Description of an IPM Program for Peaches

Mary Concklin

December 2013
IPM Pyramid

Suppression

Use Chemicals (if justified)

Decision-Making
- Economic threshold
- Monitor for pests & NE

IPM Knowledge
- Identify pests & natural enemies (NE)
- Pest biology, ecology & weather effects

Preparation, Planning & Record Keeping
- Site, soil analysis, soil preparation, fallow period
- Resistant varieties, pest-free planting date, plant health
- Planting & landscape manipulation & insure biological control

Diagram: Donn Johnson, U. of Arkansas
Reliable Weather Data

- Degree Days for predicted insect emergence
- Temperature
- Leaf Wetness
- Rainfall
Avoid Disease Susceptible Varieties

- Autumnglo
- Autumn Lady
- Blake
- Elberta
- Halehaven
- July Elberta
- Jersey Queen
- Jerseyland
- Kalhaven
- Suncling

- Suncrest
- Sunhigh
- Ran Cocos
- Redcrest
- Rio Oso-Gem
- Sweet Sue
Plant & Soil Nutrition

• Begin pre-plant
• Balanced approach
• Ample K for fruit size, tree & bud hardiness
• Avoid late summer nitrogen applications

<table>
<thead>
<tr>
<th>Nutrient in excess</th>
<th>Induced deficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>K</td>
</tr>
<tr>
<td>P</td>
<td>Cu</td>
</tr>
<tr>
<td>K</td>
<td>N, Ca, Mg</td>
</tr>
<tr>
<td>Na</td>
<td>K, Ca, Mg</td>
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<tr>
<td>Ca</td>
<td>Mg, B</td>
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<tr>
<td>Mg</td>
<td>Ca</td>
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<tr>
<td>Cu</td>
<td>Fe</td>
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Weed Management

• Compete for water & nutrients
• Broadleaf weeds → plant bugs, native stinkbugs
• *Stethorus punctum* OW in weeds
• Management options:
  – Herbicides
  – Flaming
  – Cultivation
  – Mulch
Water Management

• Irrigation
• Too much & too little water
  – Stresses trees
  – Impacts fruit size
  – Impacts nutrient uptake
  – Impacts soils
  – Impacts pest problems
Avoid Damaging Trunk, Limbs

- Entrances for borers, disease
- SW injury
- Growth constriction
Pruning

• Proper timing
• Open up → reduce disease, better pesticide penetration
Pruning

- Proper timing
- Open up
- Remove dead, weak, infected wood
Pruning

- Proper timing
- Open up
- Remove dead, weak, infected wood
- Avoid sharp crotch angles, poor pruning cuts
Pruning

- Proper timing
- Open up
- Remove dead, weak, infected wood
- Avoid sharp crotch angles, poor pruning cuts
- Remove mummified fruit
  - Brown Rot
  - Bacterial spot
Fruit Thinning

• No 2 fruits touching → disease & push-off
• Reduce limb breakage
Brown Rot

*Monilina fruiticola*

- Infects blossoms, shoots, fruit
Brown Rot
Monilina fruiticola

• IPM tools
  – Pruning
  – Sanitation
  – Understand prime infection periods
  – Understand disease requirements
Length of Wetting Period Required for an Infection

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Hours of wetness Required</th>
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</thead>
<tbody>
<tr>
<td>79°F</td>
<td>2</td>
</tr>
<tr>
<td>70°F</td>
<td>3</td>
</tr>
<tr>
<td>61°F</td>
<td>4</td>
</tr>
<tr>
<td>45°F</td>
<td>6 – 7</td>
</tr>
<tr>
<td>39°F</td>
<td>11 – 12</td>
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</table>
Brown Rot
Monilina fruiticola

- IPM tools
  - Pruning
  - Sanitation
  - Understand prime infection periods
  - Understand disease requirements
  - Fungicides
  - Harvest
Bacterial Spot
*Xanthomonas pruni*

- Attacks leaves, twigs & fruit
- OW in buds, twigs, cankers
- Infects in spring
  - Temps > 65°F
  - Rain or heavy dew
  - Wind
- Likes wounds
- Secondary summer infections produce cankers
Bacterial Spot
Xanthomonas pruni

