AVOCADO SPOTTING BUG ON NORFOLK ISLAND IDENTIFICATION AND MANAGEMENT

Background

The avocado spotting bug (*Amblypelta bilineata,* Hemiptera: Coreidae) (ASB) was officially reported on Norfolk Island in 2022. However, anecdotal evidence suggests it has been on Norfolk Island for a number of years. Furthermore, specimens of ASB in the Australian National Insect Collection were collected on Norfolk Island in 1984.

ASB occurs in Vanuatu and New Caledonia. It is considered the most significant pest of avocadoes in New Caledonia. Fruit spotting bugs (FSB) in the same genus (*A. lutescens* and *A. nitida*) are the most significant pests of tree crops in Far North Queensland. They are notoriously difficult to control. As there is little published data on ASB, this factsheet also draws on FSB control information that is likely to be applicable to ASB control.

Identification

Adult ASBs are approximately 12 millimetres long, with a brownish-green coloured body and a darker brown back. The darker patch on its back begins with a dark line across the widest part of the body between two lateral spines (Figure 1).

Figure 1. Adult Avocado spotting bug Credit ©D. Paulaud

ASB are shy and ready fliers, which often makes them difficult to see. Immature stages don't have wings. Mature nymphs can be identified by the two black spots in the middle of their back (Figure 2).

Figure 2. Early (top) and late (bottom) instars of avocado spotting bug ©IAC - S. Cazères; ©D.Paulaud

Biology and Lifecycle

ASB has a life cycle that comprises egg, five immature stages called nymphs, and adult. Only the adult stage has functioning wings. The life cycle takes about 5 – 8 weeks. There can be up to four generations per year, depending on the temperature. ASB has a wide host range that includes avocado, mango, lychee, custard apple, macadamia, citrus and Hawaiian holly.

Damage and symptoms

Adult and immature FSB feed by inserting their proboscis into the host plant tissue and drinking fluids. FSB secrete saliva which enable the bugs to extract nutrients from cells several millimetres from the puncture site. This results in an area of dead tissue and results in woody deposits and cracking in fruit. ASB has been recorded as feeding mostly on fruit but evidence from Norfolk Island suggests that it also feeds on flushing shoots of mango trees. Feeding on flushing shoots causes the flushing stem to split. Heavy infestations may cause shoot die-back. The most significant damage occurs when young fruit are attacked, often causing them to fall prematurely.

Monitoring and management

The most effective way to monitor ASB is by inspection of susceptible fruit trees. Look for the pest on avocado, macadamia and mango trees. Also look for symptoms such as puncture wounds weeping of sap on young fruit and shoots, dropped young fruit, and spotting and/or wilting of shoots (Figures 3 and 4).

Figure 3. Damage to avocado fruit caused by FSB feeding. Left: woody deposits inside fruit. Right: drying and cracking on outside of fruit. Credit ©DPI NSW

Figure 4. FSB damage on young avocado fruit. Credit ©DPI NSW

Chemical control. Commercial orchards use regular applications of broad-spectrum insecticides to reduce damage caused by FSB. There are currently two chemicals registered for FSB control in avocado and macadamias in Australia. Both are broad-spectrum insecticides, making them incompatible with Integrated Pest Management (IPM) practices. There are restrictions on how they may be used. See the Australian Pesticides and Veterinary Medicines Authority website for more details.

Biological Control. There are a number of predators that feed on FSB on mainland Australia, including predatory bugs, spiders, ants and lacewings. There are also many recorded FSB parasitoids (a type of parasite), including tachinid and phorid flies, as well as parasitoids of FSB eggs. The Australian native *Anastatus* wasp is available commercially in Queensland and gives good control in some situations. There is currently no information on Norfolk Island parasitoids that may be safely used as biocontrol agents.

Cultural Control. There is evidence that well-pruned macadamia orchards that allow light into the orchard canopy are less susceptible to FSB damage. This may be because the bugs prefer dense shady environments, the light allows more natural enemy-friendly understory, and/or the light allows better spray penetration into the canopy. There has been little research on cultural control of ASB. Planting flowering plants as an understory will encourage natural enemies and may help with control. Sweet alyssum, parsley, fennel, and yellow daisy are examples that already occur on Norfolk Island.

Resistant Varieties. Some varieties of macadamia and avocados are less sensitive to FSB attack in New South Wales and Queensland and can be used as part of IPM programs. Ask your supplier.

Kaolin clay. Application of kaolin clay is an IPM-friendly control option that has been shown to reduce ASB damage in avocados in New Caledonia. Further work is required to confirm its efficacy.

Future work

It is likely the populations of wild guava and Hawaiian holly on Norfolk Island provide alternative host plants for ASB. Determining the role that alternative hosts play in the population dynamics of ASB is essential to developing an IPM program on Norfolk Island. Work is also required to determine whether natural enemies are present on Norfolk Island that can be harnessed to help reduce ASB damage.

Australian Government

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