

# Avocado Lace Bug in Hawai'i

## The Insect and Damage

The Avocado Lace Bug (Scientific name: *Pseudacysta perseae*, Hemiptera, Family Tingidae), is a recent (December 2019) invasive species in Hawai'i that has been found attacking avocado trees on multiple islands.

Adult lace bugs have finely sculptured wings, which is typical of this insect family. The adults are approximately 2 mm (1/12 of an inch) in length. They lay their eggs, covered in a black protective layer of their own excrement,



**Figure 1A.** A typical avocado lace bug infestation on the underside of an avocado leaf (image by Sarah Martinsen)

on the underside of avocado leaves (Figure 1). The nymphs (spiny juveniles hatching from the eggs), feed in the underside of the leaves (Figure 1). See "Links to other resources" for a selection of detailed images.



**Figure 1B.** Juvenile (nymphal) avocado bugs. Black dots are fecal matter.

The life cycle takes about three weeks to complete, and there are multiple generations per year in Hawai'i. Feeding (by inserting mouthparts into the leaf, and extracting fluids from the leaf) by the juvenile and adult stages causes leaf yellowing and potentially leaf die-back with high infestations (Figure 2). The damage is seldom severe enough to cause permanent negative impacts on trees. Growers in California report that for severe infestations, leaf loss may result in fruits being sunburned, with reduced crop yields in the following crop cycles. Some growers have observed that, despite high damage levels in a particular season, the trees recover well during the next season.

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**Figure 1C.** Adult avocado lace bug, center. Black dots are fecal matter.



**Figure 2.** Avocado lace bug damage symptoms on avocado leaves.

to provide temporary suppression of lace bugs – again, with the caveat that effective coverage under leaves must be achieved. These products have minimal negative impacts on non-target insects.

Synthetic contact insecticides labelled for use on avocado will likely also cause lace bug mortality. Systemic products (e.g., imidacloprid) will likely provide the most effective suppression of avocado lace bugs. Be aware that these products may have undesirable non-target impacts on beneficial insects.

*\*Please note that any pesticide applications must be made in accordance with label requirements (US EPA and HI State). The mention of any product here is not a CTAHR or UH endorsement of that product.*

#### • Biological Control

There are no known specialist natural enemies that will act as biological control agents in Hawai'i. In the place of origin of the avocado lace bug (the Caribbean), there are two known egg parasitoids, and the lace bug nymphs are attacked by predatory thrips there.

Other known natural enemies are generalist predators, such as lacewing larvae (different from lace bugs!), lady beetles, and predacious mites. Many of these generalist predators are present in Hawai'i (see "Links to other resources") and may provide some level of suppression of the lace bugs under suitable conditions. The growth and persistence of generalist predator populations can be encouraged by providing habitat, such as flowering plants that provide secondary food resources like pollen and nectar, and by avoiding the use of broad-spectrum insecticides.

#### Links to Other Resources

##### UH CTAHR resources for predatory insect identification

- [Lacewings](http://www.ctahr.hawaii.edu/organic/downloads/beneficials/Lacewings.jpg) ([www.ctahr.hawaii.edu/organic/downloads/beneficials/Lacewings.jpg](http://www.ctahr.hawaii.edu/organic/downloads/beneficials/Lacewings.jpg))
- [Lady beetles](http://www.ctahr.hawaii.edu/organic/downloads/beneficials/LadyBeetles.jpg) ([www.ctahr.hawaii.edu/organic/downloads/beneficials/LadyBeetles.jpg](http://www.ctahr.hawaii.edu/organic/downloads/beneficials/LadyBeetles.jpg))
- [Minute pirate bugs](http://www.ctahr.hawaii.edu/organic/downloads/beneficials/MinutePirateBugs.jpg) ([www.ctahr.hawaii.edu/organic/downloads/beneficials/MinutePirateBugs.jpg](http://www.ctahr.hawaii.edu/organic/downloads/beneficials/MinutePirateBugs.jpg))
- [Predatory mites](http://www.ctahr.hawaii.edu/organic/downloads/beneficials/PredatoryMites.jpg) ([www.ctahr.hawaii.edu/organic/downloads/beneficials/PredatoryMites.jpg](http://www.ctahr.hawaii.edu/organic/downloads/beneficials/PredatoryMites.jpg))
- [Hawai'i Department of Agriculture](http://hdoa.hawaii.gov/pi/files/2020/04/Avocado-lace-bug-NPA-3-31-20-FINAL.pdf) ([hdoa.hawaii.gov/pi/files/2020/04/Avocado-lace-bug-NPA-3-31-20-FINAL.pdf](http://hdoa.hawaii.gov/pi/files/2020/04/Avocado-lace-bug-NPA-3-31-20-FINAL.pdf))
- [California](http://ipm.ucanr.edu/PMG/PESTNOTES/pn74134.html) ([ipm.ucanr.edu/PMG/PESTNOTES/pn74134.html](http://ipm.ucanr.edu/PMG/PESTNOTES/pn74134.html))
- [Florida](http://entnemdept.ufl.edu/creatures/fruit/avocado_lace_bug.htm) ([entnemdept.ufl.edu/creatures/fruit/avocado\\_lace\\_bug.htm](http://entnemdept.ufl.edu/creatures/fruit/avocado_lace_bug.htm))

### Current Management Options in Hawai'i

Bear in mind that even moderately high populations will not cause severe long-term damage to avocado trees. Light infestations do not require management. If management is needed when lace bug densities become high, and leaf damage is visibly severe, there are relatively safe pesticide options that may be used.

#### • Pesticides

Insecticidal soaps (e.g. M-Pede®, Safer Soap®) and insecticidal oils (e.g. Green Light®, SunSpray®) can provide effective suppression of lace bugs, if applied carefully to ensure good coverage. These products need to cover the target insects in order to be effective. While truly a biological control agent, *Beauveria bassiana*, an insect pathogenic fungus, is a registered insecticide; applications of *Beauveria bassiana* (BotaniGard®, Mycotrol®) have been suggested