

To:

Date:

September 30, 2016

4 pages from Margaret Baker

PLUG AND CUTTING CONFERENCE



The conference was held Carlsbad, California from September 19 to 21, 2016.

There were 32 sessions presented by 25 experts, as well as a tour of commercial greenhouses and a “hands-on” workshop on biocontrol.

The event was sponsored by American Horticulture and attended by 310 persons from 5 different countries.

More information at the webpage <http://americanhort.org/plug>.

Our company had previously attended this event in 2005 (Detroit MI), 2008 (Orlando FL) and 2011 (San Jose CA).

OVERVIEW COMMENTS

The conference had a strong focus on biocontrol for pest management, especially during propagation and early in the plant production cycle.

A main message was heard in most presentations – some points must be respected to have a successful biocontrol program.

- Start early. The focus should be on prevention of pests rather than control.
- Know the spray history of the propagation material and the pesticides applied.
- Do quality control on arrival of commercial biocontrol products.
- Manage water carefully.
- Use banker plants and trap plants.
- Use the experience and knowledge of experts in the biocontrol industry.
- The main reasons biocontrol programs fail: it was started too late, or there was pesticide residue on the plants.

HANDS-ON WITH BIOCONTROL

Quality control of biocontrol products

Suzanne Wainwright-Evans, Buglady Consulting (<http://www.bugladyconsulting.com/>)

Predatory wasps in a carrier:

- Testing hatching ratio of products using a fold up hatching cage and aspirator.
- Give supplemental feeding of diluted honey water or sugar water on a cotton ball.
- Capture hatched insects daily with the aspirator, count and release on crop.
- Compare count of hatched insects to quantity purchased.
- Don't hesitate to contact bio supplier with shortages.

Predatory wasps on cards:

- Place the cards in a cage and count exit holes in mummies.
- Alternately, place sticky card in a sealed jar with a card. Count wasps on card.

Predatory mites in carrier

- One teaspoon of *Persimilus* is approximately 10% of the total count in the vial.
- Place 1 teaspoon in centre of a plastic paint pallet, put dish soap in other indents.
- Count hatching mites.

Distribution of predatory mites in the greenhouse

Paul Koole , Biobest Biologicals

- Demonstration on construction and use of blower to distribute predatory mites.
- Blower distributes mites efficiently at the correct rate, better than hand applied.
- It will also distribute pollen (Nutramite®), a food source for Swirskii and Orius.
- Nutramite pollen can be frozen but not refrigerated.
- Swirskii mites can be fed pollen (100 ml / acre / week) under overhead irrigation.
- Multiple food sources encourage more feeding and breeding.

How irrigation can make a difference in biocontrol programs

Suzanne Wainwright-Evans, Buglady Consulting

- Test show *P. persimilis*, *A. cucumeris*, *Steinernema feltiae* and parasitic wasps work under mist conditions. For wasps, a leaf canopy must be available.
- Plant Growth Regulators can skew female to male ratio of beneficial wasps.
- Propagation irrigation should be the finest mist available (fog is best).
- Plants under water stresses have less tolerance for pest attacks.
- European Union: fewer pests with short frequent waterings, use less water.
- Water lines should be disinfected with ozone or registered hydrogen peroxide.

BIOCONTROL DURING PROPAGATION

Basics of monitoring

Daniel Peck, BioWorks USA

- Examine plugs and seedlings upon arrival.
- Pesticide residue on new plants can sabotage the biocontrol program.
- Keep growing areas clean and free of weeds, standing water and plant debris.
- Use clean media and decontaminate irrigation water.
- Make regular plant inspection, use sticky cards, use trap plants.

Using biofungicides and dips

Debbie Palumbo-Sanders, Dan Peck, BioWorks USA

- Advantages: biofungicides have short re-entry times, no resistance development.
- Ensure the products are registered and look for the correct strain of fungus.
- *Bacillus subtilis* strain QST 713 is used to control common fungal and bacterial diseases. It is sold in Canada as Serenade Max, Rhapsody ASO and Cease biological.
- *Trichoderma h.* strain T22 (RootShield) is used for damping off diseases.
- When dipping cuttings in a solution of BotaniGard or RootShield, wear gloves and dust mask, maintain constant agitation, after dipping use mist but not irrigation. Debbie

Effect of light and temperature on callusing and rooting of plants

Garret Owen and Ivan Tcakov, Metrolina Greenhouse, Huntersville NC

- 11 species of common greenhouse perennial species performed ideally for callusing at the following conditions (crop in 28 days):
23°C root temperature, 23°C air temperature, 8 to 10 mol daylight intensity.
- Basal temperature is most critical for callus and root induction.
- To optimize callus and root induction, root zone temperature of 73°F (23°C).
- Higher temperatures will decrease root induction.
- There is no difference between HPS and LED lighting for callus diameter.
- LED at 75% red showed more biomass vs. HPS lighting.

Managing moisture in propagation

Jim Faust, Clemson University

- In propagation, it's easier to prevent problems than to recover from them.
- Water on leaves should dry between misting cycles.
- Avoid water sitting under trays.
- Mist volume should equal evaporation rate.

PICTURES FROM “HANDS ON” WORKSHOP

Olive Hill Nursery in Fallbrook was the site for the “hands on” workshop.



Above left: Red *Spathiphyllum*, one of the specialized crops grown on-site.

Right: Numerous hanging plants with their individual drip irrigation line.



Above left: Debbie Palumbo-Sanders and Dan Peck from BioWorks.

A biofungicide solution is used to dip plant cuttings during propagation.

Right: Jennifer Browning from BASF.

She is demonstrating the application of nematodes using a Dosatron from DRAMM.



Left: Paul Koole from Biobest is applying beneficial insects using a homemade blower.

Right: Attendees taking notes during the session.