

Insect pests of cucurbit vegetables

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Cucurbits include watermelons, cantaloupes, cucumbers, zucchini, pumpkins, squash, bitter melons, gourds, and hairy melons. They are grown in most parts of NSW in frost-free times. Cucurbits are warm weather crops which are sown, grown and harvested over spring, summer and autumn. Insect pests can do damage wherever cucurbits are grown. Some insect pests are specific to cucurbits, but most are pests of other crops as well. None of the following pests need routine control measures, but they do need to be regularly monitored and treated when the pest becomes a problem.

Aphids

There are a number of aphid species that attack cucurbits including melon aphid *Aphis gossypii*, cowpea aphid *Aphis craccivora*, potato aphid *Macrosiphum euphorbiae* and green peach aphid *Myzus persicae*.

Aphids usually produce live young, but can sometimes lay eggs.



Figure 1. Melon aphid

The **melon aphid** (also known as cotton aphid) is the most important aphid pest, with the other aphid species usually only a minor problem. Melon aphids are usually more abundant in spring and autumn and they prefer watermelons, cantaloupes, cucumbers and pumpkins. Cotton and some ornamentals are also hosts.

The melon aphid is small and both the winged and wingless forms are found together. The winged form varies in colour from green to almost black, with the darker forms being the most common. The wings are held roof-like over the abdomen while at rest. The wingless forms are uniform light to dark green. The antennae and cornicles are shorter than they are in the winged form.

The melon aphid can be distinguished from other aphids by the colour of its cornicles, which are always black, while the cauda is pale.



Figure 2. Cowpea aphid

The **cowpea aphid** adult has a shiny, dark body with dark red eyes. Cowpea aphids may be winged or wingless and are often seen thickly clustered on the terminal parts of stems and shoots.

The **potato aphid** is usually wingless but can be found with wings. They vary in colour from pink with a yellowish head and a yellowish-pink thorax to yellowish or light green with long slender cornicles.



Figure 3. Potato aphid

The **green peach aphid** is light to dark green, or sometimes pink, with red eyes. It has a small body with three dark lines running down the back. Winged females have a central black patch on the upper abdomen and a dark head and thorax. Cornicles have distinct dark tips.



Figure 4. Winged and wingless green peach aphid

Aphids usually feed on the underside of leaves, but can attack the soft growing tips. Large populations in a seedling crop can cause leaves to curl and premature death of the leaf or growing tip. In older crops vine development is retarded and yield can be reduced. Aphids leave a sticky substance called honeydew on the leaves and growing tips. This honeydew can promote the growth of sooty mould, which reduces plant vigour. The more important damage caused by aphids is that they can transmit damaging viral diseases when they feed. The melon aphid is the main vector of the mosaic virus while the other aphid species are minor vectors.

Cutworm

Cutworms (*Agrotis* spp.) are minor and infrequent pests of cucurbits. They look similar to heliothis and cluster caterpillars. The bogong moth is the adult form of a cutworm. Its forewings are patterned with a row of three light spots, contrasting with the dark background. The hind wings are paler in colour.

Bogong moths lay their eggs in clusters on cucurbit leaves or weeds close to the soil.



Figure 5. Bogong moth

Caterpillars can range from 2.5–5 cm long and can vary a great deal in colour. They are usually a dark grey-brown and curl into a distinct 'C' shape when disturbed.



Figure 6. Cutworm larva

Twenty-eight spotted ladybird beetle (Cucurbit or Leaf eating ladybird beetle)

Twenty-eight spotted ladybird beetles, *Henosepilachna vigintioctopunctata*, are common pests of cucurbits in NSW. When populations are high they will feed on other host crops, including solanaceous crops such as potatoes. They look similar to other ladybird beetles and are a major pest of cucurbits. Eggs are laid in clusters, generally on the underside of leaves. Eggs appear tall, pointed and yellow in colour, each about 2 mm high and 1 mm across. The larvae are oval and yellow with sparse, stiff, dark hairs. The adult twenty-eight spotted ladybird beetles are relatively larger than other ladybird species. Adult beetles are orange in colour with 28 black spots on their back.

There are 13 black spots on each wing cover and two spots on the thorax.



Figure 7. Twenty-eight spotted ladybird: eggs, larvae and adult

The twenty-eight spotted ladybird beetles, which feed on plant material, are sometimes confused with other ladybird beetles which act as beneficial insects and feed on other insect pests. The twenty-eight spotted ladybird beetles leave very characteristic 'windowing' damage to leaves. The green tissue between the veins is eaten by adults feeding on the upper side and the larvae feeding on the underside of leaves. Larvae are common and also feed on leaves, flowers and the rind of the fruit.

Pumpkin beetles

There are two types of pumpkin beetles: the banded pumpkin beetle *Aulacophora hilaris* and the plain pumpkin beetle *Aulacophora abdominalis*. Both species attack all commercial cucurbit crops. They are strong fliers, very active in hot weather and take flight quickly when disturbed.

