

2021 INSECT PEST MANAGEMENT UPDATES

PECAN PRODUCTION MEETING

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UNIVERSITY OF GEORGIA
EXTENSION

INSECT THREATS ON PECAN PRODUCTION



Foliage Feeders

Aphids, Mites,
Phylloxera, Caterpillars

Nut feeders

Nut casebearer,
Shuckworm, Pecan weevil

Root and trunk feeders

Prionus rootborers
Ambrosia beetles

TIMELINE OF INSECT PESTS IN PECAN ORCHARDS

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Ambrosia Beetles

Phylloxera

Bud Moth

Nut Casebearer

Leaf-feeding Caterpillars

Yellow Aphid Complex

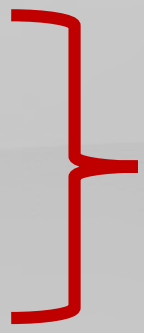
Black Pecan Aphid

Leaf Scorch Mites

Hickory Shuckworm

Pecan Weevil

Stink Bugs



Spring to early summer



Summer pests

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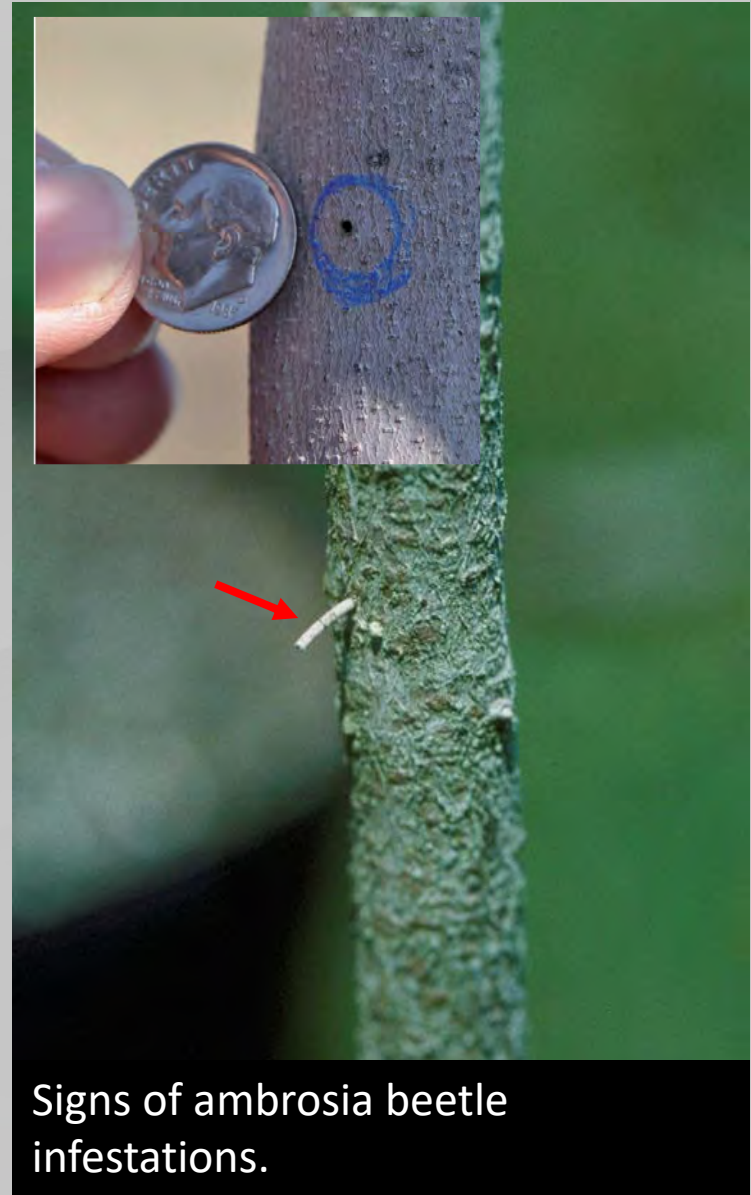
Summer pests

AMBROSIA BEETLES

Ambrosia beetles collected from young infested pecan trees in Georgia.



- **Vulnerable Trees:** Stressed trees (especially under flooded conditions, frost damage, damaged roots)
- Trees can recover, the more the attack, the higher the possibility trees could die
- Immediate action is vital in saving the tree

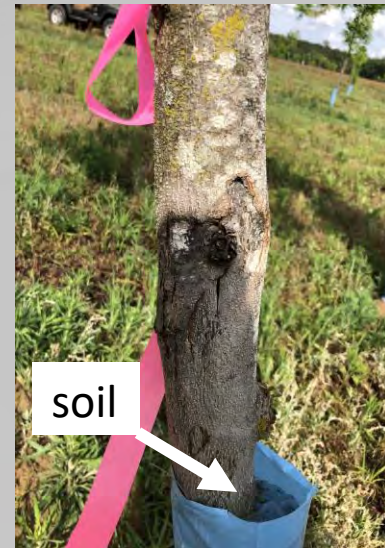


Signs of ambrosia beetle infestations.



