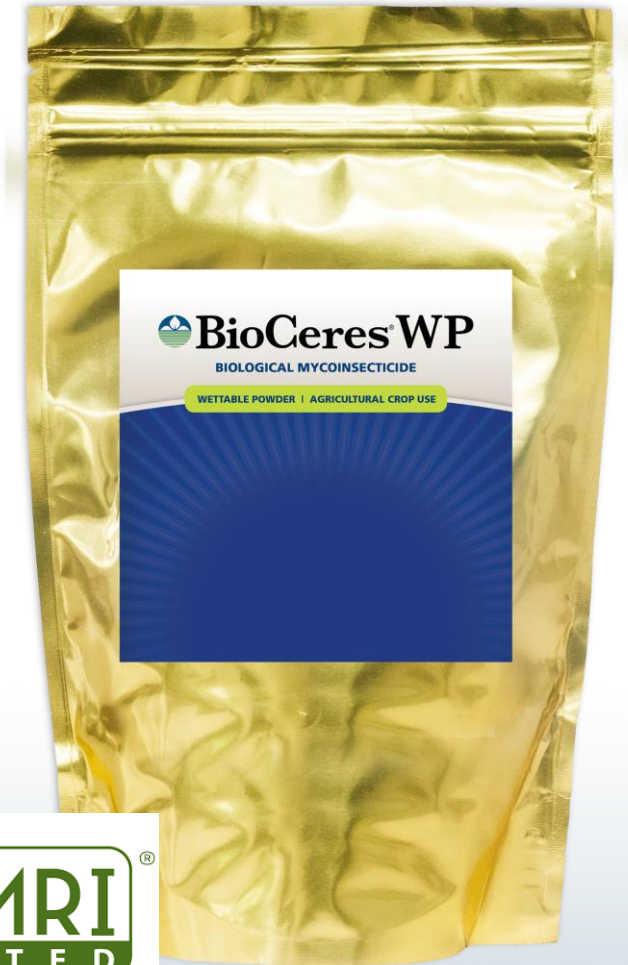




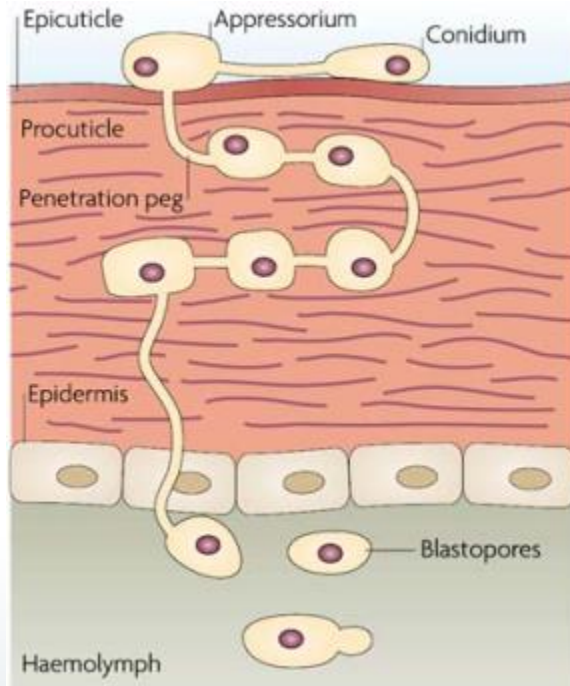
2nd Ag Innovations Conference: Microbial Control

Presented by: Manuel Campos

- **Active Ingredient:** *Beauveria bassiana*
strain-ANT-03-20.0% w/w
- **Contains** a minimum of 10 Billion CFU (Conidia)/gram
- Shelf Life: 6 months from the date of manufacture at 40-85 °F
Up to 12 months at 35 °F
- **Formulated with UV Protectant**
- **EPA Registration #:** 89600-2
- **EPA Est. No:** 89600-CAN-001



Beauveria bassiana: How does it work?



- Infection via enzymatic activity and mechanical pressure
- Infection via contact and ingestion
- Pathogenicity for all development stages including eggs, nymphs and diapausing insects

To date, no resistance to *B. bassiana* has been observed !



