PECAN INSECT PEST MANAGEMENT

Lenny Wells
Angel Acebes-Doria & Will Hudson
University of Georgia
Managing Pests on Young Pecan Trees

- Ambrosia Beetles
- Bud moth
- Borers
  - Flat-headed apple borer
  - Twig Girdler
  - Twig Pruner
Ambrosia Beetles

- Attacks most prevalent in the spring, on young stressed trees
- Traditional barrier sprays not very effective
- Beetles fly usually in March, but sometimes in Feb
- Traps can detect the start of the flight
- Spray trees with **PYRETHROID** if detected
Ambrosia Beetle Monitoring

- Bolt of hardwood 2”-3” dia.
- Bore a ½” hole down the center and fill with ethanol and cork it
- Deploy traps along woodlines next to orchards by early Feb in south GA
- Traps indicate beetle activity, check traps for ‘toothpicks’ and/or holes
PECAN BUD MOTH

- Can be devastating to younger trees
- Attacks start early in the season and continues while trees are flushing new leaves
If symptoms are observed, use chlorpyrifos or caterpillar-targeted materials such as Intrepid.
Flat-headed Apple Borer
Twig Girdler
Borer Control

- Usually attack weak or stressed plants
- Control is difficult or impossible once the larvae are in the tree (except Buprestids)
- Traditional barrier sprays worked well, but…
- Pyrethroids are best bet now (except Buprestids)
Managing Pests on Older Nut-Bearing Pecan Trees
IN ORDER OF APPEARANCE

Phylloxera
Nut Casebearer
Spittle Bug
Yellow Aphid Complex
Leaf-feeding Caterpillars
Hickory Shuckworm
Nut curculio
Black Aphid
Scorch Mites
Pecan Weevil
Foliage Pests
- Phylloxera
- Spittle Bugs
- Caterpillars
- Aphids
- Mites

Nut Pests
- Hickory shuckworm
- Pecan weevil
In Order of Importance

Must treat (if you have them)

• Phylloxera
• Shuckworm
• Black aphid
• Pecan weevil
• Nut curculio

Sometimes need treatment

• Scorch mite
• Nut casebearer

Seldom or never need treatment

• Yellow aphid
• Spittle bug
# Best Business Plan

## Must spend money on
- Shuckworm
- Black aphid
- Weevil
- Curculio

## Hold off if possible
- Yellow aphid
- Scorch mite

## Ignore (if you can)
- Casebearer*
- Spittlebug
Foliage Feeders

Phylloxera
Aphids
Mites
Caterpillars
Foliage Pest:  PECAN LEAF PHYLLOXERA

Leaf Galls caused by Phylloxeran feeding

Immature Phylloxera inside a gall

Spray at bug break to target the stem mothers.
Foliage Pest:  PECAN PHYLLOXERA

- Both leaf and stem species
- Stem species is by far the more damaging
- For both species, treatment window is bud-break
  - Imidacloprid
Spittlebug

Try to ignore
If treatment required use imdacloprid
Foliage Feeders:  APHIDS

- Short life cycle and produce many offspring
- Lots of natural enemies, so biological control can be effective
- Scouting is critical
- Both systemic and contact insecticides are used
Foliage Feeders: SCOUTING FOR APHIDS

- Orchards should be scouted regularly
- Examine a “random” sample of terminals from trees throughout the orchard
- Know how to identify the aphids
- Recognize beneficial insects
- Know your trees and orchard history
YELLOW PECAN APHID COMPLEX

Yellow Aphid

Blackmargin Aphid
YELLOW PECAN APHID

- May be found any time during the season
- Winged adults are not always present
- Populations usually peak in late summer
Foliage Pests: YELLOW APHID COMPLEX

Yellow and/or black-margined aphid infestations

Honeydew excretion from the aphids

Development of Sooty Mold
Foliage Pest: BLACK PECAN APHID

Adult

Chlorotic symptom

Nymphs

Heavy infestations can cause defoliation.
Foliage Feeder:  BLACK PECAN APHID

- Populations usually peak in late season
- Some varieties are very susceptible to damage
- Feeding causes chlorosis and leaflets drop prematurely
Foliage Feeder:  BLACK PECAN APHID
APHID MANAGEMENT

Chemical Control

- Reliance on beneficial insects for control through early August and foliage application of insecticides later

- Black Aphid: Spraying of gibberellic acid supplement (mid-July) helps in preventing leaf chlorosis

