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Sucking Insects and Mites	Winter Pest Control
<ul> <li>Cicadas</li> <li>Aphids</li> <li>Adelgids</li> <li>Scale insects</li> <li>Mealybugs</li> <li>Whiteflies</li> <li>Thrips</li> <li>Mites</li> <li>True Bugs</li> </ul>	<ul> <li>Horticultural oil sprays as a dormant application for control of:</li> <li>Scale insects</li> <li>Aphid adult females or eggs</li> <li>Adelgid adult females and eggs</li> <li>Oak phylloxera eggs</li> <li>Spruce mite and southern red mite eggs</li> <li>Rust mites on conifers</li> </ul>

#### **Overwintering Insects and Mites**

- The use of horticultural oil as a dormant application in the late winter or early spring is much underutilized
- Horticultural oil is easy on beneficial insects which are usually not on the plants then
- Oil also has little if any insecticide residual, thus conserving beneficials

#### Damage

- Soft scale, mealybugs, whiteflies, aphids, and adelgids excrete copious amounts of honeydew (sooty mold fungi grows on the honeydew)
- Cicadas and treehoppers can damage twigs by their egg laying
- Sucking insects can stress the plant much like drought damage, causing defoliation, branch die-back and even plant death







#### Damage

- Often the damage is from the loss of cell contents over a period of time (stippling of foliage is cumulative so that a general discoloration of leaf occurs such as with lace bugs)
- Some such as plant bugs kill plant tissue at the feeding site
- Some such as potato leafhoppers
   plug vascular tissue causing
   hopper burn of leaves





Fourlined plant bug











- Feeds on more than 250 host plants
- Herbs, mints and composite flowers are especially favored
- Enzymes attack the glue that holds plant cells together, causing pits where plant cells literally collapse

# **Rhododendron Lace Bug**







# Lace Bug Control in the Landscape

- One time management tool is to drench in March with the systemic Merit, Meridian 25 WG, Meridian 0.33 G, Acelepryn or in April with Safari 20 SG
- Spray active stages starting in spring after bloom with Orthene T,T & O WSP, Safari 20 SG, Merit, Meridian 25WG, or a labeled pyrethroid





# **Pollinator Health**

- If use of neonicotinoid soil drenches prior to flowering are a concern, treat right after bloom
- If treating lawn pests with insecticide, mow the grass first to remove the blooms of any flowering weeds

# Damage

- Aphids can cause twisted, distorted growth
- Phylloxerids and aphids can cause leaf or stem galls
- Boxwood psyllids can cause cupping of leaves





Spiny witch-hazel leaf gall aphid on river birch

# Aphids

Virtually every plant has at least one aphid species that attacks it





#### **Sooty Mold**

- Sooty mold is a black fungus that appears as a black coating on the surface of leaves, twigs, and branches
- It is not pathogenic but obtains its nourishment from insect honeydew
- The presence of sooty mold indicates an insect infestation









## Asian Woolly Hackberry Aphid



# **Soft Scale**

- Produce honeydew
- Sooty mold grows on honeydew



Tuliptree

Scale

# **Tuliptree Scale**

- Hosts: Tuliptree (yellow poplar), magnolia and linden.
- One generation Females produce up to 3000 eggs.
- Crawlers emerge in late August through September.







#### Fletcher Scale Eggs and Crawlers



# Spray Applications for Scale Control

The key to effective scale control is thorough insecticide coverage targeting the crawlers

 Monitoring for crawler emergence is essential to determine proper spray timing



# **Scale Monitoring**

- Sticky traps can be made to catch the emerging scale crawlers and help you time insecticide sprays
- Use double sided Scotch tape, black electrical tape, or even white tape coated with a thin layer of petroleum jelly (Tape color depends on crawler color)
- Flag the branch and check at least once per week starting 10-14 days before expected emergence







#### **Cotton Camellia Scale Control**

- Apply horticultural oil to adults as a dormant application in February-March
- Drench the soil in March with imidacloprid (Merit & other brands) or thiamethoxam (Meridian 25 WG)
- Drench in late April to early May with dinotefuran (Safari 20 SG)

#### **Cotton Camellia Scale Control**

- Egg masses (ovisacs) are laid in late May to June and crawlers emerge soon after
- Target adults & ovisacs with horticultural oil in late May to June or wait a week or so until crawlers emerge for foliar insecticide applications

# Crape Myrtle Bark Scale, a Felt Scale *Eriococcus lagerostroemia*





# **Armored Scale**

- Do not produce honeydew
- Thus no sooty mold
- They have a protective waxy armor or cover that is separate from the body of the insect





## **Euonymus Scale**



- Hosts: Euonymus, pachysandra, hollies, camellia, boxwood, English ivy, hibiscus, privet and others.
- Overwinter as fully grown fertilized females.
- Up to 3 generations: April-May, July and August.



