

# Integrated Pest Management Chemical Control Strategies



J. Sugano, S. Fukuda, J. Uyeda, K.-H. Wang, J. Tavares, T. Radovich, M. Kawate, R. Shimabuku, C. Tamaru, A. Hara, and B. Fox  
University of Hawaii at Manoa, College of Tropical Agriculture and Human Resources

## Reduced Risk Products (1 of 2)

### Bacillus subtilis/ pumilus

Derived from a soil bacterium that is antagonistic to fungal and disease pathogens by means of nutrient competition, site exclusion, colonization, attachment of the bacteria to the fungal pathogen, etc.

Example: Serenade Max (o), Sonata (o)

### Bacillus thuringiensis (Bt)

Derived from a bacterium which is selectively toxic to many moth and larvae. When ingested, Bt produces an endotoxin in the insects gut which is toxic to the insect

Examples: Dipel (o), Crymax, XenTari (o)

### Beauveria bassiana

Spores of the Beauveria bassiana come into contact with the body of an insect host, germinate, enter the body, and grow inside, eventually killing the insect. The fungus multiplies and destroys the internal structures of the host under high humidity environments

Examples: BotaniGard, Mycotrol (o)

### Copper products

Controls blights, mildew, anthracnose, but commonly associated with bacteria control

Example: Basic Copper 53 (o), Nucop 50DF (o), Champ WG (o)

### Diatomaceous earth:

Naturally occurring substance comprised of the fossilized remains of diatoms. Insects such as roaches, ants, silverfish, fleas, etc. come in contact with this powder and die from desiccation.

### EM, Compost Teas:

Fungicidal and nutritional supplement

Examples: Bokashi, Agripower

### Horticultural Oils:

Cover, wet, and suffocate, over wintering eggs, nymphs and adults. Effective on scale insects.

Examples: Volck oil, JMS Stylet-oil (o), Biocover

### Hydrogen Dioxide

Oxidizes rapidly on contact.

Examples: Oxidate (o)

### Insecticidal Soaps:

Potassium Salts of Fatty Acids typically disrupt membranes of soft body pests leading to rapid death by evaporation.

Example: Mpede (o)

### Kaolin Clay:

Common food additive approved by the FDA. It primarily serves as a protective barrier, distracts pest from the host plant and deters pest movement and damaging behavior.

Examples: Surround WP (o)

### Neem Oil/ Azadirachtin: (IGR) \*\* many labels say it is toxic to fish

Disrupts insects' hormonal balance so they die before they molt, suppresses some insects' desire to feed, and it also repels. It has fungicidal properties as well.

Examples: Trilogy (o), Neemix (o), Debug Turbo (o), Molt-X (o)

NOTE: (o) Refers to products approved for organic production by the Organic Material Review Institute (OMRI).

