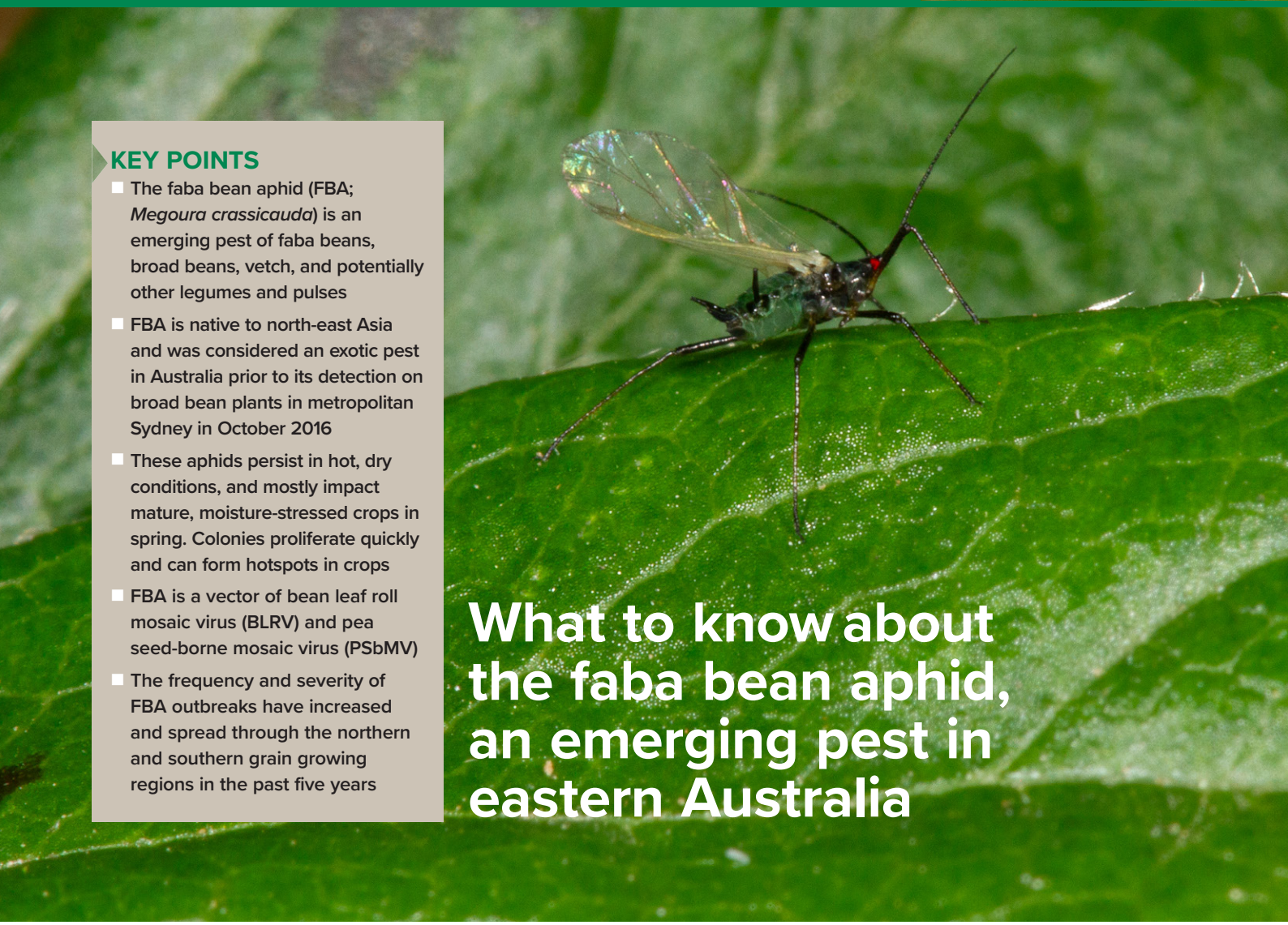
FABA BEAN APHID FACT SHEET

GRDC
GRAINS RESEARCH & DEVELOPMENT CORPORATION

NATIONAL
JUNE 2024



KEY POINTS

- The faba bean aphid (FBA; *Megoura crassicauda*) is an emerging pest of faba beans, broad beans, vetch, and potentially other legumes and pulses
- FBA is native to north-east Asia and was considered an exotic pest in Australia prior to its detection on broad bean plants in metropolitan Sydney in October 2016
- These aphids persist in hot, dry conditions, and mostly impact mature, moisture-stressed crops in spring. Colonies proliferate quickly and can form hotspots in crops
- FBA is a vector of bean leaf roll mosaic virus (BLRV) and pea seed-borne mosaic virus (PSbMV)
- The frequency and severity of FBA outbreaks have increased and spread through the northern and southern grain growing regions in the past five years

What to know about the faba bean aphid, an emerging pest in eastern Australia

Photo: Julia Severi, Cesar Australia

Identification

Adult, wingless faba bean aphids (FBA) are large (3.3 to 3.7 millimetres body length), broadly spindle-shaped and bright green with distinctive bright red eyes and a black head, prothorax, legs, siphunculi and cauda. Winged adults appear darker in colour, while newly hatched nymphs are paler in colour. Correctly identifying the aphid species (See Figure 1, page 2) can aid in making informed management decisions.

Other notable features of FBA include:

- irregular dark sclerites on the mesothorax;
- two dark lines at the seventh and eighth abdominal segments;
- small, dark plates where the siphunculi join the body; and
- antennae that are as long as or longer than the body, (See Figure 2, page 2).

Preferred hosts

The primary hosts are faba beans, broad beans and common vetch. Field peas, lentils and, to a lesser extent, lucerne and subclover can also act as hosts and aid survival and reproduction (Duric et al., 2022). Australian native vetches and vetch weeds are this aphid's suspected green bridge through the summer.

Symptoms of crop colonisation

FBA colonies can form very quickly in ideal conditions. Colonies tend to form dense hotspots in crops and, if feeding is intensive, hosts can show symptoms of necrosis, wilting, stunting and defoliation.

P Level 4, 4 National Circuit, Barton ACT 2600 | PO Box 5367, Kingston ACT 2604
