

Information

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Biological Control - LEAF MINER

There are four main leaf miner species that are of importance on greenhouse crops. These are: -

CHRYSANTHEMUM LEAF MINER (*Chromatomyia syngenesiae*)

Apart from chrysanthemums this leaf miner has a wide host range, which includes many common nursery weeds.

TOMATO LEAF MINER (*Liriomyza bryoniae*)

The main crop hosts are tomato and cucumber, but it can also colonise a limited number of weed species.

SERPENTINE (OR FLORIDA) LEAF MINER (*Liriomyza trifolii*)

This notifiable pest attacks most crops and weeds and is resistant to many pesticides.

SOUTH AMERICAN LEAF MINER (*Liriomyza huidobrensis*)

This is also a notifiable pest and has the same wide host range and resistance to pesticides as the serpentine leaf miner.

LIFE CYCLE OF LEAF MINERS

Adult female leaf miners feed on sap by probing the upper surface of leaves. Obvious white spots soon appear where probing has occurred. Eggs are laid at some of these sites and hatch after about a week. The larvae tunnel within the leaf causing typical mines. The mines get wider as the larvae grow and moult. After 10 - 20 days pupae are formed.

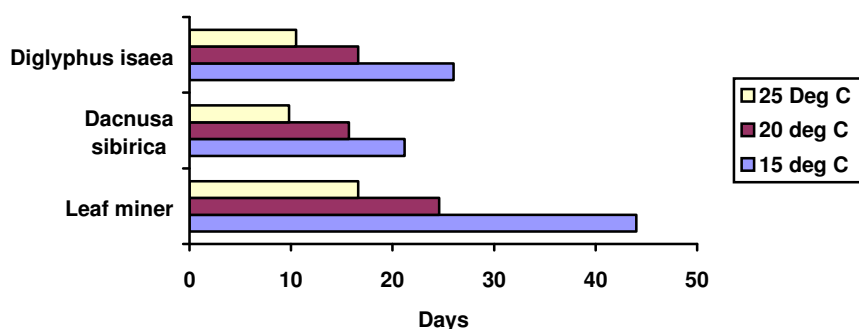
With chrysanthemum leaf miner, pupation takes place in the leaf. Adults emerge from pupae which are attached to the plant. However, with *Liriomyza* species, pupae become detached from the leaf tissue during pupation and usually fall to the floor before hatching. In summer these pupae emerge in roughly 10 days; pupae produced in autumn by *Liriomyza* species may not emerge for several months and provide an effective over wintering mechanism for the pest. Chrysanthemum leaf miner survives in various stages of its lifecycle on weeds and in crop debris.

Use plant protection products safely. Always read the label and product information before use

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PEST AND PREDATOR LIFE CYCLE



BIOLOGICAL CONTROL

The two most effective parasites of leaf miner are *Dacnusa sibirica* and *Diglyphus isaea*. *Dacnusa* adults lay their eggs in the larvae at a rate that allows the leaf miner to reach pupation. At this point the leaf miners are killed and adult *Dacnusa* emerge. *Dacnusa* adults live for about 10 - 14 days and during this time will lay about 60 - 90 eggs.

Diglyphus adults lay their eggs beside the leaf miner larvae, which they have paralysed. The *Diglyphus* larvae feed on the leaf miner eventually killing them. Characteristic black columns are made in the mines where the *Diglyphus* pupates. These remain after the adults emerge and are a clear sign that *Diglyphus* was present. *Diglyphus* is particularly active in the summer and, because it kills many leaf miner larvae at an early stage, it is more effective than *Dacnusa* at controlling large populations.

Microscopic examinations of the larvae of leaf miner can be used to assess the percentage parasitism with both biological control agents.

PRODUCTS

Mixtures of *Diglyphus* and *Dacnusa* can be supplied in various ratios as well as in units of 250 which contain either 100% *Dacnusa* or 100% *Diglyphus*.

All these products consist of freshly emerged adult parasites.

INTRODUCTION RATES

Programmes can be recommended that will give effective and economical control of this difficult pest. The number of parasites and the species of parasite to use is determined by the size of the leaf miner population and the time of year.

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