

LEAFROLLERS

Archips occidentalis (Walsingham)
Tortrix capensana (Wlk.)

1 PEST PROFILE

1.1 Distribution and status

The citrus leafroller, *Archips occidentalis*, is a sporadic minor pest in the subtropical production areas of southern Africa. The apple leafroller, *Tortrix capensana*, is a more general pest and has been found in all citrus areas. Its pest status tends to be highest in western Mpumalanga and the south-western parts of Limpopo Province. It is most often a pest in orchards that do not receive broad-spectrum treatments for other pests during spring.

1.2 Description

Adults of both species are generally similar in size and colour. Females have a wingspan of approximately 22 mm, while that of the males is somewhat less. The forewings of both species have brown spots together with paler stripes, while the hind wings are grey-white (*T. capensana*) or orange-brown (*A. occidentalis*). The forewings are characteristic of the family Tortricidae, to which both species belong, in that they are comparatively broad with recurved anterior edges.

The female lays 20 to 180 eggs in flat egg packets. The eggs overlap like roof tiles and are mainly laid on the upper surface of older leaves. They are covered with a secretion, which both holds them together and also seals the egg packet to the surface. Newly laid eggs are cream to yellow but assume an orange colour shortly before hatching.

The larvae are pale yellow or orange when young and later become light-green. The head capsules are dark brown in both species. Both species wriggle rapidly when disturbed and either retreat into their webbing or drop off the plant. They are about 1 mm long on hatching and reach a length of about 20 mm when fully grown. Pupation occurs in the area where the larva has fed.

1.3 Infestation sites on tree

After hatching, larvae move to young growth and fruitlets where they spin a web under which they feed. Leaves are rolled together in tube-like fashion from which the insect's popular name is derived. Young larvae also feed under the calyx of fruitlets. They also occur in association with mealybug infestations where they can be found among the waxy threads and debris caused by that pest. The citrus leafroller occasionally damages large fruit when it attaches a leaf to the side of the fruit.

1.4 Damage

1.4.1 Symptoms

Larval feeding activity can damage foliage but this is usually not of commercial importance. Larval feeding under the calyx of fruitlets results in blemishes that are somewhat similar to those caused by thrips, but are deeper and rougher. Older larvae eat holes in fruit that can penetrate through the flavedo.

1.4.2 Seasonal occurrence

Leafrollers are sporadic spring and summer pests.

2 MANAGEMENT ASPECTS

2.1 Infestation/damage assessment

2.1.1 Inspection

On fruit, leafroller larvae tend to occur during the same period as thrips. Inspections that are directed towards assessing thrips infestations will also indicate the presence of leafroller larvae.

2.1.2 Treatment threshold

No thresholds have been defined for the timing of treatments against leafroller larvae, however, experience indicates that a treatment should be applied before infestation of fruit reaches 10%. Orchards which are regularly subject to attack can be treated when larvae are detected. Alternatively, treatment can be applied when a potentially damaging population increase is noted.

2.2 Control options

2.2.1 Biological

Trichogrammatoidea lutea Girault and *Trichogramma pretiosum* Riley are egg parasitoids of leaf rollers. Several larval parasitoids also attack leafrollers. These include a *Goniozus* sp., *Apanteles* spp., *Brachymeria boranensis* Masi and *Pediobius amaurocoelus* (Waterston). These natural enemies may play a role in reducing the frequency of severe leafroller infestations, however, they are unable to offer commercial control of heavy infestations established on fruit. It is known that leafroller infestations can be subject to progressive annual increase in orchards placed under biological control or reduced treatment usage, before damage levels go into natural decline. This points to the possible disruption of natural enemy activity with the regular annual use of broad-spectrum treatments.

2.2.2 Cultural

There are no cultural options that can be used to influence the presence or extent of leafroller infestations.

2.2.3 Plant protection products

The only treatment registered for the control of leafroller larvae is the bacterial toxin from *Bacillus thuringiensis* var. *kurstaki*. This treatment does not have a detrimental influence on natural enemies. The treatment must be applied as an outside cover spray as soon as a larval infestation warranting treatment is noted. If necessary the spray must be repeated.

Product	Dosage/100 ℓ water
Dipel 2X	12.5 g