

Insect Pests of Pecan

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How important is nut drop to production?

- Pecan trees typically lose 75% of the pecans between nut set and shell hardening even when protected from insect damage
- Nut weight at harvest is related to nut cluster size in the spring and fall
- Insect losses are additional losses and nuts drop is often delayed after damage occurs
- Insecticide sprays for control are effective but need to be designed to conserve aphid predators

Insect Nut Damage Between Nut Set and Shell-Hardening

- Pecan nut casebearer - Pyralid –
 - larva feeds on nut - first generation most damaging
- Hickory shuckworm - Tortricid –
 - larva feeds on nut – damage increases with time
- Hickory nut curculio - Curculionid –
 - larva feeds on nut – damage peaks in early summer
- Pecan spittlebug - Cercopid –
 - Spittle is very noticeable but damage has not been demonstrated.
- Kernel-feeding bugs – Pentatomids and Coriids
 - Adult feed on nut after flying into orchard from alternate host

Scouting Methods



- **Pecan nut casebearer**
 - Pheromones, scout nuts for eggs and larvae and predators
- **Hickory shuckworm**
 - Shuck, gall, and nut collection
- **Hickory nut curculio**
 - Pyramid, cone and circle traps
- **Kernel feeding hemipterans**
 - Watch surrounding crops
- **Pecan Weevil**
 - Various traps



Finding PNC Eggs



- Once the first moth is caught in the pheromone trap the search for eggs begins.
- Eggs are tan colored at first and are oviposited on the nutlets. The eggs turn pink then red just before the larvae hatch out.
- Search 10 clusters from each of 12 trees twice each week to find eggs.

Picture copied from Texas A&M University website:

http://pecankernel.tamu.edu/insect_update/

Pecan Nut Casebearer

- Observations on 'Desirable' suggest the trees can compensate for early losses.

What if you catch PCNB?

- If you catch adults
- If you If you find eggs
- If you see damage

Nut Curculio Adults



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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

More Hickory Shuckworm

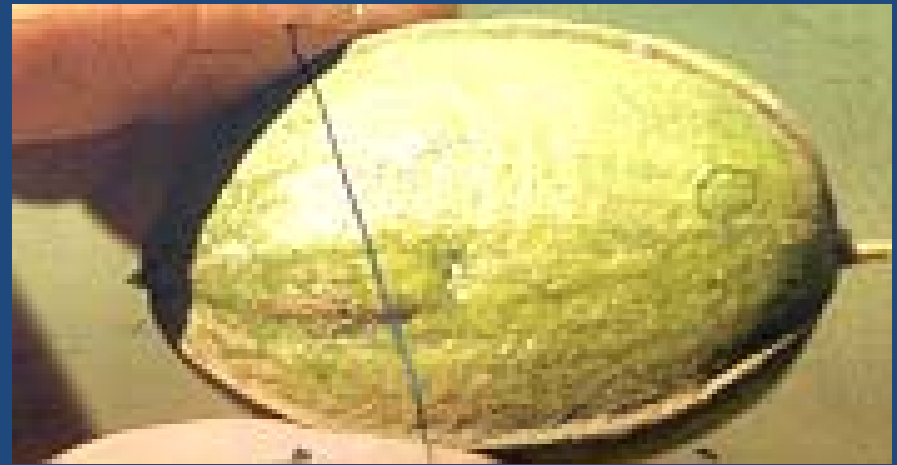
- Impact of nut drop depends on time of season
- Shuckmining causes loss of kernel quality, marks the shell and gives the larvae a secure overwintering site



What if you catch HSW?

