MITE AND LYGUS PROGRAM UPDATES

Spider Mites

Lygus Bug

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CSC RESEARCH PROGRAMS APPROACH

1) Gather Information
   - Industry practice
   - Efficacy of tools
   - Use patterns

2) Identify
   - Barriers to adoption of integrated pest management (IPM)
   - Trainable skills
   - Remaining research areas

3) Develop programs to address industry needs
What is causing increased mite problems?

- New mite?
- Insecticide Resistance?
- Predatory mite efficacy?

Two-spotted spider mite (TSSM) adult male, female, egg

Lewis mite female
METHODS

Lab tests of pesticide efficacy
- Leaf dip method
- Field collected populations

Field monitoring + PURs
- 10 randomized leaf samples per field
- Pest and predatory mites

USDA facility
MITICIDE EFFICACY – LAB TEST

Avg. % kill of 3 selective miticides

- Acramite (Bifenazate)
- Agrimek (Abamectin)
- Kanemite (Acequinocyl)
- Control (Water)

• Resistance has developed to key miticides.
MITICIDE INEFFICACY IN THE FIELD

Site 13

30,000 persimilis released in Jan-Feb

6 sprays prior to March

- Miticides did not provide control
- Where did the persimilis come from?
LYGUS BUG PROGRAM

- Mild, late Lygus year
- Synchronized & predictable populations
- May – Oxnard
- June-July hatches in SM, Watsonville-Salinas

Likely causes:
- Weather
- Decrease in second year production
- Increase in vacuum use, other cultural controls
IMPROVING OUR BUG VACUUMS

- Non-chemical tool
- Aids in control
- Increased yield on avg. $25.94 \pm 4.51\%$

% Culled Fruit Due to Lygus Feeding

Site #

Unvacuumed  Vacuumed
IMPROVING OUR BUG VACUUMS

• Design has not been optimized

• 29.65±1.93 avg windspeed

% pulled off plants:
• 5.02% of large nymphs,
  9.30% of adults

Survival after vacuum:
• 11.67% large nymphs and
  22.85% adults survive
IMPROVING OUR BUG VACUUMS

- Designs to improve kill, decrease cost and improve best practices
- Single bed research vacuum
- 100% kill using this vacuum, higher percent pulled off of plants
COMMERCIAL VACUUM EFFICACY

- Goal: pull more insects off the plants, with 100% kill.
  - 20 degree baffles
    Avg 29.9±3.0 mph
  - 20 degrees with holes
    Avg 46.9±1.1
  - Trade offs in designs to increase windspeed while maintaining kill.
SPRAY PROGRAMS ARE STILL A BLACK BOX

- Even recommended insecticide practices lose control.
NEXT STEPS

Mites
- Microsprinkler Mite Control Trials*
- Area-wide cropping pattern trials – role of other crops?

Lygus
- Continue vacuum improvement
- Identify issues with spray programs
- Integrate pesticide and vacuum programs
- Crop Destruct & Migration Studies*
MARK EDSALL
ALEX OROSCO
MARTIN MORONES
KYLE BLAUER
THANK YOU!

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