

# *Leptocoris* spp. in macadamia: are we seeing more of them or have they always been there?

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Key points regarding *Leptocoris* spp.:

- the weather will influence *Leptocoris* spp. numbers in orchards and regions, they favour dry weather whereas fruit spotting bug (FSB) and banana spotting bug (BSB) are favoured by wet weather
- *Leptocoris* spp. are widely distributed and found in all macadamia growing regions. There are two species: *L. rufomarginatus* is found in NSW and *L. tagalicus* is found in QLD
- *Leptocoris* spp. damage is similar to that of FSB and green vegetable bug (GVB) but can be distinguished in dried kernel samples
- *Leptocoris* spp. will not be controlled through beta-cyfluthrin (Bulldock®) sprays, which are effective for FSB
- *Leptocoris* spp. congregate so presence will be easy to detect; this also provides the potential for spot spraying
- to date, no known effective biological controls for them have been found
- control of *Leptocoris* spp. relies on sound monitoring, spray timing and adequate coverage.

*Leptocoris* spp. (commonly called soapberry bugs, family Rhopalidae), are widely distributed throughout NSW and Queensland. In recent years the macadamia industry has seen a more frequent presence of *Leptocoris* spp., with the wider distribution likely due to drier weather conditions. In drier seasons, such as in 2019–2020, FSB pressure is low and *Leptocoris* spp. pressure is high. Once rainfall returns, FSB pressure increases and *Leptocoris* spp. pressure is reduced. In Queensland, especially the Gympie region, *Leptocoris* spp. is a continuous threat year-round, especially during the drier late summer months.

## Pest identification

The adult *Leptocoris* spp. is reddish–brown, has a narrow body, is winged and about 12 mm long (Figure 1). Underneath the body is dull red with a dark green area in the middle of the abdomen. The legs and antennae are black. *Leptocoris* spp. nymphs have a bright red abdomen with a brown–black head (Figure 2). There are 2 known species of *Leptocoris*; *L. rufomarginatus*, found in Northern NSW and *L. tagalicus*, found in the Amamoor region, Gympie. Both species will feed on macadamia.

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Figure 1. *Leptocoris* spp. adult. Photo: Ruth Huwer.



Figure 2. *Leptocoris* spp. nymph. Photo: Ruth Huwer.

## Damage

Known hosts for *Leptocoris* spp. include the native [foam bark tree](#) (*Jagera pseudorhus*) and [golden rain tree](#) (*Koelreuteria elegans*). Monitoring these is a good way to determine *Leptocoris* spp. pressure and life stages.

*Leptocoris* spp. congregate and are often found in localised areas in macadamia orchards initially. They will then spread from this location.

The damage caused by *Leptocoris* spp. is similar to that caused by FSB and GVB but can be distinguished by more defined margins and shallower depth of damage (Figure 3). As all kernel damaged by insects is categorised as 'insect damage', to find out which insect(s) damage you have, ask your processor representative to examine samples for you.

NSW DPI entomology staff produced research suggesting that, during dry weather such as in 2019–2020, FSB pressure is low and *Leptocoris* spp. pressure is high. Once rainfall returns, FSB pressures increase and *Leptocoris* spp. pressures decrease.

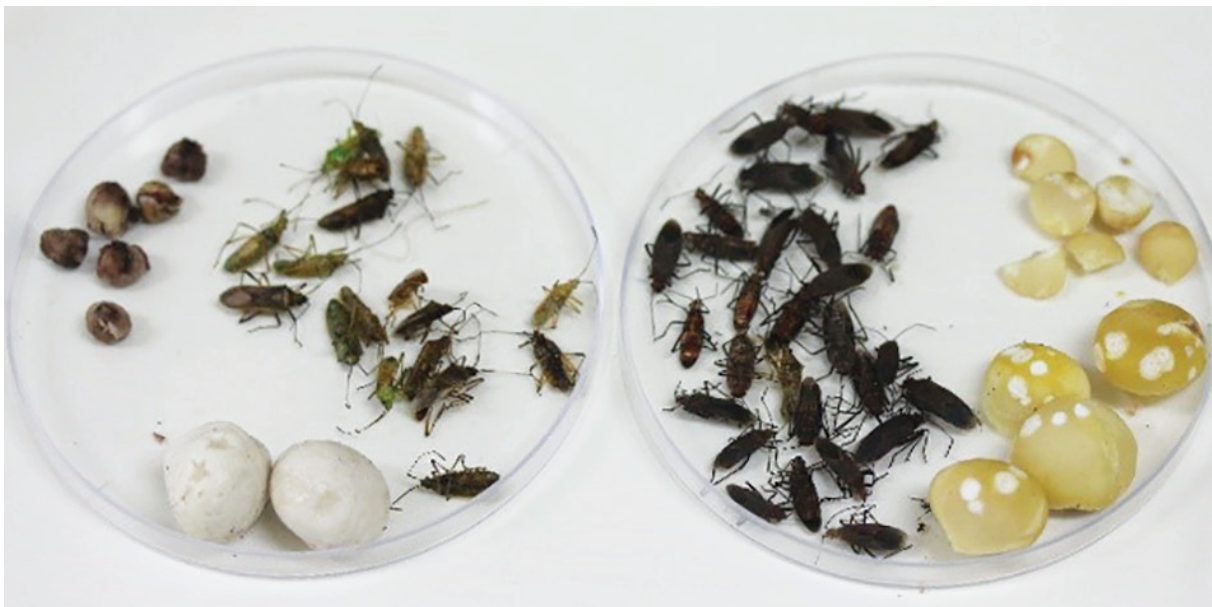


Figure 3. Fruit spotting feeding damage on the left and *Leptocoris* spp. damage on the right. Photo: Craig Maddox.