Application Rates and Methods

- 1.0–3.0 lbs./acre for most crops*
- Conventional ground apps: At least 50 Gallons of solution/A. Ensure thorough coverage of plant foliage but not to run off
- Spray Interval: 5-7 days as needed
- Pre-Harvest Interval (PHI): 0 (Zero) Days
- Can be applied by air
- Compatible with other biocontrol agents and some conventional chemistries



*Refer Label for Appropriate Crop Specific Rates

Organic Compatibility List

- **Adjuvants**

Non-Ionic Silicone

- **Insecticides**

Azadirachtin

Neem Oil

Bt

Spinosad

Pyrethrins

- **Fungicides**

OxiDate 2.0: 1 DBA/4AA*

Bacillus strains: 7 DBA/DAA

Streptomyces

Copper Hydroxide

Potassium Bicarbonate: Low rates

Extract Reynoutria sachalinensis

Sulfur 80%: 4 DBA/DAA

Dusting Sulfur: 4 DBA/DAA

*DBA=Days Before Application, DAA=Days After Application



Insects and Crops on Current Label

✓ **Aphids**

✓ Bud Weevil

✓ European Corn Borer

✓ **Plant Bugs**

✓ **Thrips**

✓ **Whiteflies**

✓ **Spotted Wing Drosophila**

✓ Striped Cucumber Beetle

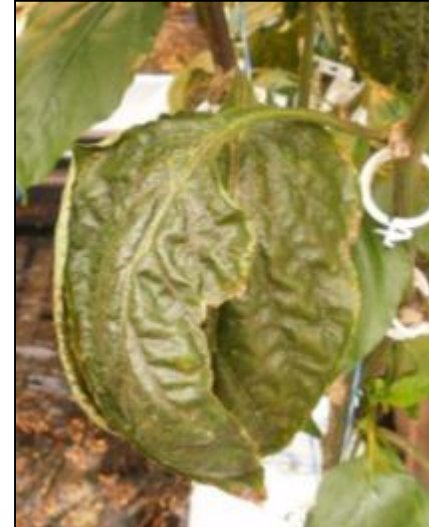
- Forage Crops, Berries
- Leafy and Bulb Vegetables
- Cereal Grains, Citrus
- Cucurbits, Grapes
- **Fruiting Vegetables**
- **Greenhouse Vegetables and Ornamentals**
- Shade and Ornamental Trees
- Herbs and Spices
- Root and Tuber Vegetables
- Legumes, **Strawberry**
- Pome Fruit (Apples, Pears etc.)
- Stone Fruits
- Tree Nuts and Pistachios
- Tropical and Sub-Tropical Fruit

Efficacy studies (>75%)

