Biological Pest Control

The Benefits of and Keys to Establishing a Successful Biological Control Program

As pest problems evolve, and traditional chemical controls become less effective or less available, more and more growers are looking to biological control programs to meet their pest control needs. Some of the benefits to a biological control program include:

- Safety issues are non-existent and protective clothing is not required.
- There is no re-entry interval (REI) or phytotoxicity associated with traditional pest control products.
- The chance of a pest developing resistance to a biological control program is also non-existent.

Biological controls are best introduced before pest populations reach a problem level. To establish a biological control program, there are 3 core building blocks that need to be implemented and followed:

1. Establish and maintain a sanitized growing environment -

It is important to establish Pre/Post and In-season cleaning programs for your facility to ensure you keep your growing environment free of weeds and other host environments for the unwanted pests. There are a number of products available to help you with this such as the following:

KleenGrow

A mild quaternary ammonium chloride compound designed to kill bacteria, and provide excellent mildew control in your greenhouse.

Strip-It

A combination cleaning and wetting agent helps remove white wash, algae, dirt, and calcium deposits from your greenhouse.

Horti-Klor

An active chlorinated detergent designed to help meet the highest greenhouse sanitation standards.

2. Monitoring & Scouting –

It is important to know what pests you are dealing with and when to introduce your beneficial biological control agents. Establishing a weekly scouting and monitoring program is essential. Use yellow and blue sticky cards (1 card/1,000-2,000ft^2) and an eye lens to monitor flying insects such as Western Flower Thrip, whitefly, fungus gnats, shoreflies and winged aphids, as well as your beneficial populations.

Keeping records of your observations will go a long way to ensuring the success of your biological program. Also use *ThriPher* (Thrip pheromone) lures at a rate of 1 per 1,000 ft^2 to help detect Thrip populations earlier and get a jump on your program.

3. Commitment to the Program -

It is essential that once you commit to a biological program you stay with it. Unlike traditional chemical control programs your results may be slower to develop and it is imperative that you begin the program ahead of your pest pressure and form a preventative perspective, as opposed to the curative mentality that is associated with most chemical control programs.

Commitment to a biological control program does not mean that all chemical controls are eliminated from your program. There is an ever-growing assortment of “bio-friendly” pest control products. You just need to be more diligent in your choice and application timing the chemical control products needed to control other problems or pests.

The following product charts will provide you with concise, to-the-point information about the leading biological control products available to combat the most common greenhouse pests. These include Fungus Gnats, Shoreflies, Aphids, Whitefly, Western Flower Thrip, Mealy Bug, and Spider Mites.

The **Biobest** website (www.biobestgroup.com) is also a great resource and has complete descriptions of the products listed in and the side effects of horticultural chemicals on beneficial insects.

Greenhouse Sanitation

PACE SOLUTIONS

ACBD System: Always Clean Before Disinfecting (a clean surface is more easily and effectively disinfected). The Pace ACBD System was developed in collaboration with growers, extension specialists, government agencies and educational institutions in Canada, United States and Mexico to bring to you

- Less disease pressure, a head start on IPM programs
- Safer work environment
- A better looking crop
- Higher yields
- Greater net profits to the grower

Structural & Equipment Sanitation/Cleaning Products – A Wide Range Available to Meet Your In-Season and Post-Season Needs

SANIDATE 5.0 SANITIZER/DISINFECTANT

SaniDate 5.0 Sanitizer/Disinfectant is for use in circulation cleaning and institutional/industrial sanitizing of pre-cleaned, hard, non-porous surfaces.

- Labeled to control Algae, Bacteria, and Viruses (including Human Coronaviruses) on hard surfaces.
- No rinse, no harmful residue.
- Apply by foam, fog, coarse spray, cloth (or other direct contact application method).
- REI: Zero hours (until treatment has dried).
- 2.5 USG and 5.0 USG container.

USE	DILUTION	TREATMENT TIME
Virucidal	4ml / L of water	10 Minutes
Sanitation	2.5 ml / L of water	1 Minute
Disinfection	4ml / L of water	10 Minutes

ZEROTOL

- A treatment for the prevention and control of fungi and algar on wood and non-porous hard services and in irrigation waters to be used in greenhouse and only on non-food crops.
  - A treatment for the control or suppression of plant diseases in commercial greenhouses, garden centres, landscapes, nurseries, interior scapes, golf courses, athletic fields and commercial turf.
- FOR GREENHOUSE SURFACES AND EQUIPMENT APPLICATIONS:
  - Clean wood and non-porous hard-surfaces: dilute 3.3-20 ml of ZeroTol per litre of clean water. Use the higher concentration (i.e. 20 ml/L) when treating heavily soiled or contaminated areas.

UPTAKE - NOW REGISTERED FOR USE ON GREENHOUSE AND FIELD CROPS.

- This unique DDAC quaternary ammonia formulation added to your water may provide multiple benefits:
  1. Increases penetration of water and pesticide performance on crops.
  2. Spreader/Sticker activity improves rain-fast and residual activity on greenhouse crops
  3. Decreases surface tension making water wetter for a more even and effective distribution of water and chemical.
- Uptake has a pH of 6.5, making it non-corrosive to equipment, structures or growing area and most importantly safe on crops.
- Application: May be applied as mist, drip, spray, sprench or drench.
- Dilution: 0.045ml/L – Continuous injection.
- 0.5 ml/L- Weekly Application.

KLEENGROW

KleenGrow is a mild quaternary ammonium chloride compound, which kills bacteria and offers excellent mildew control.

- An essential tool for any greenhouse sanitation program.
- Apply by spray, brush, and dipping.
- Available in 20L, and 205L containers.
- PCP: 13148.

USE	RATE / L WATER	RINSE
GH floors, walkways	8 ml.	NO
GH benches, equipment	8 ml.	YES
Footbaths	NO	NO
Walls, ceilings	8 ml.	NO
Mildew / Mold control	30 ml.	NO

HORTI-KLOR

An active chlorinated detergent designed to help meet the highest greenhouse sanitation standards. The mixture of detergents and emulsifiers dislodges stubborn material such as algae, whitewash, oily residue, and dirt.

- Available in 20L and 205L sizes.

USE	APPLICATION	DILUTION
Totes, bins, plug trays, pots	Dip tank, brush	20-60 ml./L
Picking equipment, packing equipment	Backpack Sprayer	20-40 ml./L
Coolers	Injection	

STRIP IT

This is a combination of cleaning and wetting agents that effectively removes whitewash coating, algae, dirt, calcium and other hard water deposits. Strip-it can be safely used on aluminum, copper, galvanized steel,glass, plastics, fibreglass and concrete without harming the greenhouse structure or horticulture equipment.

USE	APPLICATION	DILUTION
Exterior	Spray, brush, foam	20-30 ml/L
Interior gable walls, floors, structure	Spray, brush, foam	30-40 ml/L
Cleaning Irrigation Lines, Inside Tanks	Injection	10-20 ml/L

BIOSAFE PRODUCTS BioSafe Systems