## Management

Monitoring is the key to controlling this pest. Potential pest pressures can be estimated by monitoring any surrounding host plants such as golden rain tree or foam bark. It is likely that in a dry year, *Leptocoris* spp. pressure will be high. Pest scouts who perform routine spotting bug checks will also be able to identify *Leptocoris* spp. within the crop (Figure 4). *Leptocoris* spp. congregate and are often found in localised areas within macadamia orchards initially, then they will spread from this location outwards. This behaviour can be exploited with spot spraying.

Pest consultants will also have control strategies and as they are working within the region your farm is located, will be able to alert growers about population pressures. As *Leptocoris* spp. populations increase within the orchard, so will the damage to the crop.

## Risk period

Table 1. The highest risk period for *Leptocoris* species bugs is from nut set to harvest.

Pre-flowering	Early flowering	Peak flowering	Nut set	Pea size nut and spring flush	Shell hardening to harvest	Harvest to pre-flower

## Cultural and physical

Ensure that tree height is suited to the capacity of your orchard sprayer. An inability to cover all of the crop will leave opportunities for *Leptocoris* spp. to continue damaging nuts; coverage is key. Ensure adequate plant density and allow good air movement throughout the canopy. Use golden rain trees and soap bark within the region as *Leptocoris* spp. monitoring tools. Where they are in high numbers in these trees, be aware of the stage of production of your macadamia crop and be prepared to control the infestation.

## Biological

No known effective biological controls have been found for *Leptocoris* spp. A parasitic fly (Figure 5) was isolated in the field by NSW DPI entomology staff but was not found in significant numbers and currently little is known about this parasite and its effectiveness.



Figure 4. *Leptocoris rufomarginatus* on a macadamia after shell hardening. Photo: Craig Maddox.



Figure 5. The parasitic fly of *Leptocoris* spp. identified in the field by NSW DPI entomology team. Photo: Craig Maddox.

## Chemical

There is currently no product registered for controlling *Leptocoris* spp. in macadamia. As it can coincide with FSB, it could be an off-target control, although, NSW DPI entomology staff have identified that beta-cyfluthrin (Bulldock®), which is often used for FSB, will not control *Leptocoris* spp. An effective control needs to be found and registered. In the interim, talk to your crop consultant regarding control strategies for your orchard.

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Further information regarding *Leptocoris* spp. identification, damage and control can be found in the [NSW DPI Macadamia Plant Protection Guide](#).

### Sightings, more pressure, or are we looking more intensely?

With many growers now using drop-sheeting for monitoring, especially late in the season, a more comprehensive picture of pest and beneficial population dynamics within an orchard is being revealed. Whether the findings of the wide array of pests (and often beneficials) are due to increased pressure or they have always been there but we just have not seen it, is unknown. As drop-sheeting is a relatively new practice in the macadamia industry, until there are data from multiple years, it will remain unknown.

Hint: Another good way of checking *Leptocoris* spp. populations in your region is to select a few host plants as monitoring tools. At NSW DPI, we use selective golden rain trees (*Koelreuteria elegans*) to give us an indication of the level of *Leptocoris* spp. pressure we might be expecting. This works in a similar way to using *Murraya paniculata* hedges for monitoring FSB movement.

If you have elevated insect damage levels in your consignment quality report from your processor, contact your processor representative and ask them if they can identify the pest(s) damage for you. This will then allow you to know which pest is causing the problem.

### Ticking all the boxes

Growers must ensure they give their crop the best possible chance to send high-quality nuts to the processors and consumers. Discuss with your pest consultant what they have found and the best strategies for control.

Ensure you have checked your spray coverage. Put targets in trees and measure the coverage to ensure you can achieve control. Sixty per cent of production is in the top 1/3 of the tree and most pests will predate within the top 1/3 of the canopy, making effective coverage critical.

As pesticides become more pest-specific, we need to ensure we use the right pesticide for the target pest. We also need to hit the pest at its most vulnerable stage. This reinforces the requirement for good monitoring.

As we see *Leptocoris* spp. range increase throughout production areas, having an effective product registered for its control.

### Summary points

- Monitor for all pests
- Identify what a low, medium and high population of *Leptocoris* spp. is if you are using drop-sheet monitoring
- Use indicators such as seasonal conditions (e.g. dry weather) and *Leptocoris* spp. populations on host plants to anticipate likely infestation levels
- Get to know what individual pest damage looks like so you can target the right pest with the right product at the right time
- Always calibrate spray equipment annually and ensure adequate coverage
- Employ the services of a skilled pest consultant. Their ability to determine the pest threats and levels and provide recommendations to ensure the correct timing of application is critical for successful pest control.

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