Biological Control

Predators

Parasitic Wasps
Aphid/Mite Pressure

- **Aphid management:**
  - Don’t use Lorsban until late in season
  - Ignore yellow aphids*
  - Ignore black aphids before June*
  - Apply imidacloprid via drip in early/mid June
  - If black aphids flare up w/in 3-4 wks following application, apply Closer*, Carbine, Belay, PQZ, or Fulfill---**ROTATE**!
  - **Apply Pro-Gibb beginning mid July for 2-3 sprays**
  - Use Nexter late season if needed for black aphids when mites are a problem
  - Save Imidacloprid+Lorsban for late season emergencies if needed
Foliage Feeder: MITES

- Feeding causes “scorching” effect on leaves
- Mites are usually found on underside of leaflet
- Infestations often start low in the center of the tree
- Miticides are effective but seldom necessary
- Spraying may be required in August

- Heavy infestation can cause leaf drop
- Spraying of broad spectrum insecticides can flare up mite populations
Scouting for Mites

- The number of mites on these two pair of leaflets is a good indicator of what is in the rest of the tree/orchard.
Control (when to pull the trigger)

- Mites are present all year---don’t spray too early.
- Mites are not usually a problem until around mid-late July and August/September.
- When you **start** to see damage and there are 40-50 mites per leaflet, then you spray.
Mite Sprays

**SCOUT AND APPLY ONLY IF NEEDED!**

**Mites:**
Magister (24 oz/A), Portal (2 pt/A), Nexter (11 oz/A), Abamectin (rates vary), Envidor (14-18 oz)

Sulfur sprays during nut sizing will help keep populations at a minimal level but will not control mites.
Foliage Feeder: FALL WEBWORM

- Can feed on numerous host plants
- Occur in groups
- Infestation is characterized by webbing wrapped around the feeding area
- Most are managed via shuckworm sprays
In low infestations, physical removal and destruction of infested plant materials is recommended.

In high infestations, chemical control can be done.

Biological Control: There are naturally-occurring predators and parasitic wasps that can attack these caterpillars.
Host plants are limited to the hickories, walnuts, pecans
Occur in groups
Damage is characterized by leaf defoliation with no webbing
Foliage Feeder: SAWFLY

- Early-mid season
- Can be devastating to younger trees
- These are not butterfly or moth caterpillars so caterpillar-specific products do not work against them.
Nut Pests

Hickory Shuckworm
Pecan weevil
Stink bugs
Nut Feeder: PECAN NUT CASEBEARER

- More serious in the West that in the Southeast*
- Early-season adult activity monitoring is essential in managing first generation infestations.
Nut Feeder: PECAN NUT CASEBEARER MONITORING

- Once adults are captured, nut clusters need to be checked 7-10 days after.

- Growers are advised to spray if they see eggs or larvae on their nuts.

Nut Casebearer Trap

Sex pheromone lure

Once adults are captured, nut clusters need to be checked 7-10 days after.

Growers are advised to spray if they see eggs or larvae on their nuts.
Nut Pest: HICKORY SHUCKWORM

- Losses from two types of damage
  - Nut drop
  - Shuck mining
- Populations build up in three places
  - phylloxera galls
  - hickory shucks
  - pecan shucks
Hickory Shuckworms infest Phylloxera galls

Orchards with phylloxera infestations should manage for first generation shuckworm.
Nut Pest: HICKORY SHUCKWORM DAMAGE

Oviposition scars

Hickory Shuckworm Larvae

Shuckworm Injury

Shuckworm Adult
Nut Pest: PECAN WEEVIL

- Starts emerging by July and high numbers occur between August and September
- They feed on and lay eggs inside the nuts
- Spends 1-2 years in the soil
- Monitoring for adult activity is vital for management decisions
These traps are not baited with lures
These traps rely on the behavior of the weevils to walk up on trees via the main trunk upon emergence

- Check weevil traps twice per week from late July to mid-October
- Prioritize areas where previous weevil infestation occurred
PECAN WEEVIL MANAGEMENT

Spray when:

• Before shell hardens: adult emergence is steady/increasing and significant nut drop occurs or

• After shell hardens or pecans are in gel stage: treat when weevils emerge (especially following rain)

Biological control:
parasitic nematodes, fungi
NUT CURCULIO
Nut Pests: STINK BUGS, LEAF-FOOTED BUGS

- Mid to late season pests

Feeding Injury on the Nuts
PREDATORY VERSUS PLANT-FEEDING STINK BUGS

Predatory Stink Bug

Plant-feeding Stink Bug

Stylet
**BOTTOM LINE**

- You must spray for:
  - Weevils
  - Black aphids
  - Shuckworms

- You Might need to treat:
  - Phylloxera, casebearer, mites

- Almost never:
  - yellow aphids

- Scout
- Know your pest and beneficials