Pecan Production 101: Session 4
Troubleshooting
(Insects, Disease, Cultural Disorders)

Lenny Wells
Scab Development

• Rain frequency is more important than total rainfall.

• Heavy rain indirectly favors scab development, because it results in conditions favoring long periods of fog or dew.

• A light evening rain that keeps the trees wet all night will lead to more scab than rainfall ending early enough to allow trees to dry before dark.
Pecan Scab Symptoms

- Small, dark spots (1-5 mm)
- More common on lower leaf surface
- Upper & lower lesions do not always match.
- When pathogen is sporulating, lesions look ‘velvety’ (green to black).
- Leaflets drop if they are infected at the petiole base, but leaf infection does not generally result in defoliation.
- Most damage is the result of poor leaf quality and reduced photosynthesis
Pecan Nut Scab

• Early infections may get larger, become sunken and cracked
• Nuts attacked shortly after nut set usually abort and fall in August.
• Nuts with less than 25% scab show no reduction in yield or quality
• Scab infection can dramatically reduce nut size, depending on the timing and severity of infection.

• Early infections can cause tremendous yield and crop quality reductions; however, experiments have shown that as the season progresses scab infections become less damaging to both yield and quality.

• Once the shell hardens, subsequent infection is apparently more cosmetic than damaging.
Scab Control

• Resistant cultivars would be the most economical and practical control measure.
• The most practiced disease control measure is the application of preventative fungicides.
  – Typically 7-10 sprays
  – Bud break through shell hardening
  – Most critical time is between nut set to shell hardening.
    • Post-pollination period
    • June/July sprays
What to spray for nut scab?

• Post-pollination is the critical period for protection.

• Decide what you want to spray during this time, and work from there.
<table>
<thead>
<tr>
<th>Fungicide Class</th>
<th>Trade name</th>
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<tbody>
<tr>
<td>Benzimidazole</td>
<td>Topsin-M</td>
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<tr>
<td>DMIs</td>
<td>Tilt, Propimax, ½ of Stratego, ½ of Quilt Enable</td>
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<tr>
<td>Strobilurins</td>
<td>½ of Quilt Sovran Headline ½ of Stratego</td>
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<tr>
<td>Guanidines</td>
<td>Elast</td>
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<tr>
<td>Organo-metallics</td>
<td>Super Tin, Agri Tin</td>
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</tbody>
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**April/May**
DMI + Tin

**June/July**
Stratego or Quilt

**August**
Tin or Elast + Tin
Phylloxera

• Two types – stem and leaf
• “Sucking bugs”, related to aphids
• One generation per year
• Once the galls form, control is difficult
• Treat at bud-break, or go systemic
Leaf Phylloxera
Stem Phylloxera
Aphid Abundance by Date in Untreated Trees
Yellow Pecan Aphid

- May be found any time during the season
- Winged adults are not always present
- Populations usually peak in late summer
- “Threshold” is 20 per compound leaf
Black Pecan Aphid

- Populations usually peak in late season
- Some varieties are very susceptible to damage
- Feeding causes chlorosis and leaflets drop prematurely
- Threshold is 15% of terminals with >1
Pecan Aphid Chemical Control

- Soil Treatment – Season-long chemical control is effective with application of systemic insecticide – Admire
- Foliage Treatment - Reliance on beneficial insects for control through early August and foliage application of Dimethoate, Fulfill, Centric, Tri-Max Pro, + Lorsban, etc. from then until October
Pecan Leaf Scorch Mite

- Feeding causes “scorching” effect on leaves
- Mites are usually found on underside of leaflet
- Infestations often start low in the center of the tree
- Vendex, Envidor, Portal, Acramite
Nut Curculio Adults
Hickory Shuckworm

• Losses from two types of damage
  – Nut drop
  – Shuck mining

• Populations build up in three places
  – phylloxera galls
  – then hickory shucks
  – and then pecan shucks
Hickory Shuckworm Damaged Pecans
Pecan Spittlebugs
Control Options

- **Pecan Spittlebug**
  - Imidacloprid, Centric
- **Pecan nut casebearer**
  - IGR’s, chlorpyrifos, Bt’s
- **Hickory shuckworm**
  - IGR’s, chlorpyrifos, pyrethroids
- **Hickory nut curculio**
  - Carbaryl, pyrethroids
- **Kernel feeding hemipterans**
  - Pyrethroids
- **Pecan Weevil**
  - Carbaryl, pyrethroids
Basal Leaf Scorch

- Maintain adequate K levels
- When K level is marginal or deficient, N level should be reduced until K is corrected
- Foliar K can help, but does not replace soil applied (Potassium Nitrate: 3 lbs/100 gallons)

- Manage N/K ratio to 2:1
- 1.25-2.5 ppm in leaf analysis
- Manage Mg---(No Dolomitic lime above .45% Mg)
N:P Imbalance

• Similar to N:K imbalance
• Scorching & defoliation occurs 7-10 days before shuck split
Magnesium Deficiency

- 0.35-0.6% leaf
- Deficiency occurs on acid soils (pH < 5.5)
- High K or Ca
- Use Dolomitic lime
- If pH adequate, apply foliar Magnesium Sulfate at 5 lbs/100 gallons (4” shoot growth to July)
Iron Deficiency

• Usually induced by:
  Cool, wet spring
  Over-Liming
  High soil Zn, P, Mn
• Occurs early in season
• Chlorosis w/green veins
• Young leaves 1\textsuperscript{st} to be affected
Zinc

- Necessary for shoot elongation, leaf expansion, and yield
- Apply when Zn in leaf is below 50 ppm
- 2 lbs Zinc sulfate + 3 lbs Potassium Nitrate/100 gallons
- Begin 2 wks after bud-break until shoot elongation complete
Nickel

- Zinc Management

- Apply 1 pt/A in spring (April) while canopy is developing (parachute stage);

- 2nd application: 2-4 weeks later

- Third application of 1.5-2 pts/A in late Sept.-early October before leaf fall to prevent mouse ear in the spring flush.
Shuck Decline

- Not a disease
- Brought on by tree stress
  Mainly fruiting stress + drought