Spaded tree

- Attacks in GA are associated with:
 - young, newly transplanted trees (transplant stress)
 - trees in water-saturated conditions
 - trees that suffered from excessive mechanical root injury (spading mature trees for relocation)
 - trees covered in a certain type of tree protector that encourages ant infestation on the trunks (causing soil to accumulate on the trunks)



soil



Ambrosia beetle attacks

AMBROSIA BEETLE MONITORING



What trap to use?

- Bolt of wood with a drilled hole in the middle (magnolia, maple)
- Pour ethanol/denatured alcohol into the hole, refill weekly
- Cover with cork

Where to put out traps?

Along woodlines adjacent to young orchards (1 trap per 100 yards)

When to put out traps?

Early Feb in south GA

How often to check traps?

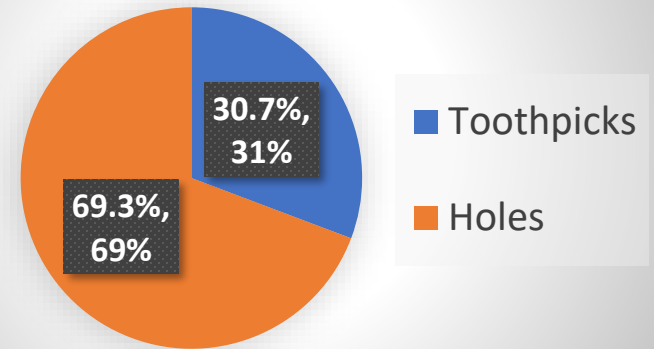
2-3x a week

AMBROSIA BEETLE MONITORING



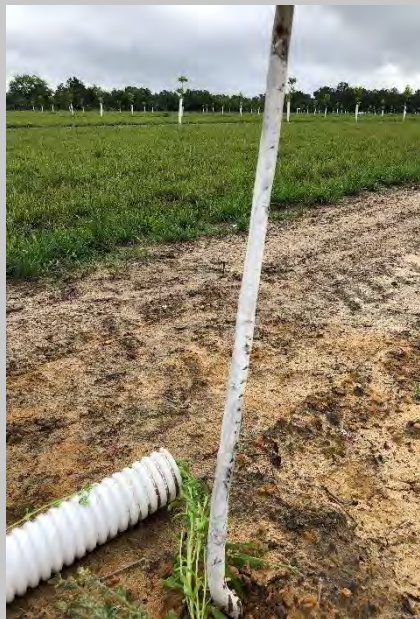
- Check traps for 'toothpicks' and holes, traps indicate beetle activity.

% Toothpicks and Holes



- When attacks are detected on the logs, scout trees in areas that may be vulnerable to attacks (low-lying areas, newly planted trees, unhealthy trees, *etc.*)

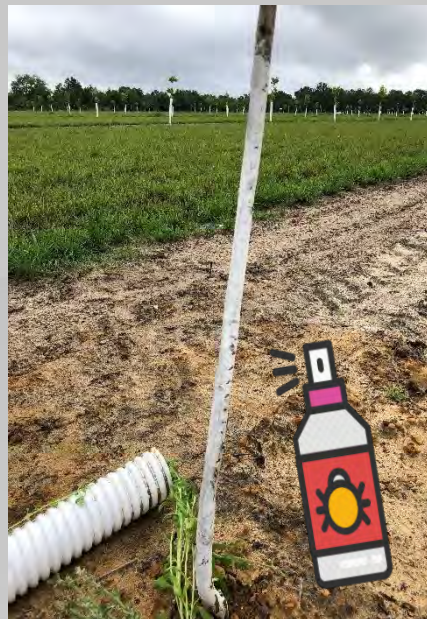
What options can be used for ambrosia beetle management?



