

CROP APHIDS

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THE BACK POCKET GUIDE

INTRODUCTION

Aphids are a group of soft-bodied bugs commonly found in a wide range of crops and pastures. Adults and nymphs suck out the plant sap and in early infestations this can remove nutrients from the young plants causing stunting and other symptoms. In heavy infestations secretion of honeydew can also cause secondary fungal growth that inhibits photosynthesis and decreases plant growth. Many aphid species also transmit viruses through their sap-sucking mouthparts, leading to the largest impacts on crop yields.

In Australia, most aphids only produce females. This means insecticide resistance can quickly establish in aphid populations as genes are passed clonally through successive generations. Identification of crop aphids is very important when making control decisions. Distinguishing between aphids can be easy in the apterous (non-winged) form but challenging with alate (winged) aphids. This guide is designed to assist growers and agronomists in identifying the most commonly observed aphids throughout Australia's cropping regions.

Wingless aphid

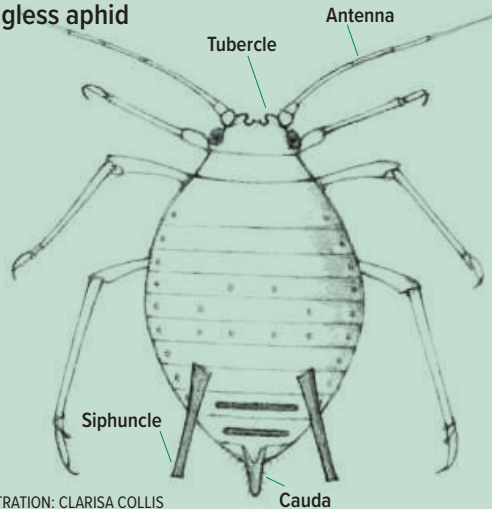


ILLUSTRATION: CLARISA COLLIS



Russian wheat aphid (*Diuraphis noxia*)

Description:

- Adults are 2 mm long and have an elongated body.
- They are pale yellowish-green, with a fine waxy coating.
- Presence of a double-tailed cauda (see page 2).
- Very short siphuncles (see page 2), which initially appear absent to the naked eye.

Crops attacked and damage:

- Predominantly wheat and barley. Will also feed on oats, rye, triticale and rice.
- Typically feed at the base and sheath of younger leaves and within leaves curled by their feeding.
- Inject salivary toxins into the plant during feeding, which retards growth and, with heavy infestations, kills the plant.
 - Affected plants show whitish, yellow and red leaf markings and rolling leaves.
 - Does not seem to be a major vector of cereal viruses such as barley yellow dwarf virus (BYDV).

Confused with:

- Rose-grain aphid.



Oat aphid (*Rhopalosiphum padi*)

Description:

- Adults are 2 mm long and have a pear-shaped body.
- Adults and nymphs have an olive-green to greenish-black body, with a dark rust-red patch on the tip of the abdomen.
- Colonies generally develop on the lower portion of the plant at the base.

Crops attacked and damage:

- Predominantly oats, wheat and barley but can occur on corn and all cereals and grasses.
- Early infestations can cause reduced tillering, stunting and early leaf senescence.
- Later infestations on leaf sheaths and flag leaves between booting and the milky dough stages can also result in yield losses.
- After grain fill aphid feeding has minimal impact on yield.
- It is a vector for many important plant viruses such as BYDV.

Confused with:

- Corn aphid and rose-grain aphid.



Corn aphid (*Rhopalosiphum maidis*)

Description:

- Adults are 2 mm long and have an oblong-shaped body.
- Adults and nymphs have a light-green to dark-green body, with two darker patches at the base of each siphuncle.
- The legs and antennae are typically darker in colour.
- Colonies generally develop within the furled emerging leaves of tillers and can be difficult to see.

Crops attacked and damage:

- While they are most likely to be found in barley crops, corn aphids also occur in wheat as well as sorghum, maize and many grasses.
- Early infestations can cause reduced tillering, stunting and early leaf senescence.
- Later infestations on leaf sheaths and flag leaves between booting and the milky dough stages can also result in yield losses.
- It is a vector for many important plant viruses such as BYDV.

Confused with:

- Oat aphid and rose-grain aphid.



Wingless and winged aphid

PHOTOS: cesar



Rose-grain aphid (*Metopolophium dirhodum*)

Description:

- Adults grow up to 3 mm long and have a green to yellow-green body with a darker stripe down the middle of the back.
- Long antennae that reach beyond the base of the siphunculi and have dark tips.
- Nymphs are similar to wingless adults but smaller in size.

Crops attacked and damage:

- Cereals and grasses including barley, oats, wheat, and triticale.
- Nymphs will cluster on leaves and form heavy infestations causing yellowing and plants to appear sickly.
- It is a vector for the important plant virus BYDV.

Confused with:

- Corn aphid, oat aphid and pea aphid.



Green peach aphid (*Myzus persicae*)

Description:

- Adults grow up to 3 mm long, are oval shaped and vary in colour from shiny pale yellow, green, orange to pink/red.
- Small tubercles at the junction of the antennae and head that are turned inwards.
- Siphuncules are longer than cabbage and turnip aphids.
- Winged adults have a dark patch on the abdomen under the wings.
- Nymphs are similar to wingless adults, but smaller in size.