T +61 2 6166 4500 **F** +61 2 6166 4599 **E** grdc@grdc.com.au

Heavily infested mature plants may also abort flowers and seed pods prematurely. The plants at the centre of the colonies seem to be the worst affected.

FBA colonies are often observed in spring, when host plants are flowering and forming seed pods. However, a 2022 study in north-west NSW found that aphid colonies can establish early in the autumn when faba bean plants are in their early to mid-vegetative growth stages (GRDC, 2023).

FBA produce a lot of honeydew (sugary liquid waste), which may suppress the plant's wound response and attract sooty mould and other fungal diseases.

On vetch, FBA almost exclusively feed on the stems of the plants, rarely feeding on the underside of the leaves. On faba beans and broad beans, FBA tend to feed along the upper stems of the plant or along the main veins of the undersides of the leaves. If flowers or seed pods are present, FBA may also feed on petals or along the seam of the pod. Although FBA can delay flower bud formation in narrow-leaf vetch, it should not reduce seed production (Kasai, 2016).

FBA is a vector of both bean leaf roll mosaic virus (BLRV) and pea seed-borne mosaic virus (PSbMV) (Duric et al., 2022).

Ecology and reproduction

The life cycle and behaviour of FBA in Australia exhibit characteristics typical of other aphids. FBA has been observed to reproduce asexually, with faba beans and vetch identified as common hosts. Field pea, lentil, lucerne and subclover also support the survival and reproduction of FBA, albeit to a lesser extent (Duric et al., 2022).

Overseas, FBA produced from either asexual or sexual modes of reproduction have a poor survival rate in extremely cold environments (Asai et al., 2002). There is a correlation between moisture and FBA infestations, with more densely infested crops reported to have been suffering from moisture stress.

Management options

Cultural control

Manage any green bridge and remove potential host plant sources from neighbouring paddocks to limit aphid survival and virus transmission. Early sowing may enable flowering, and pod set and fill before aphid populations peak; however, in some instances, it may also support the early establishment of FBA colonies at a critical period for virus transmission.