Tree Painting



Trunk Protector

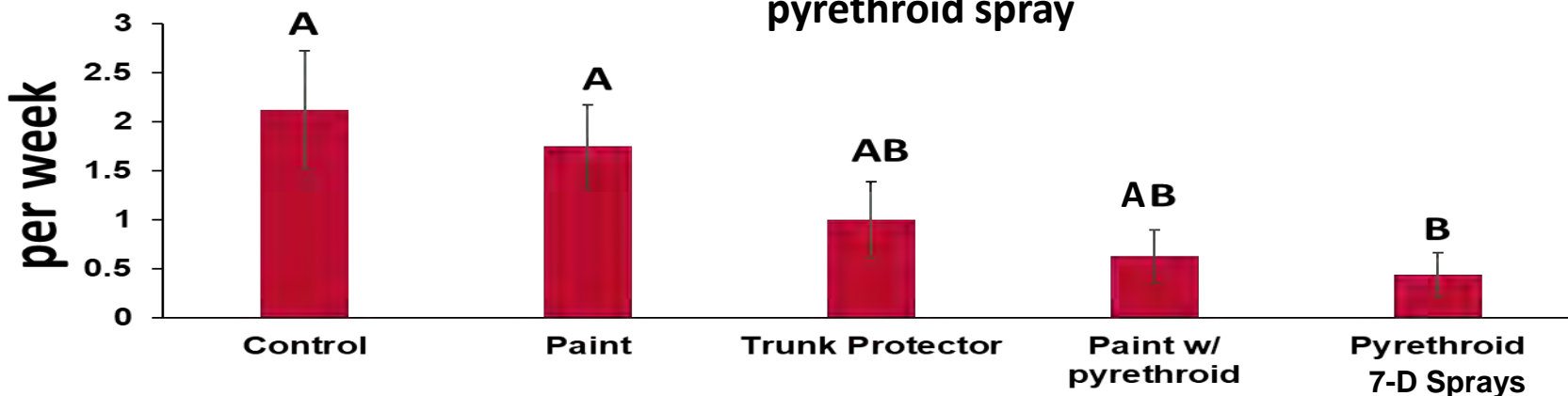


Tree Painting + 1
pyrethroid spray



7-Day Pyrethroid Sprays

Mean attacks
per week



What does this mean for growers?

- Tree painting is ineffective in protecting trees from attacks.
- Tree protectors should be removed to scout for injuries.
- Pyrethroid spraying every 7 days can protect vulnerable trees

Future Research Goals:

- Find a more sustainable option:
pyrethroid vs biopesticide
- Compare pyrethroid spray intervals:
1x, every 7-D and 14-d

Do growers really need to spray every 7-10 days during periods of ambrosia beetle flight activity?



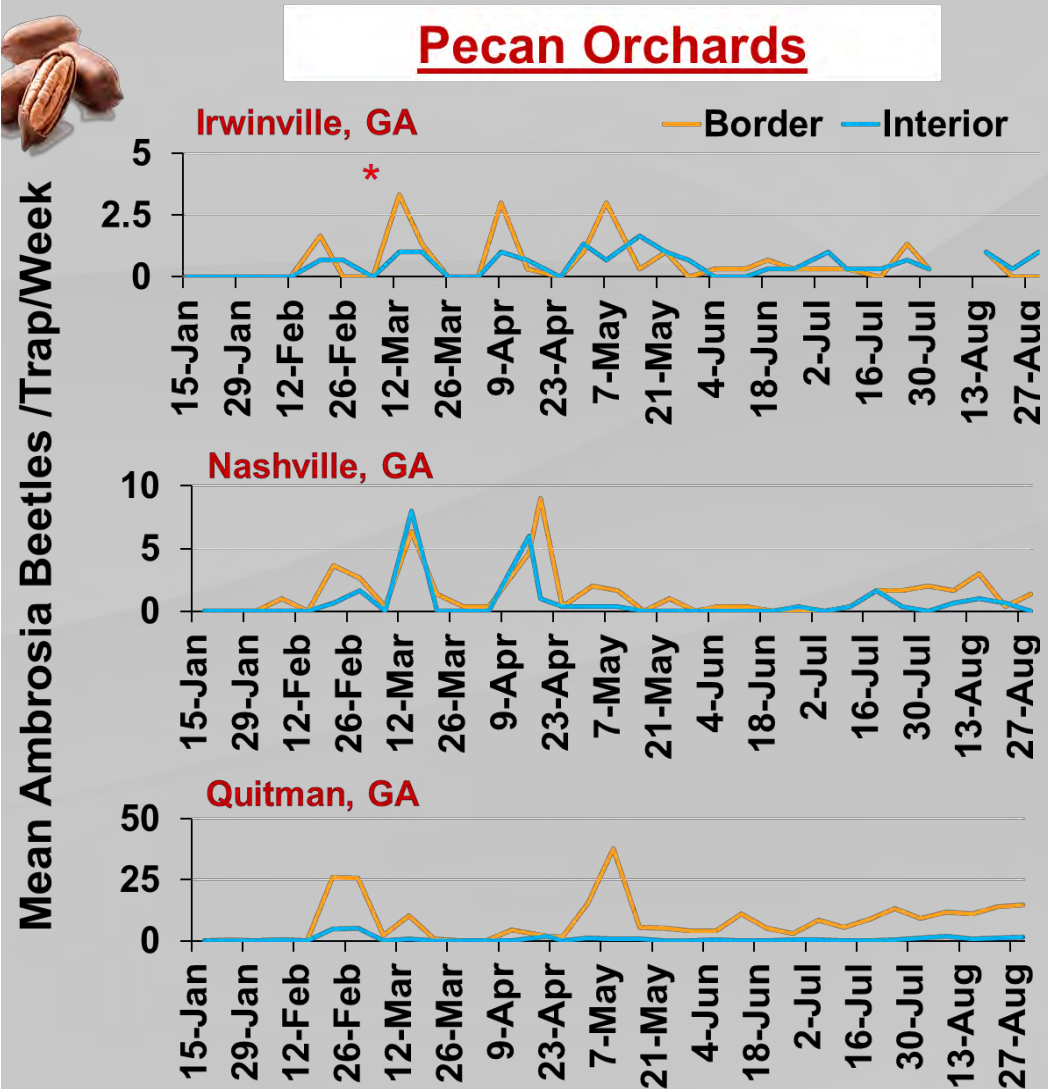
What is the main line of defense against ambrosia beetles?

