Biocompatibility: Pesticides and Biocontrols

A big word for your bugs

Scott Creary
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Sturbridge, MA
Overview

• No input is without consequences
• Minimizing harm to a biocontrol program has 3 key features
  – Picking your battles
  – Product selection
  – Timing
Starting a biocontrol program by target pest

Bios for TSSM are different than bios for aphids
   - Different critters; different pesticide susceptibility

Don’t bite off more than you can chew
Where to Start

• What pests are yearly problems?
• Your most difficult pest to control?
• Tend not to coincide with other pests?
Thrips and Fungus Gnats

- Huge overlap in BCA and timing
  - Stratios, nematodes, Dalotia
  - Cucumeris also controls broad mites

- BCA used are compatible with sprays for WF, TSSM, aphids

- Difficult to control with sprays; BCA are easy to use
Nematodes

• Control FG and thrips
• Easy to use; safe to spray
• Needs to happen at night
• Leaves almost all spray options open for other pests
TSSM

• Tend to occur late season
  – Little overlap with aphid or FG BCA
• Pred mites have different susceptibility than insect pests
• Overlap with some WFT, broad mite and WF BCA
  – Cucumeris, Swirskii
• BCA tend to be cost-effective
Aphids

- Species ID and temperature can slow down Bio program
- Potato aphid BCA is expensive; few options for foxglove aphids
  - But are very user-friendly
- Coincide with FG; may crop up throughout year
- Calibrachoa
- Early outbreaks of green peach aphids ideal start; later outbreaks get tricky
Whitefly

• Not a guaranteed pest
  – Exception: veggies, herbs
• Need to catch it early
• BCA are delicate and slow-acting
• Pesticides also kill aphids
• Programs are easy and cheap
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The myth of “Soft on Beneficials”

• Even with no impact from active ingredients, carriers are often caustic
  – Oils, emulsifiers, surfactants...
• BCA very active (moving, grooming) and contact pesticides more readily and often than pests
• Minimizing applications, good products and proper timing are critical
Damage Control

- Residues are biggest hurdle
- Pyrethrins are biggest offenders
  - Anything ending in "thrin"
- Sprays > drenches
- Broad spectrum > targeted
- Systemic > translaminar
The “Safe” List

• Soaps and Oils
  – Including plant-based
• Neem products (azidarachitin)
• Mycoinsecticidies
• Nematodes
• OMRI certified
Proceed with Caution

• Ingestion required
  – Kontos, endeavor
• Translaminar sprays
  – Spinosad, Avid
• IGRs
• Neonics*
Formulations

- WP, WSP: residues
- EC or E: contain oil
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Time your sprays based on:

- Product chosen
- Past and future releases
- Pest-BCA ratio
- Other BCA present
- Time of year
- Sale time of crop
Products and Timing

• Most newer chemistries and stand-bys have “Flamethrower Mortality”
  – Based on coverage, mobility of BCA
• Assuming no residual, certain % of BCA killed with every spray
Pre-release Ideas

• Dip your cuttings and plugs!
• 0.5% mix of Soap + Botanigard
• 0.1% oil solution (not labeled)
• Add some nemas to the mix?
Pre-release sprays

• Spray away!
• BCA release rates are for early stage infestations
• Honeydew, wax and webbing impede BCA activity
  – Syringing
Future Releases

- Certain BCA are density-dependent
  - Ladybugs, Crypts, Stethorus
Pest-BCA Ratio

• Assess # prey vs. # BCA
• Has BCA established?
  – Immatures, evidence of activity
• If yes, then action thresholds get tricky, depend on other factors
Ratios

• Expect cleanup if 1 in 10 aphids are mummies
• For TSSM: 1:10 is ideal, 1:20 is on the fence
• WF: 50-80% blackened scales is good
Environment
Crop Sales

• Plants need to clean up fast
• Growing out of any damage
• Selecting covert BCA
Questions?

Scott Creary

sfcreary@gmail.com