



Aphids in citrus

By Sonya Broughton, Entomologist

Pest species occurring in Western Australian citrus

Aphids are pear shaped, soft-bodied insects. Worldwide, 16 species of aphids are reported to feed regularly on citrus. Of these, four aphid species are recorded in Australia with only two species occurring in Western Australia: black citrus aphid, *Toxoptera citricida* (Kirkaldy) and spiraea aphid, *Aphis spiraeicola* Patch. The two species can be distinguished by colour: spiraea aphids are yellow whereas black citrus aphids range in colour from brown to black (Figures 2 and 3).

Damage

- All aphids have a piercing-sucking mouthpart that they insert into the plant tissue to feed on leaves, green shoots and flowers. Leaves may curl as a result of feeding damage.
- Large quantities of honeydew are also produced. Leaves and fruit often turn black with the growth of the sooty mould fungus.
- Aphids are not usually a problem in citrus, except on young trees.
- Overseas, black citrus aphid has been associated with the spread of citrus tristeza virus which causes dieback.

Life cycle

- Females do not need to mate to produce young and no eggs are laid. Live young are produced through a process termed parthenogenesis.
- Adult females can be wingless or winged.
- The presence of winged forms indicate that the food quality has declined or that there is overcrowding

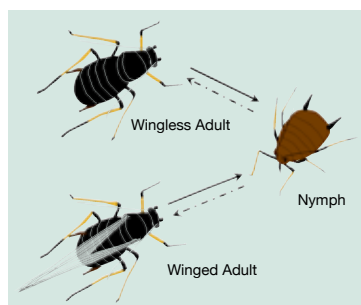


Figure 1. Aphid life cycle

Black citrus aphid (BCA) (also called brown citrus aphid), *Toxoptera citricida*

Distribution and description: found in all Western Australian citrus growing areas.

- Nymph: pear shaped, red-brown, brown to black, 1-2 mm long (Figure 3).

- Adult: shiny black, 2 mm long. May be winged or wingless (Figure 3).

Lifecycle: An entire generation can develop in one week.

- Nymphs mature in 6-8 days at temperatures of 20 degrees Celcius or above. A single aphid can produce a population of over 4400 in three weeks in the absence of natural enemies.
- 25-30 generations per year.



Figure 2. Aphid colonies on flushing growth. From left: black citrus aphid, right *Aphis spiraeicola*. Photos D. Cousins

Monitoring

- Monitor for aphids on young trees from February to March and then again from September to December.

Action level

- 25 per cent or more of leaf flushes infested with aphids.



Figure 3. Black citrus aphid, *Toxoptera citricida*. From left: nymph, right winged adult. Photos S. Broughton

Important Disclaimer

The Chief Executive Officer of the Department of Agriculture and Food and the State of Western Australia accept no liability whatsoever by reason of negligence or otherwise arising from the use or release of this information or any part of it.



Figure 4. *Aphis spiraecola* nymph. Photo D. Cousins

Spiraea aphid, *Aphis spiraecola*

Distribution and description: found on only two occasions at one orchard in Harvey and regarded to be rare in WA citrus.

- Nymph: pear shaped, apple green to bright yellow, 2 mm long (Figure 4).
- Adult: apple green, 2 mm long. May be winged or wingless.

Life cycle: an entire generation can develop in one week, with females producing 60 young each.

- There can be up to 25 generations per year.

Monitoring

- Monitor for aphids on young trees from February to March and then September to December.

Action level

- 25 per cent or more of leaf flushes.



Figure 5. *Aphidius*, a wasp parasite of aphids. Parasitised aphids appear bronzed and bloated. Photo S. Broughton

Management

Chemical control

- Natural enemies normally keep aphid populations under control and chemical control is rarely required. Use a specific aphicide or horticultural spray oil.
- Always check the label before spraying, as not all oils are registered for use in citrus. Oils can also cause phytotoxic damage if not used correctly.

Biological control

- Predators, parasites, and fungal diseases attack aphids and occur naturally in the orchard. The honeydew produced by the aphids provides a good food source for many natural enemies.

- Aphid parasites include the wasp genera *Aphidius* and *Aphelinus* (Figure 5). Neither is available commercially. The female wasps lay their eggs individually inside the lower part of the abdomen of young nymphs. The parasitised nymphs appear bloated and bronze in colour.
- Aphid predators include hoverfly larvae (syrphids), ladybird beetles and lacewing larvae (Figures 6-8).



Figure 6. Ladybird larva eating aphids. Photo S. Broughton



Figure 7. Hoverfly larva attacking an aphid. Photo S. Broughton



Figure 8. Green lacewing larva feeding on a brown citrus aphid nymph. The prey remains are put onto its back after it has finished feeding. Photo S. Broughton

Acknowledgements

Thresholds used in this Farmnote were taken from *Citrus pests and their natural enemies: integrated pest management in Australia*, edited by D. Smith, G.A. Beattie and R.H. Broadley, Queensland Department of Primary Industries, 1997.

Further reading

Citrus pests and their natural enemies: integrated pest management in Australia, D. Smith, G.A. Beattie & R.H. Broadley (eds), Queensland Department of Primary Industries, 1997.