Beetles are present season-long starting in early Feb.

Peak Beetle Activity:
late Feb–mid March
early April–mid May

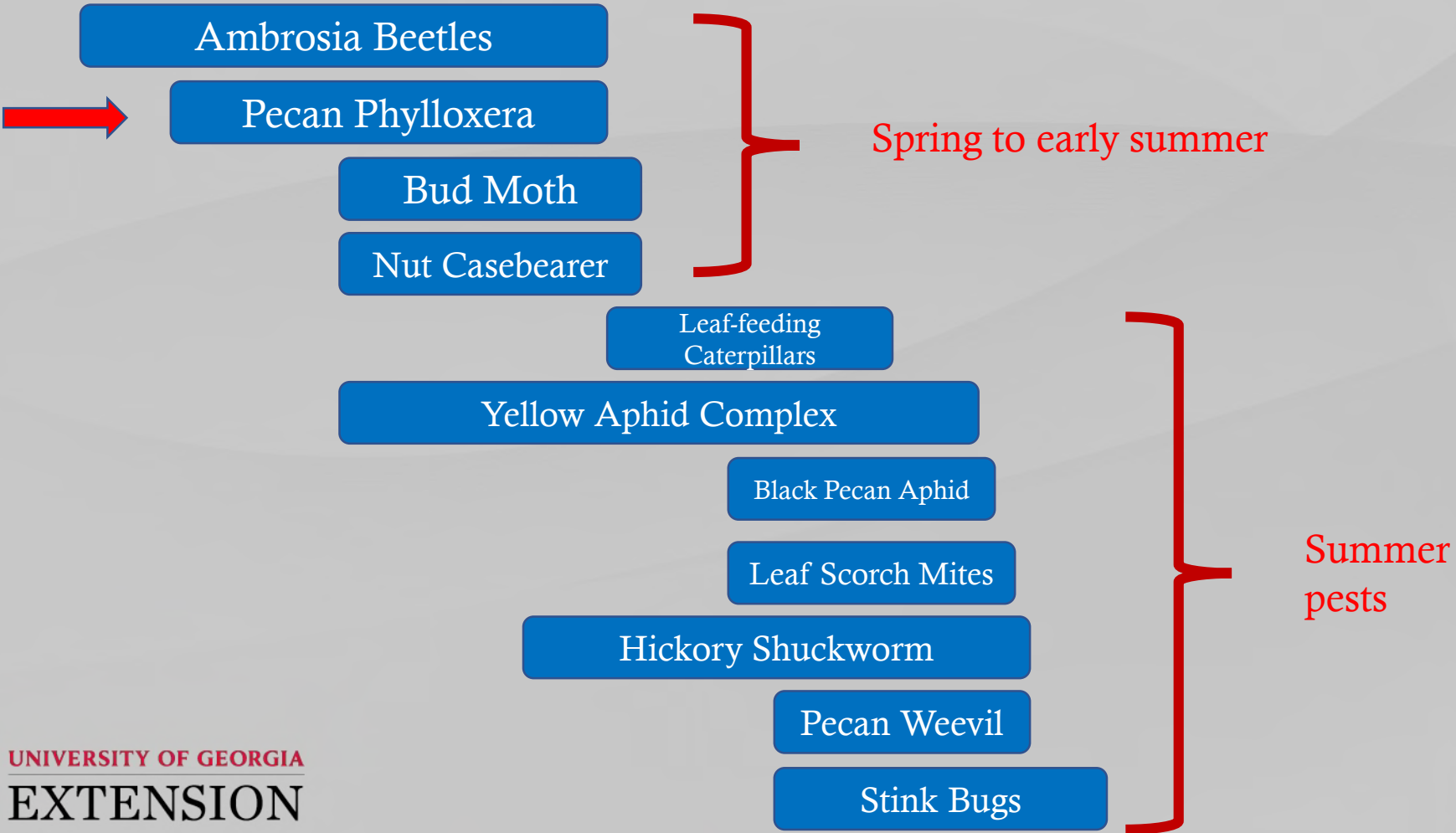
Beetles are attracted to stressed and unhealthy trees.

Maintain
healthy trees!