• IPM Tools
  – Resistant varieties
  – Plant new blocks away from older blocks
  – Healthy trees in good vigor
  – Proper pruning
  – Monitor beginning at shuck split
  – Copper applications
Perennial Canker
also called Valsa, Cytospora, Leucostoma Canker

• OW in cankers, dead wood
• Weak pathogen
  – Weak or winter-killed wood
  – Dead pruning stubs
  – Pruning cuts that did not heal
  – Winter-killed buds
  – Wounds from equipment, wildlife, insects, diseases

Photo www.apsnet.org
Perennial Canker
also called Valsa, Cytospora, Leucostoma Canker

- IPM Tools
  - Est. new plantings away from older plantings
  - Proper pruning & timing
  - Promote winter hardiness
  - Paint trunks
  - Control borers, rodents, insects, Brown rot
  - Monitor early
  - Remove cankers during dry weather
  - Avoid wound dressings
Borers: LPTB & PTB

- **OW** as larvae under bark
- **Differ where damage occurs**
  - PTB: trunk soil line to ~6” above
  - LPTB: damaged limbs
- LPTB adults emerge May-June & July-Sept
- PTB adults emerge late June-July
- Eggs laid under bark
- Eggs hatch 7-10 days
Management of Borers

• Newly planted trees
  – Root & crown dip

Photo WSU.edu
Management of Borers

• Newly planted trees
  – Root & crown dip

• Check for presence
  – Trap with pheromone
  – Separate traps
  – Use 1st emergence of adults + 8 days
Management of Borers

• Check for presence
  – 1-2 larvae or pupal cases/tree
  – Gumming/frass/sawdust
Management of Borers

• Dip new trees
• Check for presence
• Mating Disrupters
  – Isomate PTB Dual
  – Place < LPTB adult flight
• Targeted insecticide apps
Cat-Facing Insects

- TPB: piercing/sucking
  - Most damage > shuck split
  - Broadleaf weeds
  - Rutgers research: 2/3 less TPB damage in clean sod blocks
  - Threshold: 3 bleeding sites/tree or 1-2% fruit with injury
  - Insecticides critical at PF, shuck split, 10 days after
Cat-Facing Insects

• Stink Bugs
  – Same time as TPB
  – Move in from outside orchard
  – BMSB new
  – Many stink bug predators
Oriental Fruit Moth

- OW as larva on trees, ground
- 3-4 generations/year
- Damage:
  - flagging terminals
  - fruit infestation
OFM Management

• Mating disruption
  – Isomate OFM TT; CM/OFM TT
  – 200/acre, more on edges
Oriental Fruit Moth

- Mating Disruption
- Trap beginning at HIG
  - Threshold ≥15/trap/week 1<sup>st</sup> gen.
  - Threshold ≥ 10/trap/week 2<sup>nd</sup>-4<sup>th</sup> gen
OFM Management

• Insecticide applications
• Degree-day models (DD), base 45°
  – 1st adult moth capture = Biofix
  – 150-200 DDs → treatment of 1st generation with ≥15 moths/trap/week
  – 1150-1200 DDs → treatment of 2nd generation with ≥10 moths/trap/week
  – 2100-2200 DDs → treatment of 3rd generation with ≥10 moths/trap/week
Spotted Wing Drosophila

• Not a major pest

Photos: Ontario Ministry of Agriculture
Biological Control

• Green Peach Aphids
  – Lady beetles
  – Lacewings
  – Syrphid flies
  – Soldier beetles
  – Threshold: 2 colonies GPA/tree tween PF & shuck split; 5 or more colonies per tree thereafter

• Spider Mites
  – *Stethorus punctum*
  – *Orius insidiosus* – Minute Pirate bug
Diagram: Donn Johnson, U. of Arkansas

IPM Pyramid

Suppression

Use Chemicals (if justified)

Surveillance

Economic threshold
Monitor for pests & NE

Be Prepared & Avoidance

IPM KNOWLEDGE
Identify pests & natural enemies (NE)
Pest biology, ecology & weather effects

PREPARATION, PLANNING & RECORD KEEPING
Site, soil analysis, soil preparation, fallow period, resistant varieties, pest-free planting date, plant health, planting & landscape manipulation & insure biological control
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