- If you find damaged nuts on the ground
- If you see injury on nuts in the tree

Hickory Shuckworm Damaged Pecans



Hickory Shuckworm Adults and Larvae



Hickory Shuckworms infest Phylloxera galls





**Check weevil traps twice
per week from Late July
to Mid-October**

Spray when:

**Adult emergence is steady
or increasing and
Significant nut drop occurs
or
Pecans are in gel stage +**

Quit spraying:

**At shuck split
For drought delay**







Pecan Spittlebugs





Foliage Pests

- Aphids
 - Yellow Pecan Aphid
 - Black-margined Pecan Aphid
 - Black Pecan Aphid
- Mites
- Phylloxeras
- Caterpillars

Objective : Protecting Pecan Foliage

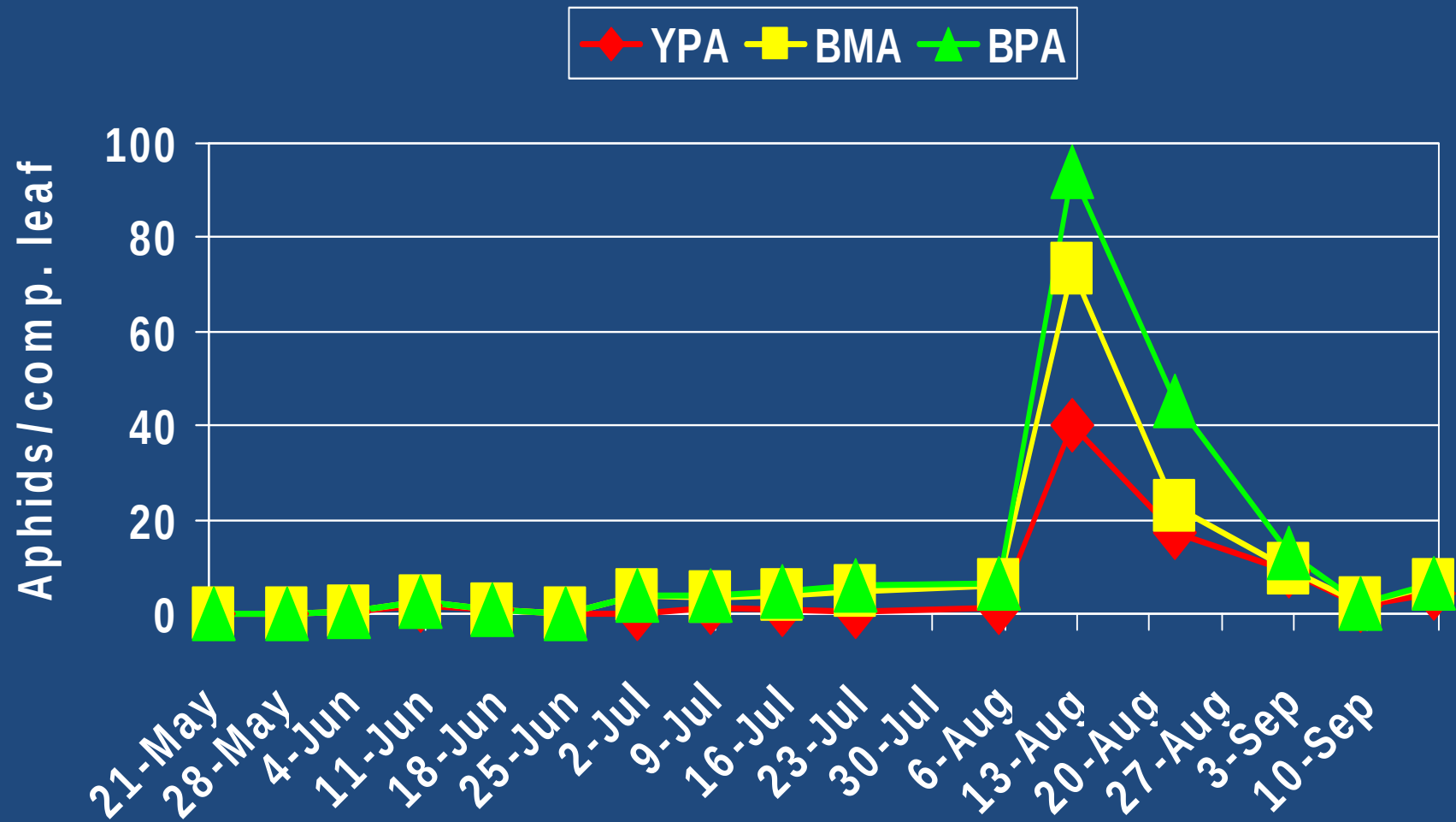


- Budbreak to Harvest is 8 months
- Pecan foliage has to be conserved and protected from insects and diseases to produce photosynthate for next season's crop and to reduce the amplitude of alternate bearing cycle

