



EVENT HORIZON

Changing the thinking about how and when to use Biological Controls

January 2020

AN OUNCE OF PREVENTION IS EQUAL TO A POUND OF CURE

- With Biologicals you must disregard all of your Chemically based training
- **Chemical intervention** is based on the “Economic Threshold” of the pest. You should wait until just before the point where noticeable (economic) damage occurs. This ensures that the action kills the maximum pests and the interval between applications is maximized, hopefully managing resistance. “Don’t shoot until you see the whites of their eyes”, so to speak.
- **Biological Control** is based on the natural interactions between the pest and the chosen agent(s). In Nature, eradication is not normal. Many agents control side by side with the pests, maintaining an equilibrium. Balancing low numbers is easier, cheaper, and has less risk than trying to work with seriously high numbers of pests.



PLANTING DATE T - 30

- The soil mite *Stratiolaelaps scimitus* (Ss) should be applied at every post and plumbing intersect with the floor. (about 1 teaspoon each point), plus along the walls. Extra where pest were present the previous year.
- *Ss* establishes in the ground where the next generation of Spider Mites and Thrips are patiently awaiting your new crop. Typically, a 70% reduction in expected pests is seen.

PLANTING DATE T – 7

- Before your crop arrives or is planted, place “indicator” plants into the locations where you had pests in the previous year(s).
- For Spider mites, bush beans are very effective. Damage is apparent within 2 hours of exposure. Beans are also very attractive to Thrips and Whitefly.
- These plants, if not overrun, can be converted into Guardian/Banker plants by applying *persimilis* or *fallacis* (for spider mite)



PLANTING DATE 0



- Apply to the soil the predatory mite *Stratiolaelaps*. A rate of 25 mites / square foot will manage fungus gnats, root weevils, root aphids, and soil pupating thrips.
- For Spider mite crops, apply *fallacis* at a rate of 0.2 mites / square foot. If seeding, delay until first true leaves open.
- Install another set of bean indicator/guardian plants amongst the crop or at strategic locations.
- Start *Encarsia* at 0.025 wasps / square foot.

PLANTING DATE T + X

- Prevent Aphids by releasing *Aphidoletes aphidimyza* weekly (or bi-weekly) from the same release point.
- Delay at your peril, but the program must begin 2 weeks before the historical first sighting of aphids.
- General rule for Aa: “We always put in too little at the beginning, and always too much at the end.”



EARLY WARNING SYSTEM

- Trapping and monitoring plants are essential for effective, preventative Biological Control.
- The concept is to offer a sacrifice. Find plants that are more attractive to the pests than your plants. Even if it is just a more susceptible variety. E.g. Roses
- Locate these monitoring plants in strategic locations and make sure that they are easily accessible (not like the photo), for both monitoring and sustaining.



PHYSICAL CONSIDERATIONS



- Consider how your operation is sited. Near hay or alfalfa fields?
- Prevailing winds?
- Entry door locations and use?
- Circulation systems?
- Pushing growth with higher EC's or higher concentrations of Ammonium Nitrate?
- Climate change leading to plant stress?

EMERGENCY RESPONSE

- Whitefly
 - Increase release rate of *Encarsia* and use *Delphastus*.
- Spider Mite
 - Add *persimilis* to infested monitors, and surround affected site
- Thrips
 - Early warning at entrance doors-M's Marigolds and scents
- Aphid
 - Double the release rate of *Aa*, every 2 weeks until a drop of aphids is seen, or, larvae are seen at 75% of the monitoring sites
- Fungus Gnats
 - add nemtodes, 2 applications, 2 weeks apart. Consider irrigation system and soil mix (eg; rice husks, peanut shells)