Phytotoxicity



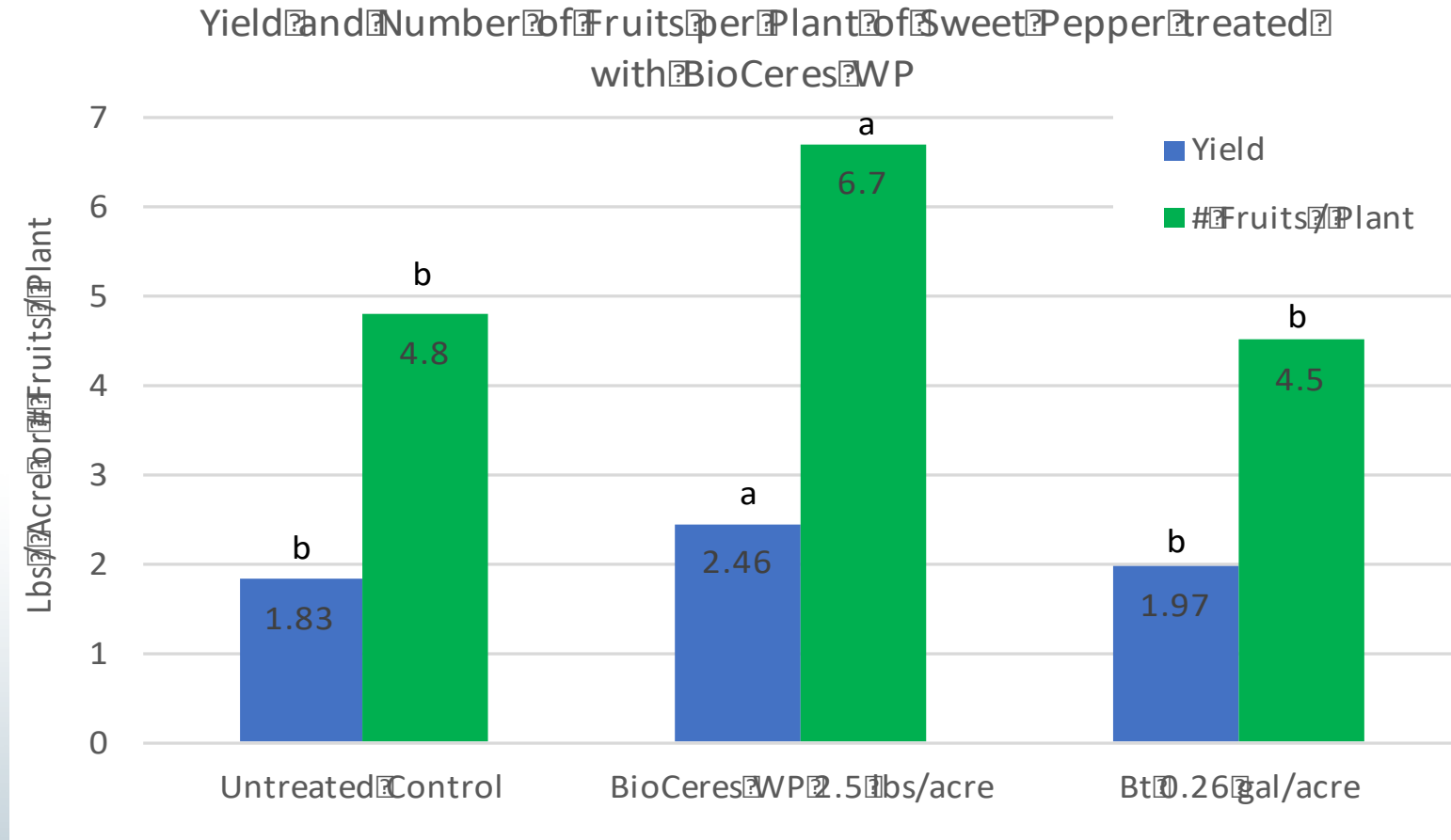
BioCeres WP