Sowing in stubble and selecting varieties with early vigour will deter the landing of migrating aphids and may avoid early infestation.

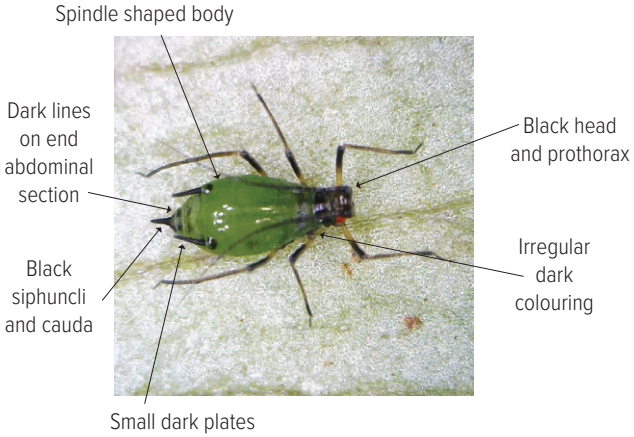
Biological control

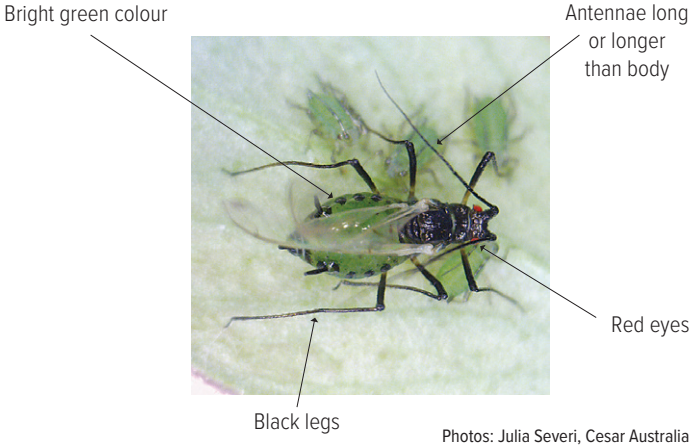
Common generalist aphid predators include hoverflies, ladybeetles and lacewings. Although evidence of beneficial invertebrates preying on faba bean aphids has yet to be found, the beneficial insects found in Australian pulse crops may evolve to prey on FBA. Maintaining an ecologically diverse crop environment is in the best interest of the cropping system in the long term.

Figure 1: Wingless adult, nymph and winged adult *Megoura crassicauda*.

Photo: Julia Severi, Cesar Australia

Figure 2: Left: Wingless adult. Right: Winged adult.





Photos: Julia Severi, Cesar Australia

Monitoring

Regular and season-long monitoring of FBA is essential for making informed management decisions. Ideally, monitoring for aphids should commence in mid-winter and continue throughout spring, as FBA populations can proliferate rapidly with rising temperatures.

It is recommended to monitor three to five locations within the crop, examining five plants at each spot. Keep detailed records and take photos of infestations to aid in identification. Monitoring should occur before any rain events or irrigation, occasionally in winter, with increasing frequency in late winter and early spring. On monitoring runs, ensure to start with clean crops and end with the crops that you know are infested, as aphids may travel with you to each successive crop that you monitor.

Yellow sticky traps can offer an early warning for when winged aphids typically invade crops.

These traps are durable and weather-resistant, featuring gridded squares that facilitate the tracking of relative numbers over time, which is especially beneficial in early spring.

Yellow sticky traps can be hung either on plants within the crop or from fence wires near the crop's edge. However, it is important to note that they only monitor winged aphids and do not provide information on established aphid populations within the crop.

Chemical control

Chemical control options are available but will not be required in many instances. Crops that are not moisture stressed have a greater ability to compensate for aphid damage and will generally be able to tolerate higher infestations before a yield loss occurs, compared to moisture-stressed plants.

Presently, five active ingredients are approved for aphid control in faba beans: imidacloprid, pirimicarb, pymetrozine, dimethoate and paraffinic oils. Of these, only pymetrozine is officially recognised for controlling aphids of the *Megoura* genus (permit no. PER85363), permitting minor use in faba beans until 31 August 2026. This permit is applicable in all states and territories except Victoria. In vetch crops, pirimicarb is the sole registered active ingredient for broad-spectrum aphid control. Economic thresholds for FBA have yet to be established.

