

Control of Melon Thrips, *Thrips palmi*

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BACKGROUND

Melon thrips (*Thrips palmi*) are thought to have originated from Malaysia and Western Indonesia. In the last 20 years they have spread throughout South-East Asia, Japan, Papua New Guinea and other Pacific islands, North America, the Caribbean islands, South America and Europe.

Melon thrips were first recorded in Australia in the Northern Territory in 1989 around Berrimah and Darwin's rural area. They were discovered on melon and cucumber crops. The Darwin rural area and south east Queensland appear to be the only parts of Australia where melon thrips have established permanent populations.

Melon thrips attack a wide variety of vegetable crops including beans, cucumbers, melons, bitter melon, capsicum, eggplant, pumpkin, squash and zucchini. However, the most seriously affected crops are capsicum, eggplant and Lebanese cucumber.

APPEARANCE

Adult melon thrips are orange/yellow in colour and slightly more than 1 mm in length. They have two pairs of narrow feather-like wings, which have dark bristles. The bristles give the appearance of a dark central line down the back. Adults often fly, if disturbed. During the two nymphal stages they are smaller, paler in colour and without wings. Both adults and nymphs are mobile and feed on plant tissue.

LIFE CYCLE

There are six stages in the life history of melon thrips. The female inserts her eggs into actively-growing leaf tissue, developing flower buds and fruit. Each female can lay up to 100 eggs. Under Top End conditions the eggs probably hatch in three to four days. The eggs hatch to produce the first stage nymph which is about 0.5 mm long. The first and second nymphal stages take a total of three to five days. When the second nymphal stage is fully fed, it crawls to the ground and burrows a few millimetres into soil. Two resting stages (pre-pupa and pupa) take place in the soil over two to three days. At the end of the second resting stage, the adult emerges and burrows onto the soil surface. Once on the soil surface, the adult either climbs or flies to a host plant. The period from egg laying to adult emergence is 10 to 12 days at 30°C and 14 to 16 days at 25°C.



Figure 1. Adult

MONITORING

Capsicum, eggplant and Lebanese cucumber crops should be monitored for the first appearance of melon thrips, soon after transplanting in the dry season. The best method is to walk weekly through the crop randomly checking the under surface of new and medium-aged leaves.

INTERSTATE QUARANTINE

The following crops, grown in the Darwin area, must be fumigated before they can enter Western Australia: leafy vegetables, rockmelons, zucchini, bitter melons, snake beans, long beans, okra and luffa.

An inspection of the produce by a Department of Primary Industry, Fisheries and Mines (DPIFM) quarantine officer is necessary before shipment to South Australia.

NATURAL ENEMIES

T. palmi has a wide range of natural enemies in the Darwin area. The fungus *Verticillium lecani* attacks and kills recently-emerged adults. Lacewing larvae, predatory mites and predatory thrips all feed on nymphs and adults. However, the most important predator is a small bug (*Deraeocoris* sp.), which consumes up to seven nymphs and adults per day.

PEST MANAGEMENT

Chemical control

Work done by the Entomology Section of DPIFM has shown that high populations of melon thrips result from the use of broad-spectrum insecticides such as dimethoate (Rogor®), malathion (Maldison,®), endosulfan (Thiodan®), and permethrin (Ambush®). The insecticides have a greater effect on the natural enemies of melon thrips than on the thrips themselves. Unfortunately, melon thrips are tolerant to all the available chemical insecticides.

In contrast to chemical insecticides, insecticidal soaps (e.g. NATRASOAP®) are highly active against melon thrips. Insecticidal soaps act by suffocating the insect rather than poisoning it. In order to be effective, the insect has to be coated with a thin film of the soap spray mixture. For this reason, two to two and a half times more insecticidal soap spray mixture is required than when spraying a chemical poison. It is thought that melon thrips will not build up resistance to insecticidal soap and their natural enemies are not affected by it.

If melon thrips are detected, spray at weekly intervals with 16 mL/L of insecticidal soap in water. The spray will not kill all of the melon thrips, but it will suppress the population enough to allow predator numbers to build up and start to control them.

Up to three insecticidal soap sprays will be needed to bring melon thrips under control. It is essential that the underside of leaves and terminal buds be thoroughly sprayed since these are the areas where melon thrips congregate. It is best to spray between 4 and 6 p.m. to minimise the chance of sunburn to leaves.

Melon, bean, and pumpkin crops are usually not worth spraying, provided broad-spectrum insecticides have not been used on the crop.

Cultural control

Overhead irrigation reduces melon thrips by making the soil too damp for the resting stages. Growers should be aware that overhead spraying will increase fungal diseases and they should take precautions to minimise the problem.

For further information on this Agnote contact DPIFM Entomology at insectinfo.dpifm@nt.gov.au. Agnotes or fact sheets on other pests are available from www.entomology.nt.gov.au or www.primaryindustry.nt.gov.au

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Department of Primary Industry, Fisheries and Mines

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ISSN 0157-8243

Serial No. 753

Agdex No. 230/612

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