Crops attacked and damage:

- Wide host range includes canola, lupins and other pulse crops.
- Common in many horticultural crops and cruciferous vegetables.
- Weed hosts include capeweed, wild radish, wild turnip and other cruciferous plants.
- Heavy infestations will cause leaf distortion, wilting of cotyledons, leaf senescence and seedling death.
- It is a vector for many important plant viruses such as beet western yellows virus (BWYV), cucumber mosaic virus (CMV) and pea seed-borne mosaic virus (PSbMV).

Confused with:

- Turnip aphid and bluegreen aphid.



Wingless and winged aphid

PHOTOS: cesar



Cabbage aphid (*Brevicoryne brassicae*)

Description:

- Adults grow up to 3 mm long and have a dull grey-green coloured body.
- Form dense colonies that appear bluish-grey and are covered with a fine, whitish powder.
- Nymphs are similar to adults but smaller in size and greenish in colour.
- Tend to colonise single plants or groups of plants in 'hot spots' within a crop.
- Appear in large numbers, typically in spring.

Crops attacked and damage:

- Predominantly canola, but also other cruciferous forage crops.
- Weed hosts include mustard, wild radish, wild turnip and other cruciferous plants.
- Adults and nymphs suck sap from plants and high numbers can result in yield loss by reducing pod set, pod fill and grain quality.
 - Canola is particularly susceptible to aphid damage during bud formation through to late flowering.
 - It is a vector for many important plant viruses such as BWYV and CMV.

Confused with:

- Turnip aphid and green peach aphid.



Wingless and winged aphid

PHOTOS: cesar



Turnip aphid (*Lipaphis pseudobrassicae*)

Description:

- Adults grow up to 3 mm long and have an olive to greyish-green body.
- Dark bars on the abdomen of non-winged adults.
- Form dense colonies that are covered with a fine wax (but not as obvious as cabbage aphid).
- Appear in large numbers, typically in spring.
- Quite susceptible to cold weather conditions.

Crops attacked and damage:

- Predominantly canola, but also other cruciferous forage crops.
- Weed hosts include wild radish, wild turnip and other cruciferous plants.
- Adults and nymphs suck sap from plants and high numbers can result in yield loss by reducing pod set, pod fill and grain quality.
- Canola is particularly susceptible to aphid damage during bud formation through to late flowering.
- It is a vector for many important plant viruses such as turnip mosaic virus (TuMV) and CMV.

Confused with:

- Cabbage aphid and green peach aphid.



Wingless and winged aphid

PHOTOS: cesar



Bluegreen aphid (*Acyrtosiphon kondoi*)

Description:

- Adults grow up to 3 mm long and vary in colour from green to grey or bluish-green.
- Long antennae.
- Very long siphuncules (relative to pea aphid).
- Feed on the upper leaves, stems and terminal buds of host plants.
- Most common in spring, but are also active in autumn and winter.

Crops attacked and damage:

- Lupins, lucerne, annual medics and subterranean clover pastures.
- Heavy infestations can cause damage to plants by direct removal of nutrients, deforming leaves and causing plants to wilt and become yellow.
- In lucerne and medics heavy infestations cause stunted growth, leaf curling and leaf drop; dry matter production can be reduced.
- It is a vector for many important plant viruses such as bean yellow mosaic virus (BYMV) and CMV.

Confused with:

- Green peach aphid and pea aphid.



Wingless and winged aphid

PHOTOS: cesar AND DAFWA



Cowpea aphid (*Aphis craccivora*)

Description:

- Adults are 2 mm long and shiny black in colour.
- Nymphs are dull grey and lightly dusted with wax.
- All stages have white and black-coloured legs.
- They tend to colonise single plants or groups of plants in 'hot spots' within a crop.
- Able to tolerate warm, dry weather and can cause severe damage to water-stressed plants.

Crops attacked and damage:

- Favours legume hosts; commonly found on faba beans, lentils, medics, lucerne, clover and lupins.
- Infestations usually start on the growing tips and spread down the stem.
 - Initial signs of damage include yellowing or whitening of leaf veins, with heavy colonisation causing rapid wilting of leaves and eventually plant death.
 - Other symptoms include leaf bunching and stem twisting.
 - It is a vector for many important viruses including CMV, BYMV, alfalfa mosaic virus (AMV) and PSbMV.

Confused with:

- Oat aphid.



Bean aphid (*Megoura crassicauda*)

Description:

- Adults grow up to 3 mm long and have a dark-green body.
- Adults have black siphunculi, cauda, head, prothorax and legs.
- Nymphs are smaller in size and with less black pigmentation.

Crops attacked and damage:

- Host range is mainly restricted to species in the *Vicia* genus, including broad beans, faba beans and some vetches.
- Aphids can infest whole stems and pods, and tend to colonise single plants.

Confused with:

- Cowpea aphid.