# Mites

Mites have tiny mouthparts modified for piercing individual plant cells and removing the contents

Southern red mite Twospotted spider mites

er mites







# **Twospotted Spider Mites**

A warm season mite that injures over 180 plants





Active from earliest spring to late fall
Overwinters as adult females in ground litter or on host plants

# **Spruce Spider Mites**

 A cool season mite pest of arborvitae, juniper, false cypress, hemlock, pine, spruce and others



Active in the spring and late summer-fall

Overwinter in the egg stage







Mottled yellowing of hemlock needles and orange eggs

#### Southern Red Mite

 Pest of broadleaf evergreen plants such as holly, cherrylaurel and azalea





# **Rust Mites on Sweetbay Magnolia**



Images courtesy of A. Windham, UT Extension

#### Rust Mite Control on Conifers

 Best controlled with a horticultural oil spray in February-March



Can also be controlled in the fall or spring with horticultural oil, Sevin, Avid, and Forbid







#### Granulate Ambrosia Beetle (GAB)

#### **Granulate Ambrosia Beetle**

- Attracted to stressed trees that emit ethyl alcohol
- Adult females tunnel into the tree and push out woody frass tubes
- They introduce a white ambrosial fungus on which the larvae and adults feed



1/10 inch long





- Treat with bifenthrin (Onyx) or permethrin (Astro) preventatively
- Or treat at first sign of attack (mid-March to May)

fungi

# Flatheaded Appletree Borer

Attacks some 30 species of woody plants, but maple, hickory, linden, oak, sycamore, tuliptree, dogwood, & crabapple are most commonly infested



Apply protective sprays in early May & mid-June or drench with a systemic insecticide earlier in the spring





#### **Emerald Ash Borer Larvae**



# **D-Shaped Exit Holes**









# Frass at Base of Tree from Banded Ash Clearwing





# **Rhododendron Borer**

 Attacks rhododendron and occasionally mountainlaurel and deciduous azalea



Apply protective sprays in mid-May and late June



(Astro), or chlorantraniliprole (Acelepryn) can be applied to the bark

 Application timing is important and a repeat application may be needed if the egg laying period is



# Eastern Tent Caterpillar





#### Comparing Eastern Tent and Forest Tent Caterpillars

- Eastern Tent: Wild cherry, apple, crabapple, & others
- Forest Tent: Oak, maple, birch, ash, elm, & others





Eastern tent caterpillar moth















# Bagworm

- Feeds on a total of 128 plant species
- The bag is made of silk and bits of twigs and leaves from the host plant







#### Lepidopteran Caterpillar Control

- Horticultural oil (1<sup>st</sup> instar caterpillars), Bt (early instar caterpillars), Orthene Turf, Tree & Ornamental WSP, insecticidal soap (early instar caterpillars), various pyrethroids, Conserve SC, or Acelepryn
- Safari 20SG applied as a soil drench for bagworms



- **Boxwood Leafminer**
- The most serious pest of boxwoods
- All varieties of boxwoods are attacked
- Mined leaves become blistered and yellowish



# **Boxwood Leafminer Life Cycle**



Stage





**Boxwood Leafminer** 





# Sawfly (Hymenoptera) Defoliators





Butternut woollyworm images by John Rochelle, TDA

# Sawflies

Larvae have more than five pairs of prolegs.

Dogwood sawflies

Dusky Birch Sawfly



# **Other Sawflies**

 Some sawfly larvae have a slug-like appearance, while others are covered in fine hairs.





# **Sawfly Control**

 Control with Conserve SC, Acelepryn, Lepitect, Orthene T & O WSP, Sevin SL, and pyrethroid insecticides labeled for use on ornamental plants in the landscape

 Note that Bt insecticides (Dipel etc.) do not work on sawflies, just lepidopteran caterpillars

Sawfly on shingle oal



# Galls

- Leaf galls are of little consequence to a healthy tree.
- Stem or twig galls are more serious and may disrupt plant functions by girdling the small branch.

Stem-Twig







Gall with single wasp larva



Mature wasps emerging from gall





**Cynipid or Gall Wasps** 

#### Imported Fire Ant Baits & Granulars on Turfgrass

- abamectin (PT370 Ascend Fire Ant Stopper Bait, Varsity Fire Ant Bait)
- s-Methoprene (Extinguish Professional Fire Ant Bait) -IGR
- fenoxycarb (Award Brand of Logic Fire Ant Bait) -IGR
- pyriproxyfen (Distance Fire Ant Bait, Spectracide Fire Ant Bait) -IGR
- hydramethylnon (Amdro Pro Fire Ant Bait, Siege Fire Ant Bait)
- spinosad (Payback Fire Ant Bait)
- indoxacarb (Advion Fire Ant Bait)
- fipronil (Ceasefire bait, Topchoice granular)

	Other Insectici	de Treatments for IFA
•	lambda-cyhalothrin	Scimitar CS, Scimitar GC
	acephate	Orthene Turf, Tree & Ornamental Spray
•	deltamethrin	DeltaGard G
-	bifenthrin	Talstar One, Talstar GC granular, OnyxPro
	zeta-cypermethrin +• bifenthrin	Talstar XTRA Granular
-	thiamethoxam •	Meridian 25WG

# **Questions?**



Dusky birch sawfly

https://tiny.utk.edu/ag/insectandmite https://tiny.utk.edu/ag/turfinsect



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