

Avocado Lace Bug *Pseudacysta perseae* (Heidemann) (Hemiptera: Tingidae)

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INTRODUCTION

In December 2019, Hawai'i Department of Agriculture, Plant Pest Control Branch (HDOA-PPC) staff was notified by University of Hawai'i Cooperative Extension (UHCE) of avocado trees at the Pearl City O'ahu Urban Garden Center (OUGC) heavily infested with lace bugs. HDOA-PPC, UHCE, and OUGC staff promptly convened for a site survey and assessment. All of the eighteen avocado (*Persea americana*) trees of various ages and varieties suffered medium to heavy levels of lace bug infestation. Specimens of this lace bug were sent to the United States Department of Agriculture, Animal and Plant Health Inspection Service, National Identification Services and confirmed by Dr. James N. Zahniser as *Pseudacysta perseae* on 6 January 2020. *P. perseae*, the avocado lace bug, is a new state record for Hawai'i.

DESCRIPTION

Adult and immature avocado lace bugs live and feed in groups on the undersides of leaves (Figs. 1, 2).

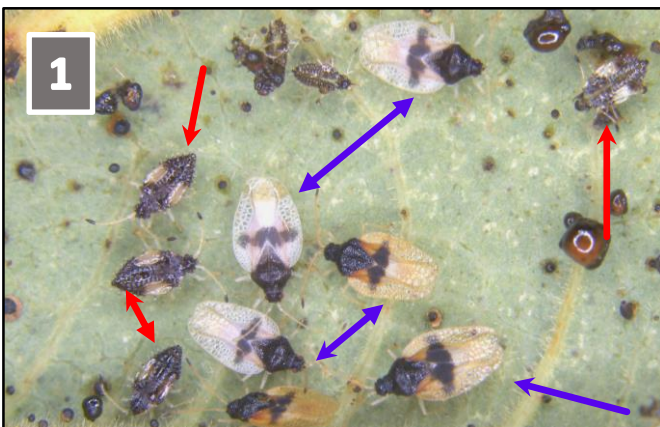


Fig. 1. Adult avocado lace bugs (blue arrows) and immature nymphs (red arrows).



Fig. 2. Underside of avocado leaf showing colony of feeding adult and immature lace bugs alongside excrement, eggs, and nymphal cast skins.

Colonies can be found alongside excrement, eggs, and nymphal cast skins. Adults (Figs. 1, 2) are about 2 mm ($\sim 1/16$ inch) in length, oval shaped, have mostly black bodies with a thick black horizontal stripe across their wings, and have yellow legs and yellow antennae with black tips. Immature lace bugs are smaller in size and range in color from dark red to black. Eggs are covered with black excrement and blend with black fecal specks (Fig. 3).

HOSTS

In Hawai'i, this pest has only been found infesting avocado (*Persea americana*). Similar to populations in California and Florida (Hoddle, 2009), it shows preference to some varieties over others. Other hosts recorded in literature all belong to the Lauraceae family. These include: red bay (*P. borbonia*), swamp bay (*P. palustris*), and camphor (*Cinnamomum camphora*) (Peña et al. 2012).

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DAMAGE AND SYMPTOMS

Avocado lace bugs only feed on the undersides of foliage (Figs. 2, 6) and will not attack fruits. Symptoms of feeding damage begin as whiteish-yellowish speckled blotches on the top surface of leaves (Fig. 4). As populations and feeding damage increase, chlorotic spots progress into brown necrotic areas of dead tissue (Figs. 4, 5). While this resembles marginal leaf/tip burn caused by salt damage (Fig. 7), avocado lace bug feeding damage will start in the interior of the leaf, away from the tips and edges. Heavy feeding can lead to leaf drop and reduced fruit yield.

DISTRIBUTION

In Hawai'i, the avocado lace bug has been found throughout **O'ahu** and on (east) **Hawai'i Island**. Quarantine interceptions have been made on plants for retail distribution on Maui and have been either treated or destroyed. No established breeding populations have been found in the field on Maui thus far.

Fig. 3. (Inset) Eggs next to a dime; Close up of adult next to eggs covered in excrement.

Fig. 4. Avocado tree showing yellow chlorosis and brown necrotic patches starting on leaves, away from leaf margins.

Fig. 5. Avocado tree showing brown, dead necrotic patches on leaves due to heavy feeding damage.

Fig. 6. Undersides of infested avocado leaves showing adults, nymphs, eggs, and excrement black spotting.

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Fig. 7. NOT avocado lace bug feeding damage. Marginal leaf scorching mostly on older leaves (Photo: Scot Nelson-<https://www.flickr.com/photos/scotnelson/16797305505/in/photolist-rAjzHB-jSz6Ac-euT4BK-jrT9eo-jBrxH9-jDQ76i-DcySsQ-E6qSAo-RzVvF8>).

potassium salt insecticidal soaps, products with the active ingredient *Beauveria bassiana*, and oils like paraffin or citrus provided temporary control of low avocado lace bug infestations (Bender et al. 2007). Additionally, their research indicated the insecticide active ingredients imidacloprid and malathion to be very effective for avocado lace bug control once flowering is complete (Byrne et al. 2010). This will also minimize impacts on pollinators. Pruning after flowering and fruiting is helpful if applying imidacloprid via soil, as it will translocate to leaves at a faster rate (Humeres et al. 2009). As much as possible, avoid use of broad-spectrum, persistent insecticides (e.g. carbamates, pyrethroids) as these may also kill natural predators of the avocado lace bug.

For further information on avocado lace bug control, please contact your local University of Hawai'i Extension Office.

ACKNOWLEDGMENTS

OUGC staff and Fruit Hui volunteers who alerted us to the infestation, nurseries, farms, and growers who graciously allowed us to survey their plants, and the many residents who reported infestations on their trees. We are grateful to Dr. James N. Zahniser for his confirmation of species.

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