

## Melon aphid (038)

### Common Name

Melon or cotton aphid. There are many aphids attacking a wide range of crops; *Aphis gossypii*, described here, is common in Pacific island countries.

### Scientific Name

*Aphis gossypii*

### Distribution

Asia, Africa, North, South and Central America, the Caribbean, Europe, Oceania. *Aphis gossypii* is recorded from Australia, American Samoa, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Federated States of Micronesia, New Caledonia, New Zealand, Niue, Northern Mariana Islands, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, and Wallis & Futuna.

### Hosts

Aphids occur on many crops, ornamentals and weeds; they are common on cucurbits (cucumber, melon, watermelon) and taro. They are also found on banana, bean, capsicum, chilli, citrus and eggplant.

### Symptoms & Life Cycle

Males are rare or not produced in tropical countries. Eggs are not laid. Females give birth to living young without mating. The young are adult in 4-7 days, after moulting four times. They then produce four to six young a day, up to 50 each. Because of this method of reproduction, populations grow rapidly, with many generations in a year.

Spread occurs by the winged forms of the aphid, and also long distance in winds. Spread also occurs associated with the international movement of plants and plant parts for food and propagation.

### Impact

Aphids cause direct and indirect damage:

- Direct damage: The damage is caused when aphids feed. Aphids have fine, needle-like mouthparts and they use them to suck sap from plants. When aphids occur in large numbers, young leaves become curled, wrinkled, cup-shaped and smaller than normal (Photo 2). Leaves may wilt, dry up and die early. When populations are high, plants, especially seedlings, become stunted.
- Indirect damage:
  - Sooty moulds grow on 'honeydew' - a sweet, sticky liquid produced by aphids as they feed - leaves go black and plant growth is poor (**see Fact Sheet no. 51**).
  - Aphids spread viruses on their mouthparts, such as the viruses of cucurbits - *Cucumber mosaic virus*, *Papaya ringspot virus* (watermelon strain) and *Zucchini yellow mosaic virus*; taro - *Dasheen mosaic virus*; and beans - *Bean common mosaic virus*.

### Detection & inspection

Look for groups of round, green (some may be light green, others dark green, almost black) insects on the underside of young leaves, on shoots and buds (Photo 1). They are about 1 mm long, with long antennae about the length of the body, and two tubes at the rear called 'cornicles'. Sometimes, winged forms occur, up to 2 mm long with prominent veins (Photo 3). It is difficult to see the detail of the body with the naked eye. Look for ants, they are often present, tending the aphids for their honeydew.



Photo 1. Aphids on the underside of a taro leaf. *Aphis gossypii* is common on taro.



Photo 2. Curly-top symptom on basil caused by large numbers of aphids feeding on the underside of young leaves.



Photo 3. Crazy ants tending aphids for their honeydew. The ants keep predators and parasitoids away and defend the aphids from their natural enemies. Winged aphids can be seen in the lower part of the photo.



Photo 4. Ladybird beetles feeding on aphids on maize. The yellow 'worm-like' creature in the centre is a syrphid larva - the adults are hoverflies.

## Management

### NATURAL ENEMIES

Aphid predators and parasites usually keep populations low. The most common are ladybird beetles (adults and larvae) (Photos 4,5&6), syrphid fly larvae (Photo 7), lacewing larvae, and tiny parasitic wasps that lay their eggs in the adult aphids. The wasp larvae develop in the aphids eating the inside parts and turning the aphids into empty shells, called 'mummies' (Photo 8). Two important parasitoids are *Lysiphlebus testaceipes* and *Aphidius colemani*. Both exist as a number of different strains, so it is important to match the strain with the aphid strain and the environmental conditions.

Note, ants tend aphids for their honeydew. By doing so, they protect them from the activities of parasites and predators. To manage aphids, it is important to remove the ants, so that biological control can operate.

### CULTURAL CONTROL

Before planting:

- Do not plant down-wind from crops with aphids. Some aphids have wings, but they are not strong fliers, and are more likely to be blown in the wind onto new crops.

During growth:

- Remove weeds from within and also outside the crop, but note that there are several hundred hosts of *Aphis gossypii* worldwide.
- Inspect crops often and regularly; destroy leaves heavily infested with aphids by hand (or if necessary use insecticides - see below).
- Mulch the crop. With some mulches, aphids find it more difficult to distinguish the crop plants from bare ground.

After harvest:

- Collect, burn or bury the remains of crops after harvest.

### CHEMICAL CONTROL

If ants are present, find the nest, and if not too close to the plant with aphids, destroy the nest with boiling water. Without ants, predators and parasites may bring about natural control.

- If necessary to use an insecticide, use white oil (made from vegetable oils), soap solution, or horticultural oil (made from petroleum) (**see Fact Sheet no. 56**).
  - White oil:
    - 3 tablespoons (1/3 cup) cooking oil in 4 litres water.
    - 1/2 teaspoon detergent soap.
    - Shake well and use
  - Soap:
    - Use soap (pure soap, not detergent).
    - 5 tablespoons of soap in 4 litres water, **OR**
    - 2 tablespoons of dish washing liquid in 4 litres water.
- Commercial horticultural oil can also be used. White oil, soap and horticultural oil sprays work by blocking the breathing holes of insects causing suffocation and death. Spray the undersides of leaves; the oils must contact the insects. A second application of soap or oils may be necessary after 3-4 weeks. Home-made preparations are ideal for small numbers of plants, but commercial products are probably the only practical solution when crop areas are large.

Alternatively, use:

- Plant-derived products, such as neem, derris, pyrethrum and chilli (with the addition of soap).
- Note, varieties of *Derris* exist in Papua New Guinea and Solomon Islands that contain 2-3% rotenone, and are effective insecticides. However, they should be used with caution. (For methods of preparation, **see Fact Sheet no. 56**.)
- Synthetic pyrethroids are likely to be effective, but will also kill natural enemies. However, they can be used to kill ants, which often tend aphids for their honeydew, and protect them from effective control by predators and parasitoids.

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When using a pesticide, (even a biopesticide) always wear protective clothing and follow the instructions on the product label, such as dosage, timing of application, and pre-harvest interval. **Recommendations will vary with the crop and system of cultivation. Expert advice on the most appropriate pesticide to use should always be sought from local agricultural authorities.**



Photo 5. Ladybird beetle larvae feeding on aphids on taro.



Photo 6. Ladybird beetle larva.



Photo 7. Syrphid larvae feeding on large numbers of aphids on maize. They are the larvae of hoverflies



Photo 8. Aphid 'mummies' on a chilli leaf.

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Information from Waterhouse DE (1998) *Aphis gossypii*. Biological control of Insects: Southeast Asian Prospects. ACIAR Monograph no. 51, 548pp. and Choate PM, et al. (2018) Melon aphid or cotton aphid. Featured Creatures. UF/IFAS, University of Florida. ([http://entnemdept.ufl.edu/creatures/veg/aphid/melon\\_aphid.htm](http://entnemdept.ufl.edu/creatures/veg/aphid/melon_aphid.htm)); and Melon aphid *Aphis gossypii* (2016) Agriculture and Natural Resources, University of California. (<http://ipm.ucanr.edu/PMG/r116300711.html>); Melon or cotton aphid *Aphis gossypii* (2013) Center for Urban Ecology and Sustainability, University of Minnesota. (<http://cues.cfans.umn.edu/old/inter/inmine/Aphidsmc.html>). Photo 6 Graham Teakle. Canberra, Australia. Photo 8 Caroline Smith. University of Tasmania, Australia.

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