



Pacific Pests and Pathogens - Fact Sheets

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Onion aphid (276)



Photo 1. Onion aphid, *Neotoxoptera formosana*, causing collapse of shallot.



Photo 2. Large colonies of the onion aphid, *Neotoxoptera formosana*, on shallot.

Common Name

Onion aphid

Scientific Name

Neotoxoptera formosana. Two other species, *Neotoxoptera violae* (violet aphid) and *Neotoxoptera olieri* (marigold aphid) are closely related.

Distribution

Worldwide. It was first recorded in Taiwan, but now occurs widely in the tropics and sub-tropics, and occasionally in Europe. Asia, Africa (St. Helena), North and South America, Europe (restricted), Oceania. It is recorded from Australia, New Zealand, and the highlands of Papua New Guinea.

Hosts

Members of the onion (*Allium*) family, including chives, leeks, onion, shallot, leeks, and weed relatives of onion.

Symptoms & Life Cycle

The aphid lives on onions and their relatives, either on the leaves (Photo 1) or on the bulbs in storage. Populations increase rapidly to damaging levels and plants wilt, yellow, collapse, and dry (Photo 2).

Eggs are unknown, and so are males. Females give birth to living young without fertilization. The nymphs pass through four stages before they become winged or wingless adults. The body length is 1.5-2.5 mm, and the antennae are approximately the same length as the body. Adults are dark red to black. Winged individuals occur occasionally, and they have distinctive wide black veins.

It is thought that this aphid is attracted to the compounds in *Allium* species that give them their distinctive smell.

Spread over short distances occurs by adults walking between plants, and over long distances on air currents, and on bulbs traded on domestic or international markets. Survival occurs on volunteer plants from the previous crop or on bulbs in storage.

Impact

Damage occurs in two ways: directly as the aphids suck the sap of plants causing them to collapse, and indirectly through the spread of viruses. The latter are reported in Japan. The extent of either kind of damage is not well documented, but the fact that populations increase quickly and cause the collapse of plants suggests that it can be considerable. Serious rots in storage are reported from Australia.

Detection & inspection

Look for dark red or black aphids, mostly wingless, but some winged with broad veins on the wings. individuals.

Management

NATURAL ENEMIES

Predators [ladybird beetles and their larvae, hover (syrphid) flies and lacewing larvae], and parasites (wasps) usually keep onion aphid populations low; however, the rapid population increase of the onion aphid may mean that the smell of onions, and other *Allium* species, keeps natural enemies away.

CULTURAL CONTROL

Before planting:

- Do not plant down-wind from crops with aphids. Occasionally, winged aphids are produced or wingless ones are spread in strong winds onto new crops.
- Establish plants that are favoured by hoverflies whose syrphid larvae eat aphids; for instance, plant oregano, buckwheat, alyssum, bachelor buttons, and dill.

During growth:

- Remove weeds from within and also outside the crop, especially any that are in the onion family.
- Inspect crops often and regularly; destroy leaves heavily infested with aphids by hand (or if necessary use insecticides - see below).
- Mulch the crop. Plastic mulches, clear or black, may delay build-up of aphids as they find it difficult to distinguish crops growing in them.

After harvest:

- Collect, burn or bury the remains of the crop after harvest. Do not leave any parts of the crop that can regrow.

CHEMICAL CONTROL

If ants are present, find the nest, and if not too close to the plants with aphids, destroy the nest with boiling water; alternatively, use ant baits or spray with synthetic pyrethroids. Without ants, predators and parasites will bring about natural control.

If insecticides are necessary against aphids, use any of the following:

- Use soap solution, horticultural oil (made from petroleum), or white oil (made from vegetable oils) as follows (**see Fact Sheet no. 56**):
 - Whiteoil:
 - 3tablespoons (1/3 cup) cooking oil in 4 litres water.
 - 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. These sprays work by blocking the breathing holes of insects causing suffocation and death. Spray the underside of leaves, as the soap and oils must contact the aphids.

Alternatively, use:

- Plant-derived products, such as neem, derris, pyrethrum and chilli (with the addition of soap).
- Note, *Derris* varieties (fish poisons) are common in Pacific island countries, and they may be present in your country. But be careful if they are used as *Derris* contains rotenone, a toxic insecticide, so it should be used with caution (**see Fact Sheet no. 56**).

- Rosemary oil has been shown to repel onion aphids; test it to see if it is effective.
- Synthetic pyrethroids are likely to be effective against aphids, and also ants, but will also kill natural enemies.

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Information from MacLeod A (2007) CSL Pest risk Analysis for *Neotoxoptera formosana*. Central Science Laboratory, Sand Hutton, York. (<https://secure.fera.defra.gov.uk/phiw/riskRegister/plant-health/documents/neotoxoptera.pdf>).

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