Pheromone-Based Monitoring and Management of BMSB in Tree Fruit

Brent D. Short and Tracy C. Leskey
USDA ARS Appalachian Fruit Research Station
Kearneysville, WV  25430
Distribution and Injury

- 43 states and 4 Canadian provinces
- > 150 known hosts
- Injury includes depressions, discoloration, corked flesh and disfiguring of crop
Cost-Benefit Analysis

- Pesticide
- Monitoring
- Fuel
- Labor
- Predators
- Sanity

Image: Dollars, Apple, Beetle, Bug
Predicting BMSB Risk
Real-Time Threat Assessments
BMSB Management in Apple

**Excellent**
- Belay
- Bifenture/Brigade
- Danitol
- Endigo
- Scorpion/Venom

**Fair to Good**
- Actara
- Assail (high rate only)
- Lannate
- Leverage 360
- Provado/Wrangler
- Warrior II
Methods of Application

**Benefits**
- Total coverage to crop
- Usually 10-14-d interval
- Compatible for control of other pests

**Cons**
- Kill all insects – good or bad
- Insufficient residual activity

**Benefits**
- Total coverage to crop over 2 weeks
- Increased residual activity

**Cons**
- Kill all insects – good or bad
- More frequent spraying
Methods of Application

Full Perimeter (Attract-and-Kill)

Benefits
- Reduced chemical use and costs
- Minimal impact on beneficial insects
- Behaviorally relevant

Cons
- Less compatible with other sprays
- Plot interior unprotected
- Frequency of treatment?

Benefits
- Reduced chemical use and costs
- Minimal impact on beneficial insects
- Behaviorally relevant
- Long-term control?

Cons
- Less compatible with other sprays
- Plot interior unprotected
- 7-d-interval sprays
- Expensive lures
Timing Applications

Treatment Threshold

**Benefits**
- Ecologically driven
- Reduction in applications

**Cons**
- Apples only
- Specific lure and trap
- Needs commercialized
Degree-Day Models and Peak Activity

• DD models are being developed for apple and peach, but need verified in the field

• Combining trapping with Peak Populations
  • Mid-May to late May (100 – 250 DD)
  • Mid-Late June (500-650 DD)
  • Mid-Late July (1000-1200 DD)
  • Mid-Aug on (1350 + DD)
Monitoring Strategies

- $32/trap
- 2 lures/trap = < $9.00

- $1.65/trap x 2 changes = <$5.00
- 2 lures/trap = < $9.00
Potential Management Plan

• Weekly check of sticky or pyramid trap along riskiest borders neighboring apples
  • Trece combo lure seems to give most bang for the buck

• Insecticide application
  • 10 cumulative BMSB/trap or
  • DD/peak populations with increase in captures
  • Border sprays?
Biological Control

ARS BARC, Beltsville MD 2014

About 42 miles apart

You are Here

Nat’l Agric. Library

You are Here
Refine Attract and Kill

Insecticide Netting

Sprayable Pheromone

Threshold Expansion
Acknowledgments

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Yay.... Surveys !!??!