TIMELINE OF INSECT PESTS IN PECAN ORCHARDS

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PECAN PHYLLOXERA

Pecan Leaf Phylloxera



- Leaf and stem species
- Orchards with previous history of infestation
- Spray with imidacloprid at budbreak with pre-pollination spray
- Time sprays before the insects are enclosed by the galls
- Too late to spray once damage is observed
- Phylloxera outbreaks = potential increase in 1st gen shuckworm

Pecan Stem Phylloxera



Phylloxera offspring inside a gall



Shuckworm larva inside a gall



BUD MOTH

- Early season attack can seriously damage young trees (can kill terminals, can cause multiple branching)
- Larvae feed on leaves, buds and shoots
- Scout for bud moth damage in young trees

Management

- Spray insect growth regulators (IGR)
- Time application before caterpillars bore into the shoots
- Systemic diamide insecticides can be used to protect the new foliage for an extended period, requiring fewer retreatments.

Bud Moth

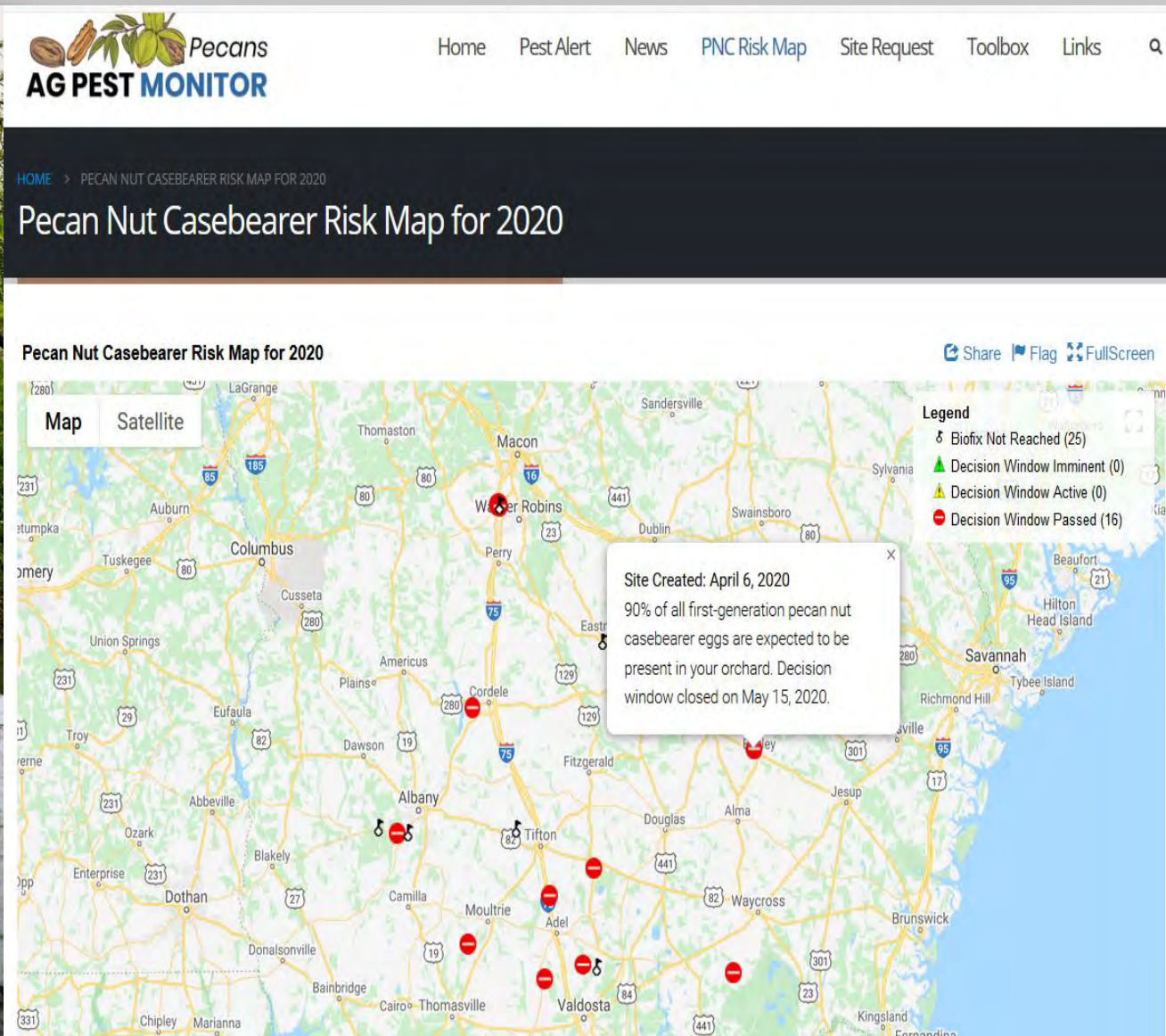


Pecan Nut Casebearer

- Early to mid-May is when eggs are laid (weather dependent).
- **During heavy crop load**, can serve as a natural thinning mechanism.
- Light infestations do not require control.
- Management options:
Intrepid and Dimilin
- Time application before larvae start feeding inside the nut
- Monitoring for adult emergence