Adults lay their eggs in small clusters on dead leaves or moist soil under the plants. Larvae are creamy-white in colour and about 10–12 mm long. Larvae can be found feeding on roots and the underside of fruit. Adults are about 6–7 mm long with six legs. The plain pumpkin beetle is uniformly orange in colour, while the banded pumpkin beetle is also orange and has four very distinct large black spots on its back (one on each corner of the wing cover).

Pumpkin beetles tend to cluster together and can quickly defoliate and kill seedlings and small plants. Older plants can tolerate a greater amount of feeding before yields start to decline. Flowers are destroyed and feeding on the skin of fruit causes blemishes. Larvae feed on roots, but damage is minimal and usually plants are not affected.



Figure 8. Banded pumpkin beetles (photo courtesy Peter Deuter, QDPI&F)



Figure 9. Plain pumpkin beetle (photo courtesy of Haidee Brown, Entomology Section, Diagnostic Services, NT Department of RDPIFR)

Mites

There are a number of mite species that attack cucurbits, including two-spotted (spider) mite *Tetranychus urticae*, bean spider mite *Tetranychus ludeni*, red legged earth mite *Halotydeus destructor*, broad mite *Polyphagotarsonemus latus*, blue oat mite *Penthaleus major* and clover mite *Bryobia cristata*. Two-spotted mites are the most important mite pest, with the other species being of less importance. All species lay minute, globular, and almost transparent eggs. Some can have a yellowish-white tinge and others a reddish tinge.

The larvae have six legs and are pale yellowish-white, minute and oval. The larvae moult to become eight-legged nymphs. The adults of all species are tiny, with eight legs. The two-spotted mite is minute and barely visible to the naked eye. It is about 0.3–0.5 mm long and appears yellowish-green with two pronounced dark spots.



Figure 10. Two-spotted mites

Mites feed on the underside of leaves. Damage is first noticed on the upper side of leaves as pale or bronzed areas along the midrib and veins of leaves. Heavily infested leaves may become bronzed and shrivelled. Severe infestations can cause premature leaf fall. Damaging populations develop quickly in warm, dry conditions. Dusty conditions can also favour early infestations. Some mites cover plants in webbing for protection from predators while they feed and shelter.

Thrips

There are a number of thrips species that attack cucurbits including melon thrips *Thrips palmi*, onion thrips *Thrips tabaci*, plague thrips *Thrips imaginis* and western flower thrips *Frankliniella occidentalis*. Thrips are minor and frequent pests of cucurbits in temperate regions, but major and regular pests in tropical and subtropical zones. Eggs are laid into actively growing leaf tissue, developing flower buds and fruit.



Figure 11. Melon thrips

After hatching, the wingless larvae are white or yellowish in colour with an elongate body about 0.5–1 mm long. The adults are also torpedo shaped and grow to about 1.0–1.5 mm long. They have two pairs of wings that have fine hairs around the margins.



Figure 12. Onion thrips

Thrips vary in colour and size depending on species.



Figure 13. Plague thrips

Thrips can be found on all the above-ground parts of a plant and are commonly seen in flowers and on the back of leaves. Thrips feeding damage appears as silvering and flecking on the leaves of seedlings. Heavily infested plants are characterised by a silvered or bronzed appearance of the leaves, stunted leaves and terminal shoots, and scarred, deformed fruits.



Figure 14. Western flower thrips

If predator numbers (such as predatory mites) are high enough, they can control thrips. If insecticides are used, care should be taken as the overuse of insecticides has, in the past, increased the problem; probably by killing the natural enemies.

Heliothis

Heliothis are a minor and occasional pest of cucurbits in most areas of NSW, but can be a major pest in some tropical and subtropical regions of Australia. There are two species that attack

cucurbits, including the corn earworm *Helicoverpa armigera* and native budworm *Helicoverpa punctigera*.



Figure 15. *Heliiothis* moth

The colour of the adult moth can vary and looks similar to a bogong moth. Its forewings are buff to reddish brown with dark markings. The hindwings are pale grey with a dark band along the lower edge. Newly emerged larvae are 1.5 mm long, cream in colour, hairy and have a dark brown head. Older larvae can be green, pink, buff, or brown. The larvae have distinct lateral (side) stripes, and have visible hairs. Fully mature larvae measure about 40 mm.



Figure 16. *Heliiothis* grub

Heliiothis larvae chew on the foliage, flowers or fruit of cucurbits. The feeding damage on fruit results in surface tunnelling on skin usually where the fruit is closest to the ground. In cantaloupes the netting is damaged. Damaged flowers will affect the pollination processes and fruit set will be impaired. When feeding they like to be protected and tend to be found in hidden areas of foliage and covered areas of fruit.

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