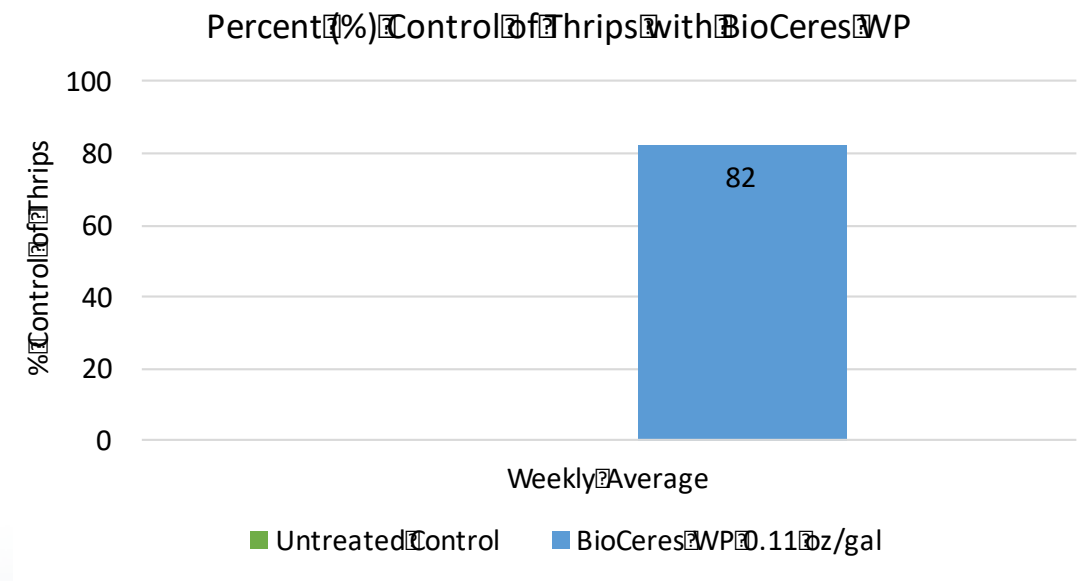
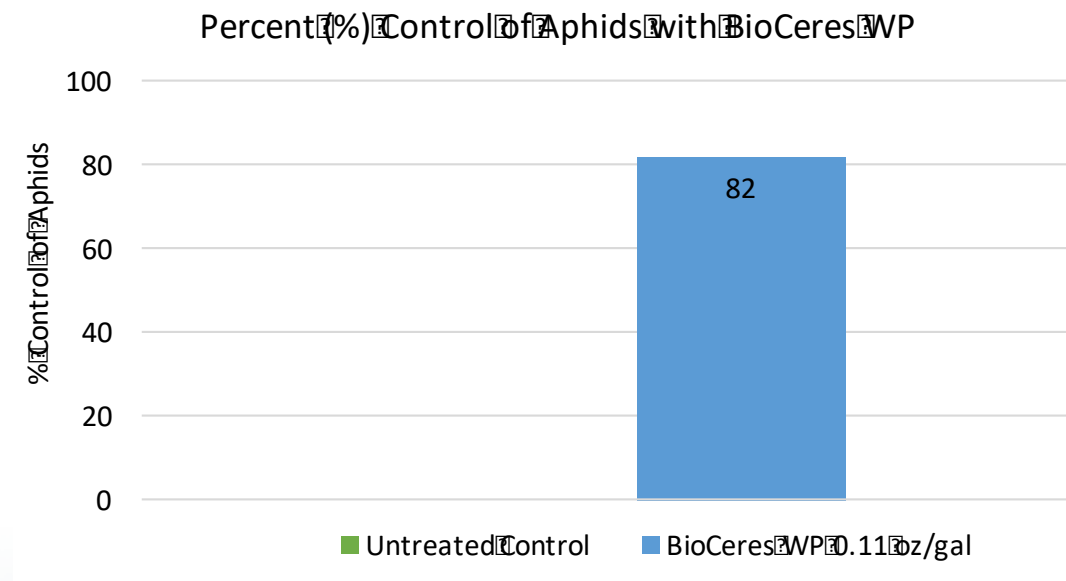


