Microbial control of arthropod pests and disease: perspective of independent private research

Frank V. Sances
Pacific Ag Group
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University of California San Diego
Product Development Research

Independent CRO*
- Office and Lab
  - Small or large entities - “mom and pop” regional to multi state to global
  - NDA, Secrecy and non-compete agreements with patent holders
- Field Research
  - Traditional field stations
  - Lab and greenhouse facilities
  - Grower cooperator “immersion” studies

Manufacturer
- Research and “technical service” staff
- Lab, Greenhouse and Field station facilities
  (many have been closed since 2000)

Independent Consultant
- Contract with growers/PCAs
- Retired from university, manufacturing, or government

*Contract Research Organization
Study Types

- Efficacy – Product Performance
- Regulatory – GLP
- Agronomy – Fertilizer, Genetics, Other (i.e. Equipment)
- Diagnostic – Crop Investigation
Multiple Facilities Across Broad Geography and Microclimates

**Pacific Ag Research:**
- **Central Coast:**
  - San Luis Obispo
  - Arroyo Grande (2)
  - Huasna
  - Guadalupe

**Salinas Valley:**
- Spreckels
- Chualar

**San Joaquin Valley:**
- Five Points
- Avenal

**Michigan Ag Research:**
- Albion
- Sunfield

**Florida Ag Research:**
- Thonotosassa
- Dover
Facilities & Staff Disciplines

Horticulture

Entomology

Plant Pathology

Viticulture & Enology

Nematology
Types of Data

Crop Safety

Damage

Post Harvest

Digital Data

Herbicide
Specialty Equipment Engineering and Fabrication
Role of Plant Health in product performance testing
Primary Methods of Biopesticide Testing

Laboratory Assessment – Munger Cells

In-Field Assessment
Air Monitoring and Worker Exposure
Improving Biopesticide Efficacy – Spray Coverage
Improving Biopesticide Efficacy – Spray Coverage

- High Pressure or Air Assist More Effective
- 3 Nozzles at 40 psi not effective
**Regulatory**

Coordination with state and federal regulatory agencies throughout trial conduct

California Department of Pesticide Regulation

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**Reporting**

Unless the results are easily understood by the end user, reporting is incomplete
Thank You

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