Pecan Nut Casebearer (PNC) Monitoring



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Nut Casebearer

Leaf-feeding Caterpillars

→ Yellow Aphid Complex

→ Black Pecan Aphid

Leaf Scorch Mites

Hickory Shuckworm

Pecan Weevil

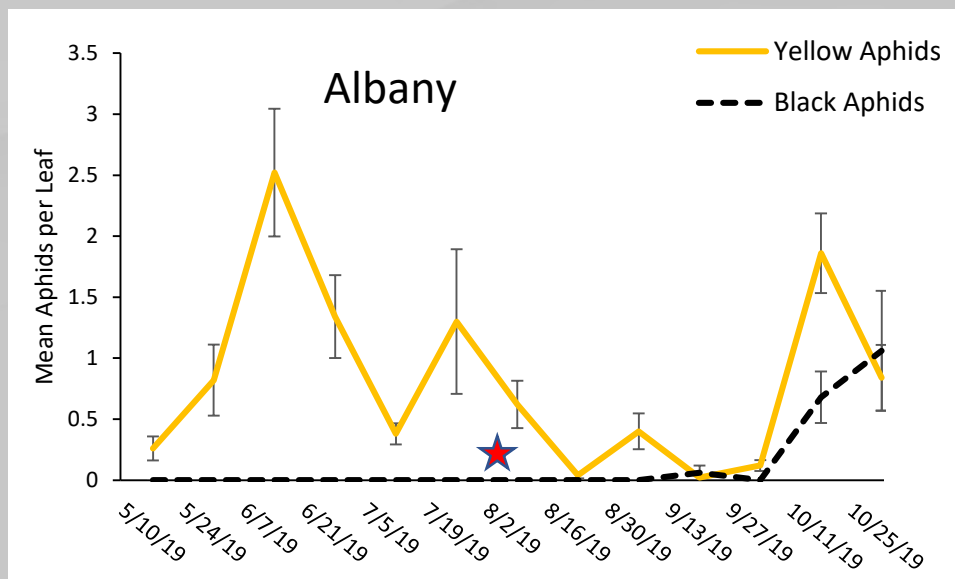
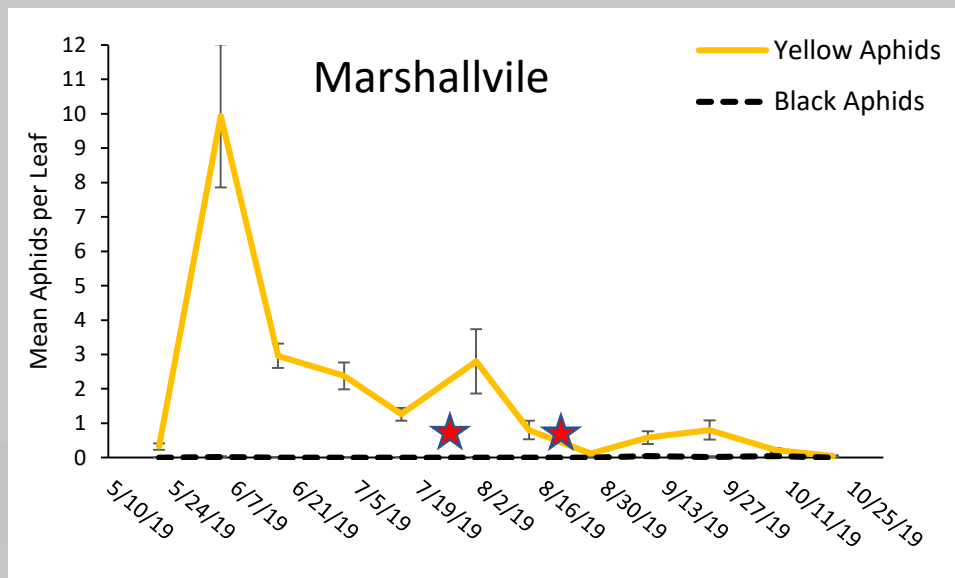
Stink Bugs

Spring to early summer

Summer pests

- Sumner trees sampled at two commercial orchards in 2019
- Yellow aphids more abundant than black aphids
- Growers applied insecticides in the summer
- Yellow aphid numbers crashed even without insecticidal applications

What does this mean for growers?



★ Timings of aphid sprays.

SPRAYING FOR APHIDS EARLY IN THE SEASON IS NOT NEEDED.
DEFINITELY DO NOT USE PYRETHROIDS OR LORSBAN!
YOU WANT TO PROTECT THE PREDATORY INSECTS!