Aphids

- Short life cycle and high reproductive potential result in explosive population growth in favorable conditions
- Lots of natural enemies, so biological control can be effective
- Scouting is critical
- Both systemic and contact insecticides are used

Aphid Abundance by Date in Untreated Trees



Predicting Aphid Outbreaks

Population Growth - Days to Double

aphid	June 28 C	July 27 C	August 28 C	Sept. 27 C	Oct. 23 C
BMA	1.8	1.6	1.7	1.8	2.1
YPA	2.1	2.0	2.0	2.0	2.4
BPA	2.9	2.7	2.7	2.8	3.4

Kaakeh and Dutcher. 1992. Environ. Entomol. 21: 632-9.

Scouting for Aphids

- Orchards should be scouted weekly
- Examine a “random” sample of terminals from trees throughout the orchard
- Know how to identify the aphids
- Recognize beneficials
- Know your trees and orchard history
- Keep up!

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



Yellow Pecan Aphid



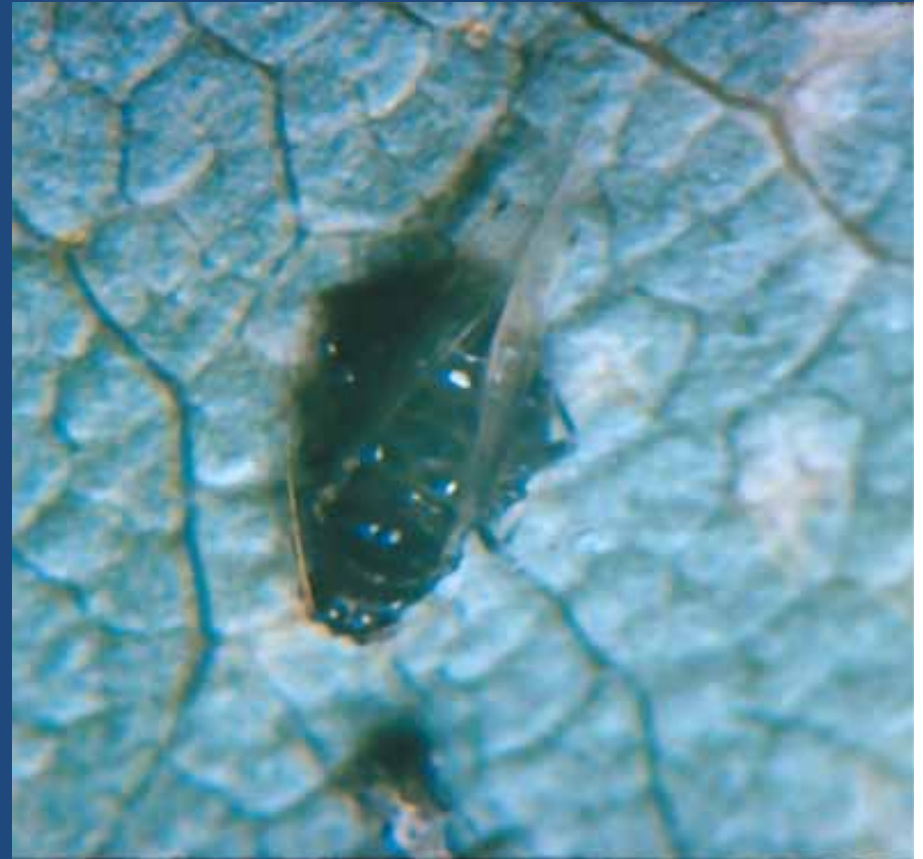
Blackmargined Aphid

Blackmargined aphids are most abundant in spring and then again in the Fall



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 Natural Enemies

- Predators
 - Lady beetles
 - Lacewings
 - Syrphid flies
 - Predatory flies
- Parasites
 - Look for mummies





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Black aphid vs. Mummy



Early summer populations



All aphids are not the same!