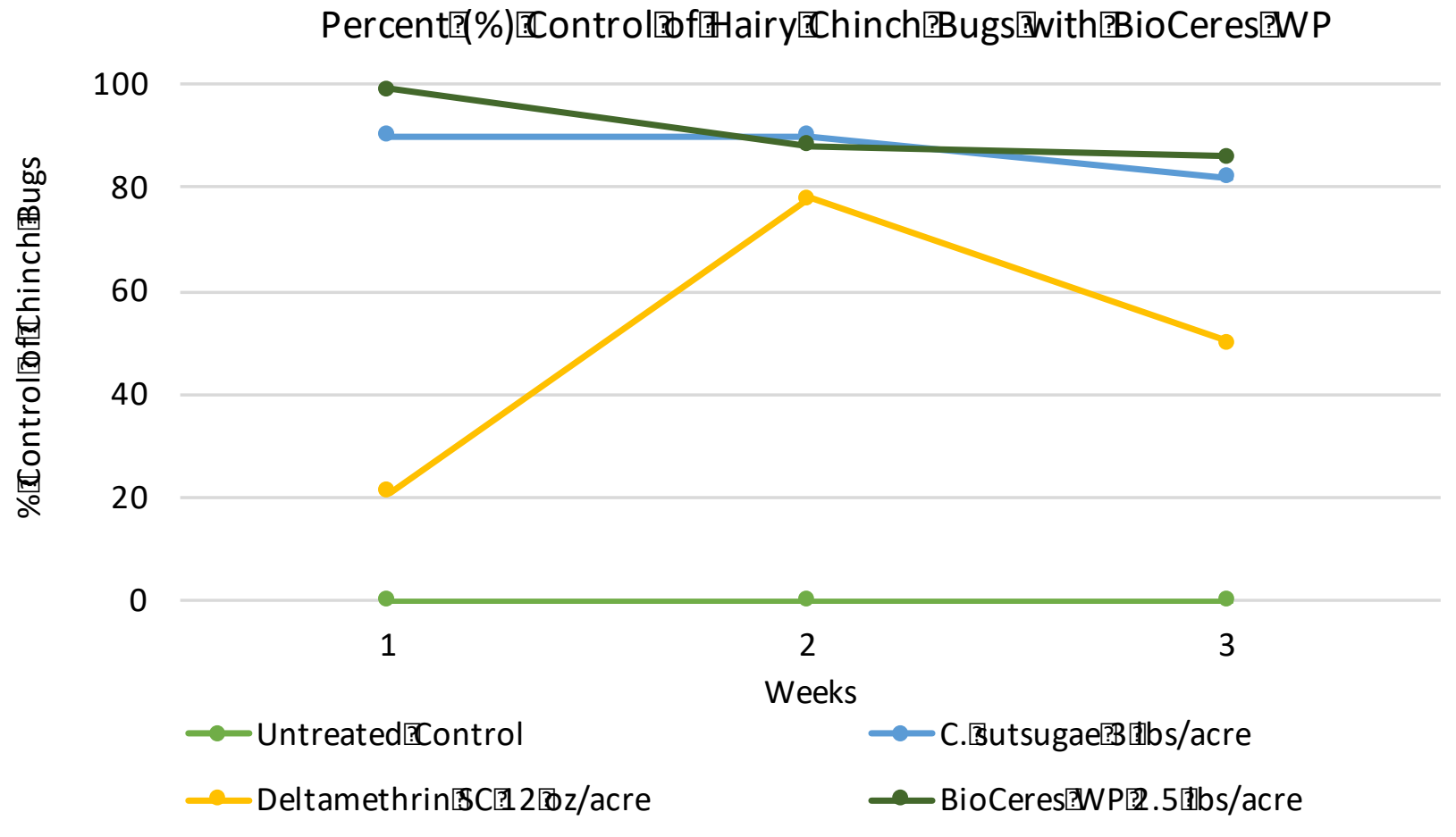
Competitive product

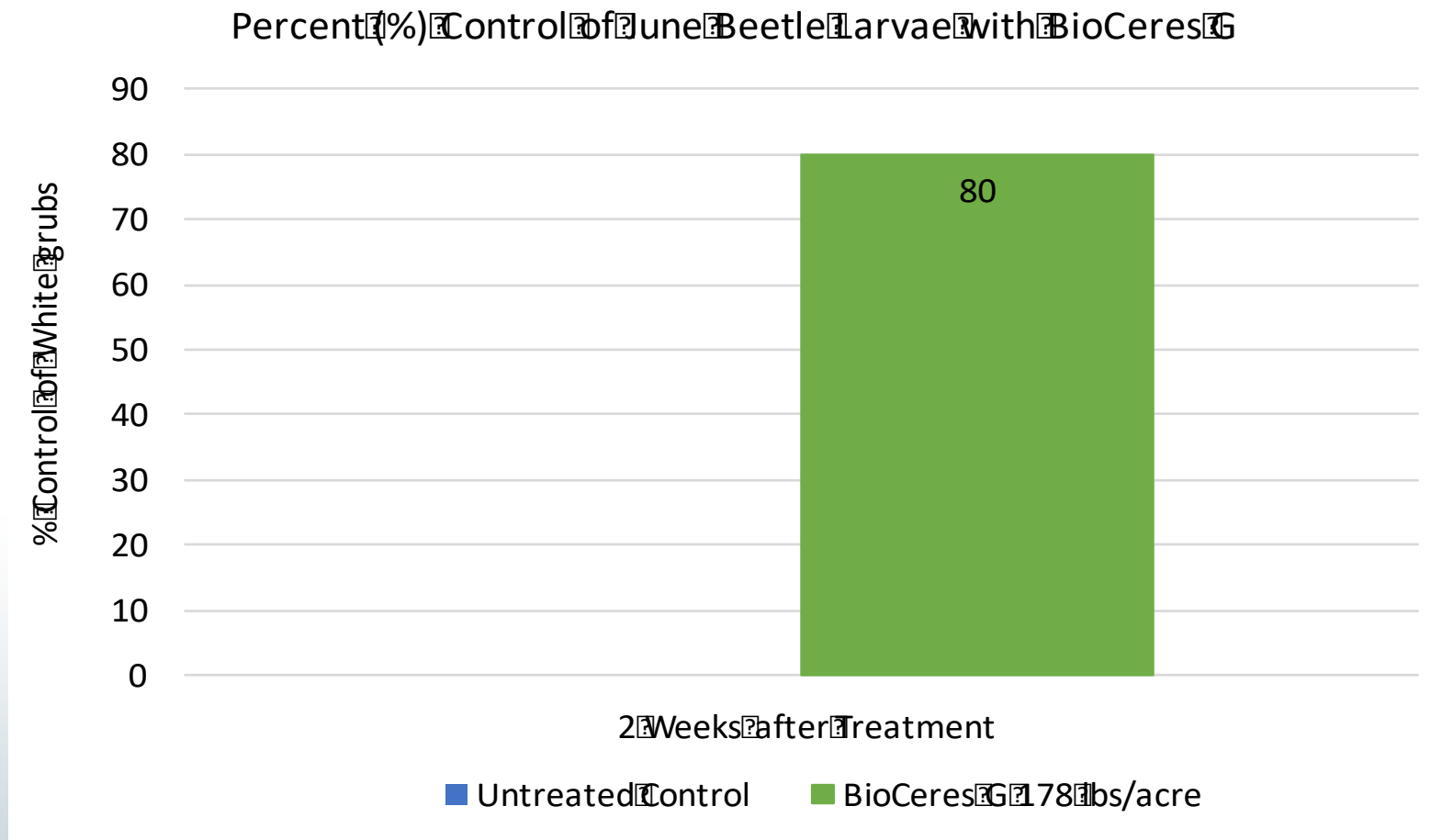
BioCeres: non-toxic to plants

Impact on Yield and Number of Fruits

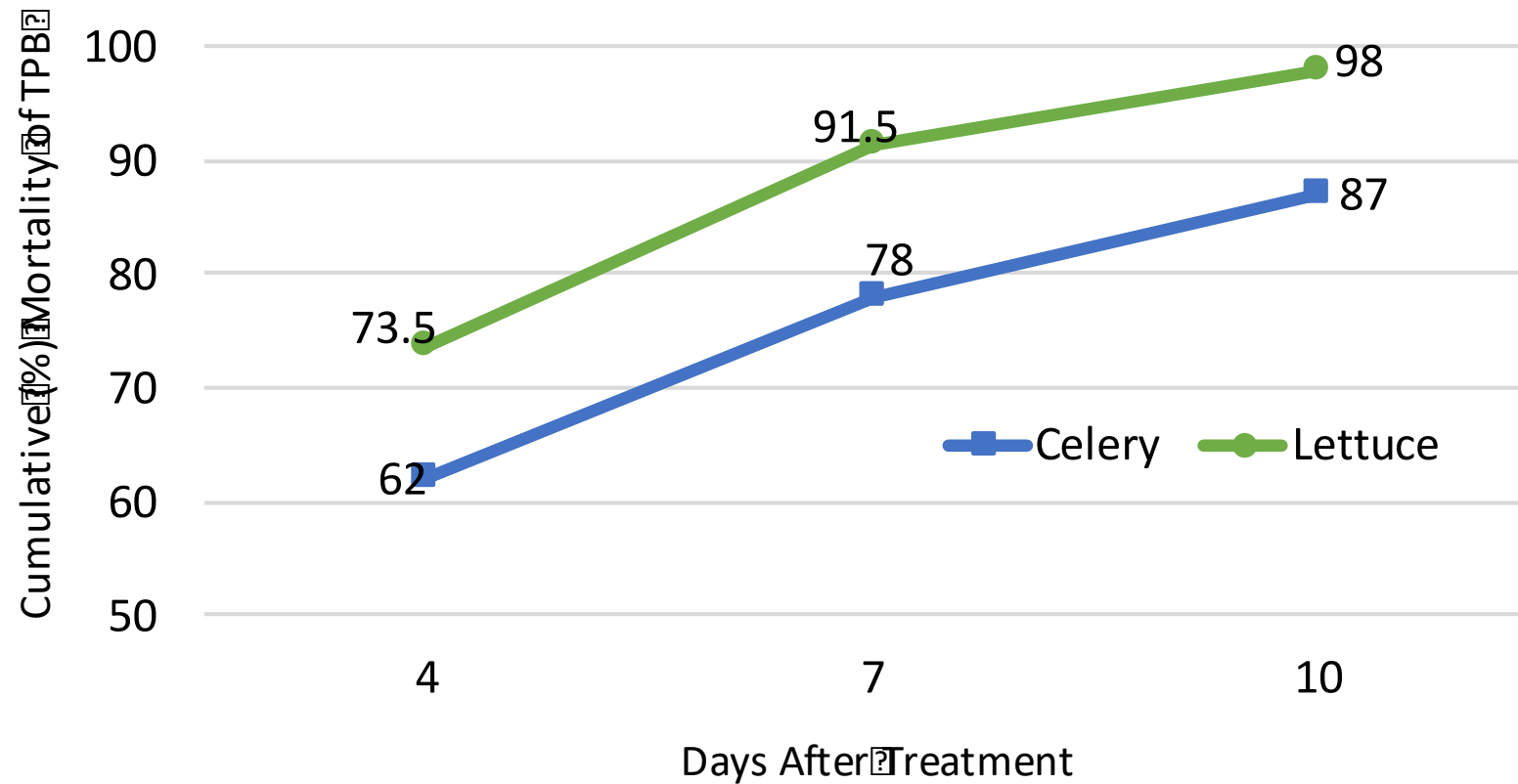




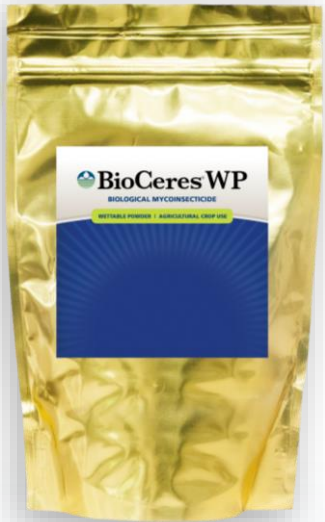




Cumulative (%) Mortality by BioCeres WP on Adult Tarnished plant Bug in Field Caged Celery and Lettuce



Tank Mix Program



- Complimentary Modes of Action
- Impacts All Life Stages
- Effective approach for Whiteflies, Aphids, Thrips, Mites, etc...
- 1 LB BioCeres WP + 8 – 10 OZ AzaGuard per 100 GALS
- Solution Preparation: Slowly add BioCeres WP while agitating then add AzaGuard

