Azalea lace bug

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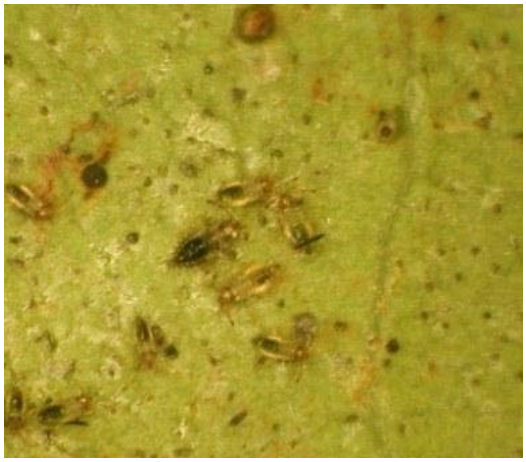
Azalea lace bug, *Stephanitis pyrioides*, was confirmed in 2008 in the state of Washington and has been confirmed this summer of 2009 in Oregon (although damage was first reported in 2008). Damage from this new introduction was noticed first on evergreen azalea plants in landscapes which turn nearly white from feeding damage.

This lace bug is also causing damage on rhododendrons, the damage appears to be more severe than damage reported from rhododendron lace bug which has been in the PNW for some time and is reported to have only one generation per year compared to multiple generations reported for azalea lacebug. Mountain laurel is reported as an alternate host for azalea lace bug (Smith-Fiola).

Pest description and crop damage: Overwinters in egg stage. Eggs are laid in the midrib on the underside of leaves. According to Rutger Cooperative Extension, azalea lace bug eggs first hatch in mid-May in New Jersey, with later generations in June, July, and August.

Nymphs, the young immature lace bugs, are nearly translucent and light yellowish-green when small. As they age, they darken, particularly on the abdomen, and become spiny.



The adult nymphs are around ¼" long, with wings that are slightly colored with white and black patterns in a window pane effect and quite sculptured. The head capsule is round and swollen-looking from the side.

Damage
Lacebugs have piercing/sucking mouth parts. The initial damage shows up as light yellow stippling on the surface of the leaves. Higher populations can cause more severe damage on azaleas, causing the leaves to turn nearly white. On rhododendrons, severe damage may look like iron chlorosis with yellow leaves and green veins.

Lace bugs leave small black fecal spots on the underside of leaves. Exuvia, or cast skins, are also often present.

Rhododendron lace bug
In New Jersey, rhododendron lace bug eggs first hatch in late April, with later generations in late May and June. Here in the Pacific Northwest, rhododendron lace bug egg hatch is reported from mid-May through mid-June (Antonelli and Davidson, 2002) but has been noted as early as mid-April. One generation a year is reported for the Pacific Northwest.

Biological Control
There are a range of predators that feed on azalea lace bug including azalea plant bug, tree crickets, earwigs, green lacewings, minute pirate bugs, and spiders. The Rutgers publication mentions one nursery study concerning augmentation with green lacewing larvae against newly hatched azalea lace bug nymphs resulted in 79-97% control.

Cultural Control
Drought stressed plants are more susceptible to lace bug attack. Azaleas in the sun are reported to be nearly twice as likely to be infested.

There are azaleas that show some resistance to azalea lace bug.
A study by Grant Kirker, conducted at the USDA-ARS Thad Cochran Horticultural Research Laboratory in Poplarville, Miss., studied 19 varieties of Encore Azalea and 14

standard cultivars for host plant resistance to lace bugs. Encore Azalea cultivars found to be resistant included: Autumn Amethyst, Autumn Twist, Autumn Royalty, Autumn Sangria, Autumn Cheer, and Autumn Rouge. Cultivars showing moderate resistance were Autumn Embers, Autumn Bravo, Autumn Starlite, Autumn Ruby, and Autumn Princess.

Another study from Virginia Beach Experiment Center show additional varieties with resistance.

Table 1. Azaleas Resistant to Lacebug Attack (in order of decreasing resistance)*

Indica alba	white
Flame Creeper	white
Delaware Valley White	white
Rosebud	pink
Cooperman	red
Hahn's Red	red
Boldface	lavender
Mrs. G.G. Gerbing	white
Dream	white
Salmon Beauty	pink
Hinocrimson	red

*Research by Dr. Peter Schultz, Virginia Beach Experiment

Chemical Control – See Table 2 Chemical Control of Lace Bugs

There are several strategies for managing lace bug. One can choose a biorational program based on incorporating products such as insescticidal soap, horticultural oil, and neem-based products. Insecticidal soaps and oils must directly contact the insects to control them and are most efficacious on newly hatched nymphs but can have 80-90% control if used correctly. Horticultural oil can also smother the egg stage. Neem-based products act as anti-feedants, insect growth regulators, and repellants. Research from New Jersey has shown a 50% reduction of azalea lace bugs after a neem application. Early season control is very important with these tools.

The egg stage is embedded in the plant material and thus protected from most control (except for horticultural oils). Most of the remaining chemical options act either as contact insecticides such as the pyrethroids or carbaryl or have systemic activity such as acephate or the neonicotinoids. Contact insecticides and some of the systemic insecticides may have a detrimental impact on beneficial insects. Timing of the neonicotinoid insecticides generally is either a foliar application shortly before the egg hatch (6-8 weeks) or applied as a soil drench in the late fall.

Useful websites:

Antonelli, A. and Davidson, R., Jr. 2002. Rhododendron Lace-Bug. Washington State University Cooperative Extension.
http://www.puyallup.wsu.edu/plantclinic/resources/pdf/pls120rhodylacebug.pdf

Featured Creatures: Azalea lace bug.
http://entomology.ifas.ufl.edu/creatures/orn/shrubs/azalea_lace_bug.htm
Murray, T. Lace bugs on your azalea. WSU
http://www.king.wsu.edu/gardening/MGCD/documents/AzaleaLaceBug.pdf

Smith-Fiola, Deborah. Lacebugs: Life Cycle, Monitoring, and Pest Management in New Jersey. Rutgers New Jersey Agricultural Experiment Station.
http://njaes.rutgers.edu/pubs/publication.asp?pid=FS783

UC IPM Online: Lace bugs
http://www.ipm.ucdavis.edu/PMG/PESTNOTES/pn7428.html

Table 2. Chemical Management Options for Lace bugs*

Botanical	azadiractin	Aza-Direct (OMRI), Azatrol (OMRI) Ornazin
	limonene	Orange Guard
	pyrethrins	Pyganic Dust (OMRI)
Biological	*Beauvaria bassiana*	Botanigard, Mycotrol, Naturalis L
Carbamate	carbaryl	Sevin
Clay	kaolin	Surround (OMRI)
Neonicotinoid	dinotefuran	Safari
	imidacloprid	Imidacloprid, Marathon
	thiamethoxam	Flagship
Oil	mineral oil/petroleum distillate	Many
Organophosphate	acephate	Acephate Pro, Orthene
	chlorpyrifos	Dursban
	dimethoate	Dimethoate
	disulfoton	Di-syston
	malathion	Malathion 5EC, Fyfanon, Prentox
Pyrethroid	bifenthrin	Menace, Talstar, Wisdom
	cyfluthrin	Decathalon, Tempo
	deltamethrin	
	lambda cyhalothrin	Cyonara , Scimitar GC
	permethrin	Ambush, Permethrin, Pounce,
Soap	potassium laurate	M-Pede, Insecticidal Soap

* Based on PICOL search December 2009.