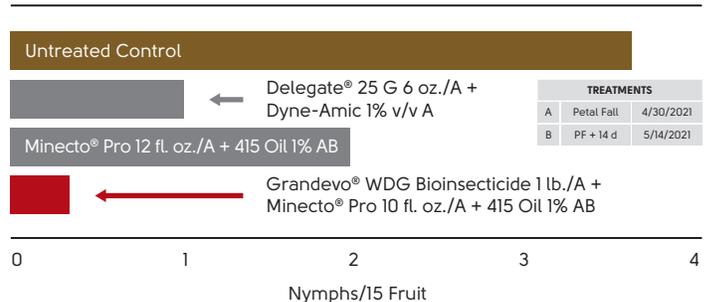
ART OF USE:

Apply Grandevo® WDG Bioinsecticide at 1-3 lbs./A every 7-14 days until the fruit is no longer susceptible to scarring. When fruit reaches 1.5 inches for Navels & Valencias; mandarins often require longer treatment regimens.

Use of an oil or surfactant is recommended when applying Grandevo WDG Bioinsecticide to aid in enhanced coverage at insecticide efficacy.

GRANDEVO® WDG BIOINSECTICIDE FOR ORANGES

56-79% Fewer Citrus Thrips vs. Alternatives
Bisabri Ag Research, Ivanhoe, CA, 2021 • Variety: 'Cara Cara' Navel



WE'RE ON YOUTUBE!

Watch Educational Webinars & Videos





Contributes to a cooler canopy, increasing plant transpiration & blocking harmful solar radiation. It is a plant UV-B blocker without visible residue.

APPLICATION:
Foliar

ACTIVE INGREDIENT:
Stearyl Alcohol

- BENEFITS:**
- Leaves no visible residue on the fruit making harvest & processing easier
 - Lowers internal leaf canopy temperatures
 - Blocks harmful radiation like UV-B that harms plant tissue & growth

ART OF USE:
Volume - apply for full coverage. Do not apply to runoff to avoid waste. For typical 12-foot trees, 100-200 gal./A is recommended.

Concentration - dilute HAVEN® in water at a rate of 0.9% - 1.2% v/v. 115 - 150 fluid ounces per 100 gallons.

A broad spectrum peroxyacetic acid (PAA) suppresses, eliminates, & controls algae, fungi, & bacterial diseases.

APPLICATION:
Foliar (Ground)

ACTIVE INGREDIENT:
Hydrogen Peroxide 26.5%, Peroxyacetic Acid 4.9%

- MAIN PESTS:**
- Blue & Green Mold
 - Sour Rot
 - Brown Rot

- BENEFITS:**
- Highly stable PAA
 - Curative contact fungicide, bactericide & algacide
 - Kills pathogen spores on fruit surface
 - No residue
 - Tank mix compatible*

* Avoid mixing with copper, magnesium, sulfur & zinc.

ART OF USE:
1% v/v every 7-14 days; prior to rain event or near harvest or when conditions become conducive to disease development.

SURROUND® TREATMENT
LEAVES VISIBLE RESIDUE



HAVEN® TREATMENT
LEAVES NO VISIBLE RESIDUE



CONTROL vs. JET-AG TREATED FRUIT



Dr Joe Smilanick, USDA-ARS 2016

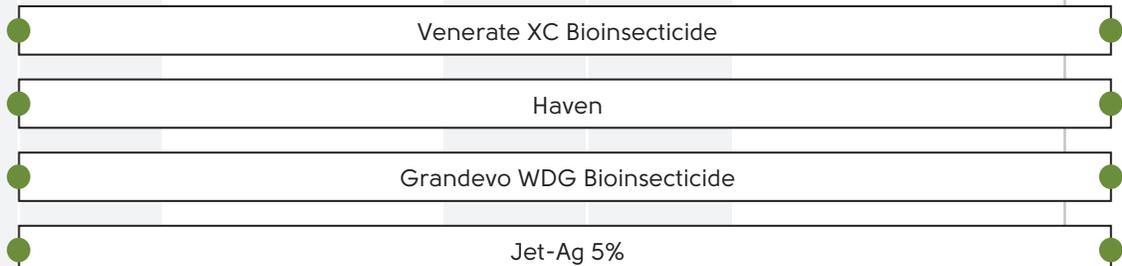


TIMING OF APPLICATION

BLOOM SET

FRUIT SET

HARVEST



Pro Farm Group, Inc. was created on July 12, 2022, when Marrone Bio Innovations merged with Bioceres Crop Solutions. The newly formed organization creates the largest global biological crop solutions portfolio.

FARMER-FOCUSED SOLUTIONS

Pro Farm Group is dedicated to helping all farmers, in conventional & organic settings, find better ways to grow & increase their return on investment (ROI). From our laboratories where we screen microorganisms to the more than 3,000 global field tests in 23 countries, we are committed to bringing growers sustainable, trial-tested solutions. We offer two approaches to integrated pest management:



An approach that focuses on combining the power of biologicals with other OMRI certified options to obtain the best ROI for certified organic production.



An integrated pest management approach that harnesses the power of biology with the performance of chemistry to obtain the best ROI for conventional crops.



POST-HARVEST SANITIZER & INDUSTRIAL SURFACE DISINFECTANT

- Easy to use; no mixing required
- Environmentally friendly, PAA breaks down to carbon, oxygen & water



NEMATODE, WIREWORM & WHITE GRUB CONTROL

- Higher yields through the reduction & repulsion of nematodes, wireworms & white grubs
- Shows positive effect on root development



FUNGAL & BACTERIAL DISEASE MANAGEMENT

- Promotes plant immunity & prevents disease
- Broad-spectrum mode of action protects against multiple pathogens, including powdery mildew & fire blight



CONTROL DOWNY MILDEW, BOTRYTIS & WHITE MOLD

- Increases marketable yield from a reduction of disease incidence & severity
- Broad-spectrum fungicidal activity against downy mildew & *Botrytis*

PRO FARM GROUP BIOINSECTICIDE IMPACT ON BENEFICIAL INSECTS

Acute mortality over 24 hours at 3X the maximum label rate with no significant mortality:

- Rove beetle, *Atheta coriaria*
- Minute pirate bug, *Orius insidiosus*
- Aphid midge, *Aphidoletes aphidimyza*
- Mealybug destroyer, *Cryptolaemus montrouzieri*
- Whitefly parasitoid, *Delphastus catalinae*
- Whitefly parasitoid, *Encarsia formosa*
- Aphid parasitoid, *Aphidius colemani*

Chronic mortality & effects on reproduction over 96 hours of exposure at 3X the maximum label rate with no significant mortality:

- *Neoseiulus californicus*
- *Neoseiulus cucumeris*
- *Amblyseius swirskii*
- *Phytoseiulus persimilis*