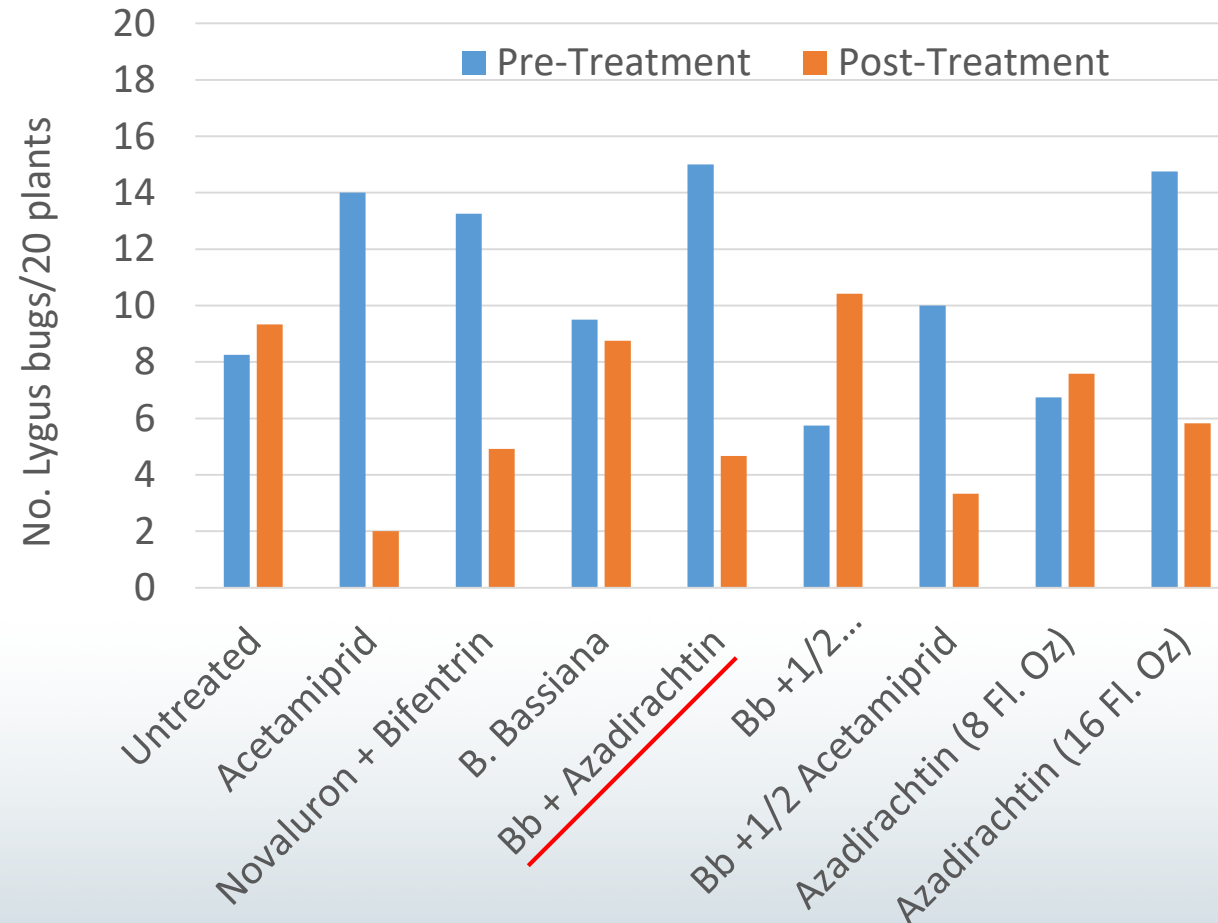


AzaGuard[®]

- Botanical Insecticide/Nematicide
- Active Ingredient: Azadirachtin 3% EC
- Other Constituents: Azadirachtins B – K, Salanin, Nimbin, Melantriol
- 4 hr REI
- Built in surfactant



BioCeres® WP + AzaGuard®



Control of Lygus Bugs with *Beauveria bassiana* and Azadirachtin (AzaGuard) on strawberry. Data taken from: Surendra, D. K. 2016. Managing strawberry pests with chemical pesticides and non-chemical alternatives. International Journal of Fruit Science. Vol. 16, No. S1, 129-141.

Thank You!

We want to thank to Dr. Surendra Dara for the invitation to participate in this Ag Innovation Conference.

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Ph.D. Jay Sughroue
Area Manager, California/AZ/NV
951-719-9244
jsughroue@biosafesystems.com



Ph.D. Manuel Campos (Texas)
Technical Representative, US and Mexico
956-246-2608
mcampos@biosafesystems.com