Predatory Insects

Lacewing

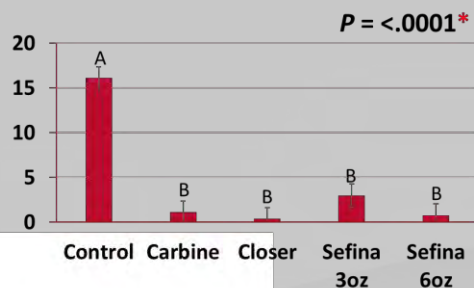


Lady Beetles (Predator)

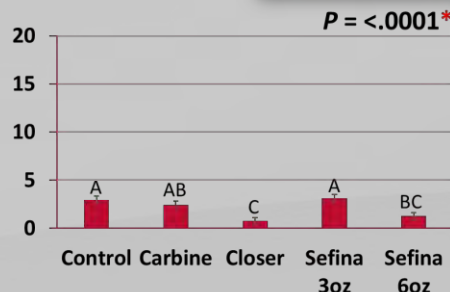


APHID LATE SEASON SPRAY TRIALS

Results: Mean Aphid Abundance Per Leaf



7-Day

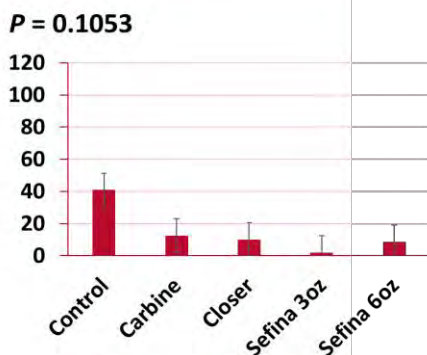


14-Day

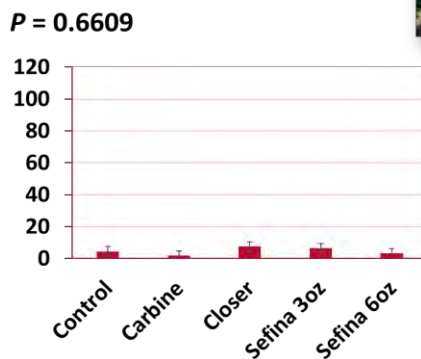
Highlights

- All the materials tested (Carbine, Closer, Sefina) decreased aphid numbers, 7-D post spraying.
- Aphid numbers remained low on trees sprayed with Closer and Sefina 6 oz, 14-D after spraying.
- PQZ included in 2020 trial and showed similar results.
- Good news! All materials showed no negative effects on parasitic wasp population.

Results: Mean No. Parasitic Wasp Per Card



7-Day



14-Day

LATE-SEASON RECOMMENDATIONS

APHIDS

Yellow and Black Pecan Aphids:

Carbine, PQZ

Sefina is officially labelled now for pecans

Closer is now available as Transform

If mites are also present:

Nexter

**APPLY ONLY IF
NEEDED!**

**Rotate/Alternate
materials to delay
resistance
development.**



Take Home

- Accurate pest identification and monitoring are important.
- Assess infestation levels and only treat if needed.
- If you choose to treat, timing of application and type of material to use need to be considered.
- Make sure to rotate materials to use for specific pests.

REMEMBER: NOT ALL INSECTS ARE PESTS

EXTENSION: App- and Web-based Resources

MyIPM App



Android



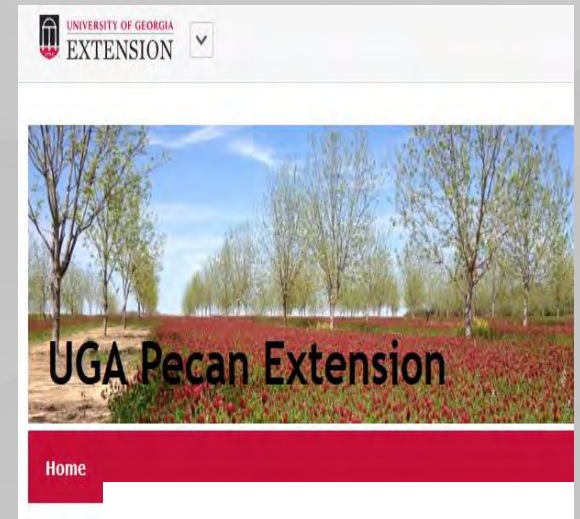
Iphone

Pecan Pest Reporting

Pecan Nut Casebearer



UGA Pecan Blog



PECAN MANAGEMENT

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Planting trees only | Don't use fertilizer and burning slash | Non-burning trees only

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

TREE PHENOLOGY

Deciduous	Leaf buds	Vegetative growth	Terminal vegetative growth flush	Leaf senescence	Deciduous					
	Propagulation 10 to 16 days	Proliferative	Postproliferative (Sapwood layer forms, coffee ring drops, Not out drop starts, see 6-25 days)	Early out timing: Red gum drops, leaflets yellow, veins, rounded leaf drop	Late out timing: Red gum drops, Not out drop starts, early water drops, Not out drop	Late out timing: Red gum drops, Not out drop starts, Not out drop	Early leafout timing: White drops, Not out drop starts, Not out drop	Kernel filling: Late water drops, Any gum and drop drops, Not out drop starts	Late kernel filling: Late water drops, Late leafout timing, Not out drop starts	Marking split: Several development conditions, note can be status from check

DISEASE MANAGEMENT

Targetable sprays at budbreak	Propagative fungicide sprays at 10- to 15-day intervals through disease period	Propagative fungicide sprays at 10- to 25-day intervals based on disease potential. Can be 10 days during wet weather based on wet leaf index.	Continue fungicide sprays at 14-day intervals	Fungicide may be needed under heavy disease pressure
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Please refer to fungicide resistance labels and spraying schedules for use. Always consult fungicide labels for use on resistant fungicide applications. Not apply fungicide culture (e.g., "Growth" and "Power"). Disease resistance not be developed but avoid its selection.

