Tree Fruit Pests
The New, the Bad & the Ugly

Bay Area Fruit School
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Typical Insect Pests

- Tree Health Insects
- External Fruit Feeders
- Internal Fruit Feeders
- Invasive’s
Granulate Ambrosia Beetle

- Often referred to as Shot Hole Borers
- Common in MD in ornamentals
- Introduced to US in 1970's – Asia
- Reported in PA & NJ
Granulate Ambrosia Beetle

- Possibly 4 generations per season
- Most likely over winters in woods
- Attacked mature apple trees in 2014 that may have had some winter injury.
Granulate Ambrosia Beetle

- Easily trapped
- Treat if present
Granulate Ambrosia Beetle

- Control ??
  - Lorsban ?
  - Dogwood Borer sprays
  - Pyrethroids
  - Permethrin
BMSB

• Active since 2009 – from Asia
• Has put a stop to true IPM programs where present.
• Populations anecdotally lower in 2014 when BMSB present previously.
BMSB – Fruit Injury
BMSB

- Difficult to control since the adults are very mobile and move in and out of the orchard.
- Traps somewhat effective but no ET.
BMSB – Top Spray Materials

- Bifenture, Brigade – Section 18
- Belay
- Scorpion, Venom – Section 18
- Thionex, Thiodan – Last Chance
- Endigo
- *Perm-Up, Permethrin - Peach*
BMSB

- Traps, Pheromones, Thresholds
Spotted Wing Drosophila
SPOTTED LANTERNFLY: NEW PEST IN NORTH AMERICA

*Lycorma delicatula (WHITE)*

Sven-Erik Spichiger, Entomology Program Manager
The Pest:
Believed to have been brought into US in a shipment of stone from Asia

The spotted lanternfly is recorded on over 65 different plants including hardwoods, ornamental trees, fruit trees, vines

In Pennsylvania feeding has been recorded on: Ailanthus, Salix, Vitis, Acer, Phellodendron, Styrax, Populus, and Prunus

Spotted lanternfly narrows its host range before mating to the preferred host - Ailanthus altissima
The Pest:
Overwinters in a foam covered egg mass
The Pest:
Immature stages hatch out in May??
There are four instars, with the early instars appearing black with white spots and turning red as later instar nymphs
The Pest:
Immature stages migrate up and down trees/plants each day and are active hoppers
The Pest:
Adults begin to appear in late summer, feed, mate, and lay eggs
In South Korea females lay eggs twice before dying
Males and females mate multiple times
Berks County, Pa – quarantined
Insect not a great mover but hitchhikes rides
Chemical Control - ??
If you see it or think you see it Report to
Extension or MDA
Tree Health Pests

• Aphids
• Leafhoppers
• Leafminers
• Mites
• Borers
Aphids

- **Rosy Apple Aphids**
  - Usually active early in season
  - Most orchards require treatment.
  - ET – 1 colony per tree.
Aphids

- **Green Apple Aphid**
  - Examine 10 shoots on 10 trees
  - ET - >50% shoots infested and no predators present.
Aphids

• Woolly Apple Aphid
  - Occasional pest
  - ET - >50% pruning cuts infested
Leafhoppers

- **White Apple Leafhopper**
  - 1\textsuperscript{st} generation nymphs remove chlorophyll.
  - 2\textsuperscript{nd} generation leaves excrement on fruit.
  - ET - >0.5 nymphs/lf.
Leaf Hoppers

- Potato Leafhoppers
  - Occasional pest
  - Common in non-fruiting trees
  - No ET
Spotted Tentiform Leafminer

- Use pheromone trap to judge adult activity.
- Follow with visual inspection of underside of leaves.
- ET – 1-2 active mines per leaf
European Red Mite

- Over winter as eggs
- Complex ET – Use PSU TF Production Guide
- Biocontrol can provide economic control
European Red Mites

- **Biocontrol Agents**
  - *Stethorus punctum*
  - *Typholdromus pyri*
Borers

- **Greater Peachtree Borer**
  - Causes damage in main trunk of peach tree. Lower 12 in. to 3 in. below surface.
  - ET – 10/moths/trap/week or 1 pupal case/tree
Borers

• Lesser PT Borer
  – Causes injury in scaffold limbs
  – ET – 20 moths/trap/week or 2 pupal cases/tree
Mating Disruption

• Economic control of both types of Peachtree Borers can be achieved using Mating Disruption.

• 5A blocks rectangular in shape.
Borers

- Attracted to Dwarf Apple Trees
- Eggs laid in Burr Knot
- ET – none but treat if present
External Fruit Feeders

- Leafrollers
- Plant Bug / Stink Bug
- San Jose Scale
Leafroller Complex

- Redbanded Leafroller (RBLR)
- Variegated Leafroller (VLR)
- Tufted Apple Budmoth (TABM)

- All cause surface injury to fruit.
- Control early generations to limit later generation populations.
- 2nd generation TABM can cause most economic injury.
Leafroller Complex
Tufted Apple Budmoth

- Stays in orchard.
- Tends to be resistant to commonly used insecticides in orchard.
- OP & Carbamate resistance.
- Resistant problems overcome with use of growth regulator insecticides.
- $2^{\text{nd}}$ generation not always present especially in dry seasons.
- DD models available for determining treatment.
San Jose Scale

• Was an important pest until the 1980’s.
• Abundance decreased with increased acreage of dwarf trees.
• Pheromone Traps
• Visual Inspections
• Sticky Tape for crawlers
Plant Bugs & Stink Bugs

Most likely seen feeding on fruit buds and young fruit.

Record # of adults/tree and # of injured fruit/tree

Gummosis – LS peach

Zero tolerance
Japanese Beetle

- Will feed on foliage and fruit
- No ET – treat when fruit feeding occurs
Internal Feeders

- Plum Cucurlio
- Codling Moth
- Oriental Fruit Moth
- Oblique Banded Leafroller
Plum Curculio

- Traditionally an early season pest controlled at petal fall
- 2nd generation now beginning to appear in early to mid July.
Internal Feeders

• Codling Moth
  – 2 generations season in Mid-Atlantic.
  – ET = 5 moths / trap / week
Internal Feeders

• Oriental Fruit Moth
  - 3 + generations
  - 1st generation does not infest fruit.
Mating Disruption

- Mating Disruption is available for both OFM & CM.
- Has provided effective control.
- Square 5A blocks minimum.
- Must still intensively monitor for non-MD controlled pests.
- 2nd Generation PC discovered this way.
- May allow minor pests to provide major injury.
**Internal Feeders**

- **Oblique Banded Leafroller**
  - 1-2 generations/yr.
  - 1\textsuperscript{st} flight \(~3-4\) wks after PF.
  - Injure newly formed fruit.
  - Damaged fruit may drop.
Internal Feeders

- Late season injury generally is made directly to the fruit.
Tree Fruit Diseases

- Most TF diseases are prevented in a typical IPM program.
- Season long evaluation of diseases should be made to evaluate both the spray program and the forecast model.
Tree Fruit Diseases

- Forecast models exist for:
  - Fire Blight
  - Apple Scab
  - Sooty Blotch
  - Cherry Leafspot*
  - Bacterial Spot*

* See PSU-Biglerville Website for more information
Disease Models

- Maryblyt
  - Developed in Maryland by Paul Steiner (UMd & Gary Lightner (USDA).
  - Seems to be a better fit for this region.
  - Used Worldwide.
  - SkyBit model to conservative.

http://www.caf.wvu.edu/kearneysville/maryblyt/