

## APHIDS

*Toxoptera citricidus* (Kirkaldy)  
*Aphis gossypii* Glover  
*Aphis spiraecola* Patch  
*Toxoptera aurantii* (Fonscolombe)

### 1 PEST PROFILE

#### 1.1 Distribution and status

The first two aphid species mentioned above are the most common and can infest citrus in all production areas. The other two species are less common.

#### 1.2 Description

The adults of the popularly named black citrus aphid, *T. citricidus*, are about 3 mm long and have a purple-brown colour. The cotton aphid, *A. gossypii*, is somewhat smaller with a dark grey body, the young lifestages are light green and become greyer with age. The adult spiraea aphid, *A. spiraecola*, is light green with dark head and thorax and dark cornicles (protrusions on the rear of the abdomen). Young lifestages are light green. *T. aurantii* is similar in appearance to the black citrus aphid, although slightly smaller and lighter in colour. In South Africa this species is called the brown citrus aphid although in other parts of the world this common name is used for *T. citricidus*. All the above species have winged and wingless forms. The wingless forms live on young, succulent growth. Winged forms are produced when the young plant growth hardens off and new food sources are required. The females reproduce parthenogenetically. A female can produce 40 to 50 active young aphids in a short period.

#### 1.3 Infestation sites on tree

Only young growth and blossoms are infested. At times aphids can be noted moving about on mature growth in their search for a suitable feeding place.

#### 1.4 Damage

##### 1.4.1 Symptoms

Citrus trees of all ages are attacked by aphids. Direct damage is done to leaves as a result of

aphid feeding which causes the tissue to exhibit undulations resulting in a variable degree of malformation. This type of damage can be detrimental to the development of young trees which have a significant percentage of the foliage mass in the form of new growth. On mature trees foliage damage is less important, although infested blossoms may drop. However, aphid attack is generally not considered to have a detrimental effect on yield. Aphid infestations yield copious amounts of honeydew which promotes the growth of sooty mould. The secondary problems arising from these factors are discussed in the section on SOFT SCALES.

*T. citricidus* is the most efficient vector of Citrus Tristeza Virus (Ctv) (see Chapter 8), to which grapefruit are particularly susceptible because their cross-protection is currently not as effective as for other citrus types.

##### 1.4.2 Seasonal occurrence

Aphids do not show marked seasonal trends and, especially in the subtropical areas, are able to infest new growth throughout the year. In the Cape citrus areas they are mainly a pest during late summer and autumn.

## 2 MANAGEMENT ASPECTS

### 2.1 Infestation/Damage assessment

#### 2.1.1 Inspection

Due to their preference for succulent growth it is necessary to inspect trees for aphid presence only during periods when orchards are producing new growth.

#### 2.1.2 Treatment threshold

Light aphid infestations on cultivars other than grapefruit are usually left untreated. Infestations producing large amounts of honeydew should be treated. During spring this will apply particularly in orchards where sugar-containing baits are being used for thrips control. Grapefruit trees less than eight years old should be treated at the first sign of aphid infestation in order to limit the spread of Ctv.

## 2.2 Control options

### 2.2.1 Biological

A variety of predators and parasitoids attack aphids. The best known of these is the large, round orange and black ladybird beetle, *Chilomenes lunata* (Fabr.) and the more elongated, introduced, orange and black beetle *Hippodamia variegata* (Goeze), which can often be found feeding on aphid colonies together with many other ladybird beetles. The more recently introduced harlequin ladybird beetle *Harmonia axyridis* (Pallas) may also be observed. Light aphid infestations can be effectively controlled by these natural enemies. However, in the case of heavy infestations the population increase is so rapid that natural enemies are unable to exert significant control.

### 2.2.2 Cultural

There are no cultural options that can be used to prevent aphid infestations, although unmown ground cover in every second interrow can increase numbers of natural enemies.

### 2.2.3 Plant protection products

#### 2.2.3.1 Soil treatments

Rogor EC is registered as a soil treatment for aphid control. Refer to CITRUS PSYLLA for more information on its use.

Confidor 700 WG (and imidacloprid 350 SC) is registered as a soil treatment against aphids at 3 g (6 ml) per tree applied around the base of the trunk in 1 l of water. It is also registered for use on citrus seedlings at 0.75 g (1.5 ml) per seedling in 200 ml water.

#### 2.2.3.2 Trunk treatments

Citrimet, Mospilan SL and Confidor SL are registered as trunk treatments for control of the black citrus aphid in South Africa and monocrotophos SL may be an option in other countries. Citrimet and monocrotophos are not effective against the cotton aphid due to OP resistance. Refer to **TRUNK APPLICATION PROCEDURE in Chapter 2** for more information on this technique.

Product	Dosage/100 l water
Citrimet	According to trunk diameter
Mospilan SL	2 ml/m <sup>2</sup> canopy surface area
Confidor 200 SL*	10 ml/tree
Monocrotophos SL (not South Africa)	According to trunk diameter

\*May only be available as a special order

#### 2.2.3.3 Spray treatments

Using ground-based machinery: One of the following treatments can be applied with tractor-powered machinery as an outside diffuse cover spray for aphid control, taking residue restrictions into account.

Product	Dosage/100 l water
Aphox	40 g
Mevinfos 150 EC	20 ml
Phosdrin 500 SL	6 ml
Methomyl SL <sup>1</sup>	90 ml
Lannate SP <sup>1</sup>	20 g
Chlorpyrifos EC	20 ml
Dursban WG	13 g
Profenofos <sup>2</sup>	50 ml
Tokuthion	40 ml
Calypso + light/medium horticultural mineral oil	30 ml + 250 ml

<sup>1</sup> May cause an increase in populations of red mite.

<sup>2</sup> May be phytotoxic on grapefruit, easy peelers or mid-season cultivars.

Aerial treatment: The following treatment can be applied by aircraft at the rate of 50 litres per hectare:

Product	Dosage/100 l water
Lannate SP*	250 g at 50 l/ha

\*May cause an increase in populations of red mite.

### 3 Additional notes

- Aphids are generally sensitive to most crop protection products with the exception of low concentrations of narrow range oil. Sprays applied for various other pests are therefore also likely to suppress aphids.
- The soil and trunk treatments have a longer residual effect against aphids than the spray treatments. They are therefore to be preferred for protecting grapefruit against Ctv.
- Honeydew attracts ants which disturb natural enemies of other pests.
- The presence of honeydew can have a detrimental influence on the efficacy of sugar-containing baits applied for thrips control. In this regard it is advisable to control aphids before a build-up of honeydew occurs when following a baiting programme for thrips.