

CITRUS LEAFMINER
Phyllocnistis citrella Stainton

1 PEST PROFILE
1.1 Distribution and status

Citrus leafminer occurs during summer and autumn in all citrus producing areas. It is of primary importance for non-bearing trees.

1.2 Description

The moths are active at dusk and are seldom seen during the day. They have a wingspan of 4 mm. The translucent eggs are usually laid singly. On hatching, the first instar larva immediately burrows beneath the leaf cuticle. As it eats it traverses the leaf in a characteristic serpentine fashion. The third instar larva usually makes its way to the edge of the leaf where it spins its cocoon, curling the leaf edge in the process and pupates. In ideal conditions the life cycle is as short as 13 days.

1.3 Infestation site on tree

Eggs are usually laid singly near the midrib on the underside of young, unhardened leaves. Where high levels of infestation occur, eggs may be laid on the upper surface of the leaf, on newly emerged shoot tips and, occasionally, on the fruitlet itself.

1.4 Damage
1.4.1 Symptoms

All damage is caused by the feeding activity of the larvae. Newly emerged growth flush is the primary target. Once the leaves have hardened they are usually no longer susceptible to attack.

Serpentine mines are visible in the leaves and the leaves may later curl at the margins and become yellow or brown in patches. Mines are occasionally found in green twigs but seldom in fruit.

1.4.2 Seasonal occurrence

Citrus leafminer damage occurs on the summer and autumn growth flushes.

2 MANAGEMENT ASPECTS
2.1 Infestation/Damage assessment
2.1.1 Inspection

New growth on young trees should be inspected weekly for the presence of leafminer.

2.1.2 Treatment threshold

There are no formal infestation criteria on which to base treatment. In Florida it is suggested that if more than 10% of the new leaves are infested with live leafminer larvae some form of treatment may be indicated. No treatment is considered necessary for bearing trees.

2.2 Control Options
2.2.1 Biological

A number of hymenopterous parasitoids have been isolated from citrus leafminer larvae and pupae. *Citrostichus phyllocnistoides* (Narayanan) is an indigenous primary leafminer parasitoid and *Ageniaspis citricola* Lagvinorskaya has been imported and released. Other parasitoids which have been isolated are: Tetrastichinae new genus, *Notanisomorphella borborica* (Giard), *Cirrospilus ?longifasciatus* (Ferrière), *Sympiesis ?striatipes* Ashmead, *Cirrospilus cinctiventris* Ferrière and *Platocharis coffeae* (Ferrière). The last two are known parasitoids of the coffee leafminer. The complex can make a significant contribution to control especially late in the season. However, they appear to have difficulty in controlling early season populations.

2.2.2 Cultural

There are no cultural options that can be used to suppress or control citrus leafminer on young trees.

2.2.3 Plant protection products

The systemic chloronicotinyls Confidor and Mospilan have been registered for the control of citrus leafminer in South Africa as follows:

Product	Dosage per plant
Confidor 350 SC Nursery trees Non-bearing trees	1.5 ml/seedling in 200 ml water as a drench. 8 ml/tree in 1 l water around base of trunk.
Mospilan 222 SL	2 ml/m ² canopy surface applied undiluted to the stem.

The Americans and Spanish have registered abamectin (25 ml/hl) for suppression of the pest and only apply it to the young growth flush. Control in Israel relies on the use of soil-applied Confidor and stem applications of Mospilan. In Australia it has been demonstrated that sprays of narrow range oil at 0.5% will prevent leafminer moths from laying eggs for a number of days.