Early season yellow aphid populations feed beneficials and keep them building in the orchard.



Early season black aphids are here and gone, making them hard to target.



To Treat or Not To Treat

- What aphid?
- What else is there?
 - Beneficials
 - Other pests
- Weather conditions
- Cultivar
- Time of the season

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
- Use of pyrethroid insecticides often flares mites





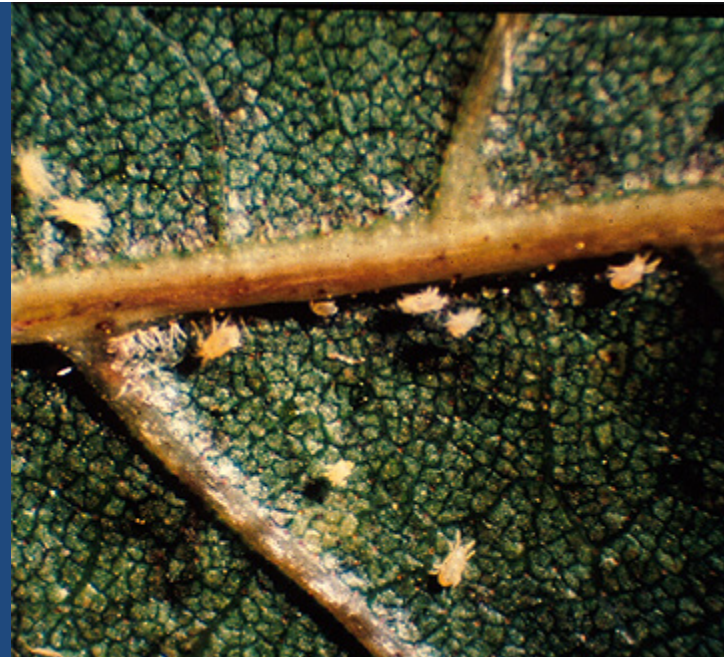






Photo by HC Ellis



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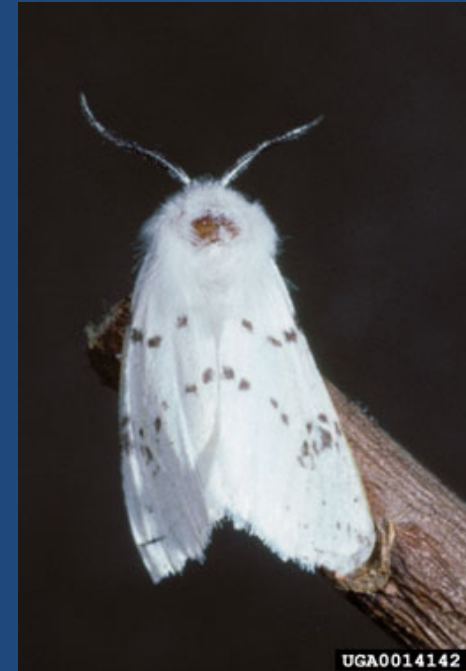
Caterpillars

- Most foliage feeders are minor in importance
- Usually infest only a few trees
- Many insecticidal options are labeled
- Sprays for other insects usually get these also

Walnut Caterpillar



Fall Webworm



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



The Bottom Line

Real problems

- Phylloxera
- Shuckworm
 - Depending on numbers
- Nut curculio
 - Depending on numbers
- Weevils
 - Use traps, but should be treated if present

Seldom require sprays

- Casebearer
 - Tree can compensate
- Yellow/black-margined aphid
 - Very high populations required before yield is affected
- Scorch mites
 - Populations seldom reach damaging levels