INSECT AND MITE PEST MANAGEMENT

Monitor for insects: Inspect weekly for scale, but only check for scale on new trees. Look for scale on upper surface of leaves or on stems. Scale is often associated with leaf curl, which is a symptom of scale infestation. If scale is found, remove trees from production and destroy them.	Monitor for insects: Inspect weekly for scale, but only check for scale on new trees. Look for scale on upper surface of leaves or on stems. Scale is often associated with leaf curl, which is a symptom of scale infestation. If scale is found, remove trees from production and destroy them.	Monitor for insects: Inspect weekly for scale, but only check for scale on new trees. Look for scale on upper surface of leaves or on stems. Scale is often associated with leaf curl, which is a symptom of scale infestation. If scale is found, remove trees from production and destroy them.	Monitor for insects: Inspect weekly for scale, but only check for scale on new trees. Look for scale on upper surface of leaves or on stems. Scale is often associated with leaf curl, which is a symptom of scale infestation. If scale is found, remove trees from production and destroy them.	Monitor for insects: Inspect weekly for scale, but only check for scale on new trees. Look for scale on upper surface of leaves or on stems. Scale is often associated with leaf curl, which is a symptom of scale infestation. If scale is found, remove trees from production and destroy them.	Monitor for insects: Inspect weekly for scale, but only check for scale on new trees. Look for scale on upper surface of leaves or on stems. Scale is often associated with leaf curl, which is a symptom of scale infestation. If scale is found, remove trees from production and destroy them.	Monitor for insects: Inspect weekly for scale, but only check for scale on new trees. Look for scale on upper surface of leaves or on stems. Scale is often associated with leaf curl, which is a symptom of scale infestation. If scale is found, remove trees from production and destroy them.
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PDF COPY LINK:



FERTILIZATION

Take soil samples. Apply lime, phosphorus, and potassium as per label directions.	Apply all potassium and phosphorus. Make critical soil, alkaline, and basic applications.	Make critical nitrogen applications to mature trees. No fertilization on young trees.	Apply critical nitrogen applications to mature trees. No fertilization on young trees.	Apply critical nitrogen applications to mature trees. No fertilization on young trees.	Apply critical nitrogen applications to mature trees. No fertilization on young trees.	Apply critical nitrogen applications to mature trees. No fertilization on young trees.	Take soil samples. Apply lime, phosphorus, and potassium as per label directions.
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IRRIGATION

60-70 gal/acre/week 500-600 gal/acre/week 90-20% full capacity Irrig cycle: 60%	75-85 gal/acre/week 800-1000 gal/acre/week 25-40% full capacity Irrig cycle: 70%	90-100 gal/acre/week 1000-1200 gal/acre/week 25-40% full capacity Irrig cycle: 80%	125-150 gal/acre/week 1400-2000 gal/acre/week 45-50% full capacity Irrig cycle: 90%	200-250 gal/acre/week 2000-4000 gal/acre/week 50% full capacity Irrig cycle: 100%	300-350 gal/acre/week 3000-4000 gal/acre/week 50% full capacity Irrig cycle: 100%	30-140 gal/acre/week 1000-1500 gal/acre/week 25-40% full capacity Irrig cycle: 80%
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Use irrigation all the time days when reaching >1 in. of soil.
Sandy soils: Use higher end of rate.
Clay soils: Use lower end of rate.

OTHER PRODUCTION ACTIVITIES

Take recommended soil tests. Clean up fields and trees. Monitor and repair equipment. Collect soil core samples. Log notes. Prune, hedge, or trim trees. Plant on bare trees. Final note.	Apply herbicides as needed. Bark graft. Thin crop yield. Keep orchard weeded. Remove debris from trees. Summer hedge pruning. Order new trees for planting.	Harvest early for top quality and price. Prune for harvest. Do not allow pecans to be on ground for extended periods of time. Collect and evenly sort for new planting. Daily harvesting may begin. Weigh and record harvest.	Continue harvest and marketing of crop (if not planted). Thin recommended orchards. Clean up fields and debris. Service and repair equipment. Rig up harvest trees.
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Acknowledgment



**Georgia
Pecan
Commodity
Commission**

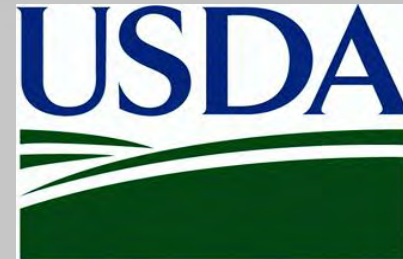
**Georgia
Pecan
Growers
Association**

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