Wingless and winged aphid

PHOTOS: cesar



Spotted alfalfa aphid (*Therioaphis trifolii*)

Description:

- Adults grow up to 2 mm long and have a pale yellow-green body with six or more rows of tiny spots across the abdomen.
- Two biotypes present, each attacking different hosts, but morphologically indistinguishable.
- Nymphs are similar to wingless adults but smaller in size.

Crops attacked and damage:

- Lucerne, clover, medics and other legumes.
- Infestations usually start at the base of the plant and spread up the plant.
- Initial signs of damage include yellowing or whitening of leaf veins and plant wilting.
- It is a vector for many important plant viruses such as AMV and BYMV.

Confused with:

- Bluegreen aphid and green peach aphid.





Soybean aphid

(*Aphis glycine*)

Description:

- Adults grow up to 2 mm long and have a pale yellow-green body.
- Black siphunculi.
- Nymphs are similar to wingless adults but smaller in size.

Crops attacked and damage:

- Soybean and other *Glycine* species.
- Peak infestation occurs at flowering and pod set.
- It is a vector for many important plant viruses such as soybean mosaic virus (SMV), AMV and BYMV.

Confused with:

- Bluegreen aphid and green peach aphid.

Wingless

PHOTO: PETER DESBOROUGH



Pea aphid (*Acyrtosiphon pisum*)

Description:

- Large aphid, with adults growing up to 4 mm long.
- Body colour varies from shiny pale-yellow green to green.
- Red eyes, blackish knee joints and dark bands on antennal segments.
- Long siphunculi and long cauda (tail).
- Nymphs are similar to wingless adults, but smaller in size.

Crops attacked and damage:

- Faba beans, lucerne, chickpeas, vetch, clover and other leguminous grasses.
- Heavy infestations will cause leaf deformation, wilting and yellowing, stunting, leaf curling and leaf drop, and reduced dry matter.
- It is a vector for many important plant viruses such as CMV, BYMV, AMV and PSbMV.

Confused with:

- Green peach aphid and bluegreen aphid.

APHID MONITORING

Monitoring involves the assessment of the health of a crop, the presence of pests and gauging their population levels at regular intervals. This is a critical component of integrated pest management as the identification of pest (and beneficial) insects, and their relative densities, is essential to determine what control decisions need to be undertaken.

Aphid infestations typically occur in autumn and spring. Winged aphids generally move into paddocks from roadside and fenceline weeds.



Damage will typically first appear on crop edges, so monitor these areas carefully. Visually inspect the underside of plant leaves and new growth (buds and flowering heads), as this is where most aphids colonise.

Aphid distribution may be patchy so monitoring should include at least five sampling points over the paddock. Inspect at least 20 plants at each sampling point. Monitor regularly and thoroughly as numbers can build rapidly within weeks.

Aphid infestations can be reduced by heavy rain events or sustained frosts. If heavy rain occurs after a decision to spray has been made, but before the insecticide has been applied, check the crop again to determine if treatment is still required.

APHID MANAGEMENT



Control summer and autumn weeds, particularly wild radish and turnip, volunteer cereals and grasses, and broadleaf weeds to reduce the availability of alternate hosts between growing seasons.

Several insecticides are registered for aphid control but should only be applied if deemed necessary. Unwarranted spraying increases the risk of insecticide resistance, particularly as the green peach aphid in many regions of Australia has developed widespread resistance to pyrethroids, organophosphates and carbamates (e.g. pirimicarb).

Growers are urged to reduce the risk of insecticide resistance by:

- rotating insecticides from different chemical groups;
- avoiding the use of broad-spectrum 'insurance' sprays, and applying insecticides only after monitoring;
- distinguishing between species, particularly winged forms; and
- incorporating non-chemical control methods.

Parasitoid wasps, hoverflies, lacewing, ladybird beetles, damsel bugs and aphid fungal disease are effective natural enemies that can suppress low to moderate aphid numbers. Encourage beneficial insect activity by using 'softer' chemicals and biopesticides.



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■ *Apps Insect ID: The Ute Guide* Available as an Android™ app on Google Play and for the iPhone and iPad on the App Store – www.grdc.com.au/Resources/Apps

■ Plant Health Australia, www.planthealthaustralia.com.au/pests/russian-wheat-aphid
Northern, Southern and Western Regions for identifying beneficial insects
Copies available from Ground Cover Direct (see left)

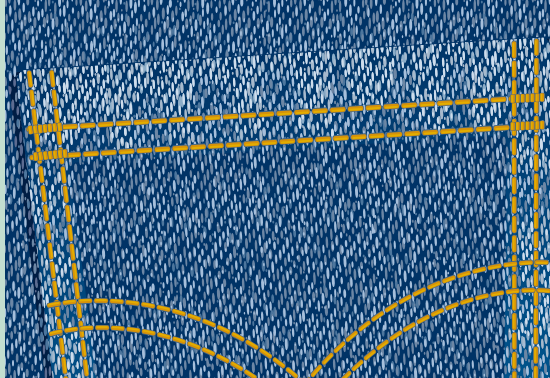
■ *Crop Insects: The Ute Guide* (Northern Region Grain Belt edition) Order code: GRDC009

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