Foliar sprays should be applied according to the label and should consider the presence of beneficial insects. To prevent insecticide resistance, repeated use of the same chemicals should be avoided.

Insecticide seed dressings may be beneficial in autumn, delaying early aphid establishment and potentially slowing the spread of viruses that aphids can carry, especially in years when high aphid populations are expected. Transmission of viruses in the early stages of crop growth is most damaging to productivity – monitoring post-emergence remains important.

Employing imidacloprid seed treatments may be valuable in preventing early infestations of FBA and effectively controlling their populations during the initial stages of plant growth. Although seed treatments do not prevent viral infection, they can help mitigate the spread of non-persistently transmitted viruses within the crop.

FBA distribution in Australia

FBA is considered established in NSW and Victoria. Its current distribution spans from south-eastern Queensland across New South Wales, and into the Mallee, Wimmera and northern high-rainfall regions of Victoria.

FBA has also been observed in both central and south-eastern Victoria, in suburban gardens.

Although not yet considered established in Tasmania, it has been observed there. No observations of FBA have been recorded in SA or WA.

If you suspect FBA in areas it is not known to occur, call the Emergency Plant Pest Hotline (1800 084 881), which will direct you to your relevant state department. Reporting observations assists with tracking changes in distribution.

Figure 3: FBA colonies on faba bean plants.

Photo: Stephanie Ann Veskoukis, Cesar Australia

ACKNOWLEDGEMENTS

Stephanie Ann Veskoukis
Julia Severi
Lizzy Lowe
Paul Umina, Cesar Australia
Zorica Duric, NSW DPI

MORE INFORMATION

VICTORIA
Paul Umina
Cesar Australia and The University of Melbourne
03 9349 4723
pumina@cesaraustralia.com

NSW
Zorica Duric
NSW Department of Primary Industries
+61 2 6763 1154
zorica.duric@dpi.nsw.gov.au

GRDC RESEARCH CODE

CES2303-002RTX

REFERENCES

Asai, M., Yoshida, H., Honda, K., and Tsumuki, H. (2002). Cold hardiness of three aphid species, *Acyrthosiphon pisum*, *Megoura crassicauda* and *Aulacorthum solani* (Hemiptera: Aphididae). *Applied Entomology and Zoology*, *37*(3): 341–346.

Duric, Z., George, J. and van Leur, J. (2022). *Megoura crassicauda* Mordvilko (Hemiptera: Aphididae), a potential threat to Faba bean industry in New South Wales. *General and Applied Entomology*, *50*: 11–17.

GRDC. (2023). Review of management strategies of faba bean aphid. *GRDC Update Paper*, grdc.com.au/resources-and-publications/grdc-update-papers/tab-content/grdc-update-papers/2023/02/aphids-in-faba-beans-an-update-with-a-review-of-management-strategies-of-faba-bean-aphid

Kasai A. (2016). Vetch aphid, *Megoura crassicauda* (Hemiptera: Aphididae), parasitism does not reduce the bean production of narrow-leaved vetch, *Vicia sativa* subsp. *nigra* (Fabaceae), *Ecological Research 31*, 189–194.

USEFUL RESOURCES

Beneficials Chemical Toxicity Table cesaraustralia.com/resources/beneficials-toxicity-table

Beneficial Insects – The Back Pocket Guide (Southern and Western Regions) grdc.com.au/BPG-BeneficialInsectsSW

Cesar Australia (PestFacts) cesaraustralia.com/pestfacts

Cesar Australia PestFacts article cesaraustralia.com/pestfacts/faba-bean-aphid-megoura-crassicauda-victoria-nsw

Integrated pest management and pest suppressive landscapes with Phil Bowden youtu.be/xkknl35m3GY

iSPY: Insect Identification for Broadacre Crops and Pastures Guide grdc.com.au//I-SPY

GRDC
GRAINS RESEARCH & DEVELOPMENT CORPORATION

Produced by www.coretext.com.au