

Fact sheet

Vegetable leaf miner

What is vegetable leaf miner and what harm can it cause?

The vegetable leaf miner (*Liriomyza sativae*) is a major horticultural pest affecting many crops especially those within Solanaceae and Fabaceae families. It is a type of fly native to the Americas but have since been introduced into other parts of the world. The larvae feed internally on host leaf tissue and can cause losses of up to 80% in tomato and are particularly damaging to young crops. Adult females cause leaf punctures during ovipositing which adult flies (both male and female) feed from and can act as entry points for secondary infections.

What does it look like?

The adult vegetable leaf miner is a small (1.3-2.3 mm), predominantly pale to bright yellow fly with a shiny, black coloured dorsal (upper) thorax, with a yellow spot below the wings, and black and yellow striped abdomen. The female lays eggs within leaves of host plants leaving very small (0.05 mm) round puncture marks at the upper surface of the leaf. These puncture marks (0.15 mm) can lead to a mottled yellow pattern (known as stippling) on leaves during heavy infestations.

The eggs are typically white, oval shaped and approximately 0.23mm in length and 0.13mm in width and are laid singly within leaf punctures. The larvae are legless maggots up to 3 mm in length. They change from almost transparent to pale green then yellow or yellow-orange as they mature. As the larvae feed, they create tunnels (mines) throughout leaves and young stems. Mines are tightly coiled, pale green to white in colour with dark thread-like frass. Some areas of the mines can have a dried brown appearance and increase in size as larvae grow. Pupae are red/brown or golden brown in colour and are approximately 1.5 mm in length and 0.75 mm in width with an oval shaped, segmented body. The pupae generally drop from the leaf and pupate in the soil. In addition to leaf punctures and mines, other symptoms of vegetable leaf miner infestation include sun scald of fruit and flowers and lodging of stems during windy weather.



Adult vegetable leaf miner. Note the shiny black upper thorax and yellow spot

Jack Kelly Clark, courtesy University of California Statewide IPM Program



Vegetable leaf miner pupa on tomato leaf

Jack Kelly Clark, courtesy University of California Statewide IPM Program



Vegetable leaf miner pupa in leaf mine onion

Bugwood.org



What can it be confused with?

Many *Liriomyza* species have a very similar appearance including the American serpentine leaf miner (*L. trifolii*) and the pea leaf miner (*L. huidobrensis*) both of which are not currently found in Australia. The symptoms on tomato also resemble other leaf mining species such as the exotic pest tomato leaf miner (*Tuta abosluta*). These pests are all currently exotic to Australia and should be reported if found. There are a number of leaf mining insects in Australia but they rarely cause economic damage (impact) on horticultural production. Stippling of leaves can be confused with the early stages of bacterial spot (*Xanthomonas campestris* pv. *vesicatoria*) and bacterial speck (*Pseudomonas syringae* pv. *tomato*), however, stipples generally do not cause necrosis. Symptoms of vegetable leaf miner infestation can be confused with lodging and sunscald.

What should I look for?

The most obvious symptom of vegetable leaf miner infestation is the mines caused by the feeding larvae. Other symptoms such as stippling and lodging can indicate the presence of vegetable leaf miners. Given the similarity with other pests, the presence of black and yellow adult flies in a tomato crop should be reported to an entomologist.

How does it spread?

Adult vegetable leaf miners are capable of flight but generally do not fly long distances. Dispersal of the pest over longer distances is generally caused by movement of plant material of Vegetable leaf miner host species.

Where is it now?

The range of the vegetable leaf miner is currently rapidly expanding. The pest was first described in South America and this is believed to be the centre of origin. It has since spread throughout the Americas, Asia, parts of Africa and Oceania.

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Jack Kelly Clark, courtesy University of California Statewide IPM Program

Vegetable leaf miner mines on tomato. Note the change of the width of the mines and the presence of frass within the mines

How can I protect my farm from vegetable leaf miner?

Check your crop frequently for the presence of new pests and unusual symptoms. In particular, check your crop for vegetable leaf miner activity such as leaf stippling, mining, lodging and sun scald of fruit. Maintain good crop hygiene ensuring that volunteer plants and weeds are adequately controlled and planting material comes from reputable sources.

Make sure you are familiar with common tomato pests so you can monitor your crops for both endemic and be alert for exotic pests.

If you see anything unusual, call the Exotic Plant Pest Hotline

**EXOTIC PLANT PEST HOTLINE
1800 084 881**

