Manaaki Whenua
Landcare Research

WOOLLY NIGHTSHADE LACE BUG

Gargaphia decoris

The Biological Control Of Weeds Book - Te Whakapau Taru: A New Zealand Guide ISBN 0-478-09306-3

History in New Zealand

The woolly nightshade lace bug is native to South America. Permission to release the lace bug in New Zealand was granted by ERMA in 2009. The first shipment, of Brazilian provenance, was imported in 2010 from South Africa where the lace bug has been used as a biocontrol agent for the past decade. Widespread releases of the lace bug began in New Zealand towards the end of 2010, and this insect has established readily at most sites.

Adult beetle

How would I find/recognise them and what is their lifecycle?

Adult lace bugs are around 5mm long. They are pale brown with two angled black patches on their otherwise transparent wings. Their underside is black. You will need a hand lens to see the delicate sculpting on the head, thorax and wings which gives them the name "lace bug". The adults tend to cluster together and feed in groups on leaves and should be visible throughout the warmer months.

Female lace bugs lay batches of up to 900 eggs primarily on the underside of leaves. The eggs themselves are tiny (0.5mm in length) but because of their dark colour the batches are conspicuous against the pale undersides of leaves so you may be able to see them.

The nymphs should also be relatively easy to spot during the warmer months. When newly hatched, they are almost transparent. The nymphs go through five moults. Later nymphal stages have prominent spines on their body and head and dark markings on their thorax. Wing buds become apparent from the fourth moult.

The nymphs also feed in groups on both the underside and upper leaf surfaces. They scatter if disturbed but will regroup soon afterwards. Adult females guard the eggs and young nymphs to help protect them from attack by predators or parasites. A characteristic sign of lace bug presence to look for is spots of dark frass deposited along the margin of leaves.

The woolly nightshade lace bug has a short generation time and has the potential to quickly build

Nymphs

up large populations. At warm temperatures, it takes about 30 days for an egg to become a new adult which will start mating after about 11 days. Adults are relatively long-lived, and females can lay successive egg batches, leading to overlapping generations.

Leaf with typical feeding damage

You are unlikely to confuse the woolly nightshade lace bug with other insects. A native lace bug (*Tanybyrsa cumberi*) lives on *Astelia* species and an exotic lace bug (*Stephanitis rhododendri*) can be found on rhododendrons. A sap-sucking psyllid (*Acizzia solanicola*) has recently established here and is common on woolly nightshade. The psyllid is smaller and greener than the woolly nightshade lace bug.

How do they damage woolly nightshade?

Both the nymphs and adults damage woolly nightshade by feeding on leaves. They puncture the surface and suck out the green layers beneath. This results in white chlorotic spots on the upper leaf surface. Heavy feeding causes the leaves to become bleached, dry out and fall off prematurely. Flowering and fruit production are reduced and if the attack is severe, plants may die.

Will they attack other plants?

Woolly nightshade (*Solanum mauritianum*) is the only species likely to be attacked by the lace bug. Host-testing has showed minor damage to egg plant (*S. melongena*) is possible but is unlikely to occur given it has never been reported in the lace bugs' native range in South America or introduced range in South Africa.

How effective are they?

Damaging and persistent outbreaks have occurred in the Bay of Plenty, with defoliation over a wide area, and elsewhere in the North Island. These outbreaks have been largely confined to sheltered, shaded or partially shaded habitats. Similar outbreaks have occurred in South Africa. A recent study in New Zealand showed that plant defences against lace bugs (trichomes) are thicker and denser on plants in full sun, which may explain why the lace bug prefers shade.

How can I get the most out of this agent?

If the lace bug establishes at initial release sites, it would be worth helping to establish them in all areas where they are needed. The adults can fly but are likely to disperse fairly slowly, possibly only a few kilometres per year.

How do I select a release site?

Read *Guidelines for selecting release sites for biocontrol agents.*

Severely damaged woolly nightshade

How do I collect them for release at other sites?

When adults and nymphs are present in good numbers, cut infested leaf material and put it in a chilly bin or large paper rubbish bag. Always wear gloves when handling woolly nightshade foliage to avoid any health issues. At the new site wedge or tie the infested material firmly into woolly nightshade

plants so the lace bugs can move across. Shift at least 1000 individuals to each new site at any time during the warmer months. Partially-shaded sites are best.

How do I manage the release sites?

Avoid any activities that will interfere with the lace bugs, such as herbicide application. If you need to undertake control measures, then avoid the release site.

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