

## AFRICAN CITRUS TRIOZID

*Trioza erytreae* (Del Guercio)

### 1 PEST PROFILE

#### 1.1 Distribution and status

The African Citrus Triozid (ACT) is of economic significance in high-lying production areas of Limpopo Province, Mpumalanga, KwaZulu-Natal, parts of the Western Province and also in certain subtropical and coastal areas. The insect requires a relatively humid climate with moderate temperatures to survive. ACT therefore has endemic pest status in areas where these climatic conditions occur frequently. High temperatures combined with low humidity are lethal to the insect's first and second nymphal stages. As a result, psyllids tend to be relatively scarce during dry years, while assuming epidemic proportions during cool, humid summers. The summer climate in the low-lying interior areas of the Western and Eastern Cape tends to be so hot and dry that ACT seldom occurs there.

The reason for this pest being of economic significance is that the adult insect is the vector of African greening disease associated with *Candidatus Liberibacter africanus* (Laf) in citrus. It therefore has a high pest status in areas where greening disease is present. For this reason, the pest status is not yet high in the Eastern Cape, even though the insect is present in the coastal areas.

ACT is in the same superfamily Psylloidea as the Asian Citrus Psyllid (ACP) *Diaphorina citri* Kuwayama which is not yet present in southern Africa, but is present in Ethiopia, Kenya, Tanzania, Nigeria, Mauritius and Reunion. ACP is an important vector of Huanglongbing (HLB) associated with *Candidatus Liberibacter asiaticus* (Las). Las is present in Ethiopia, Kenya, Mauritius and Reunion. HLB is the most devastating disease of citrus worldwide. ACP can also potentially transmit Laf. An action plan for HLB and ACP was compiled and provides guidelines for early detection surveys and rapid response measures for ACP and HLB. An early detection survey protocol is contained in the action plan and is recommended in citrus nurseries and citrus orchards, particularly those

close to our north-eastern borders. Many species in the *Diaphorina* genus can be found on indigenous plants other than citrus and may be caught on yellow sticky traps near bush. These psyllids usually have patterned wings and are brownish-grey. Confirmation of the presence of *D. citri* during surveys should be obtained from the Biosecurity division at CRI.

#### 1.2 Description

The adult ACT is light yellow/brown and approximately the size of an aphid with transparent wings. The insects are good fliers. Pointed, oval-shaped, yellow eggs are laid primarily along the edges of young leaves and shoots. First instar nymphs establish themselves on the lower surfaces of young leaves and their feeding activity causes cavities in the leaf tissue which appear as prominences on the upper surfaces. The nymphs lie in the cavities and complete five instars before emerging as adults.

#### 1.3 Infestation sites on tree

The adult insect is attracted to new growth for feeding and oviposition purposes. However, hardened growth is also used in the absence of succulent new growth.

#### 1.4 Damage

##### 1.4.1 Symptoms

The characteristic yellow eggs on the edges of young leaves and the subsequent cavities and related prominences are the first signs of psyllid presence. In the case of severe infestations, young growth can be severely malformed as a result of nymphal activity.

##### 1.4.2 Seasonal occurrence

ACT can occur throughout the year on young growth but numbers of adults are usually lowest on the spring flush (August). It is therefore a good strategy to control ACT on the spring flush because it will take a long time for the population to build up thereafter. Without effective treatments against ACT, adults are most abundant in September and October.

**2 MANAGEMENT ASPECTS**

Due to the importance of greening disease, new growth on young trees in areas where greening is problematic must be protected against psyllid infestation on a **preventive** basis. It is uneconomical to protect all new growth on mature trees. On these trees the major growth flushes during August to October, November to December and February to March should be treated when signs of psyllid infestations are noted or when one adult per week is caught on a sticky yellow trap.

**2.1 Infestation/Damage assessment**

**2.1.1 Non-bearing or nursery trees**

**2.1.1.1 Inspection**

Due to the importance of greening disease in affected production areas it is not advisable to wait for signs of infestation on trees in this age group before applying treatment.

**2.1.1.2 Treatment threshold**

No infestation thresholds can be recommended for nursery and young non-bearing trees. Treatments must be applied preventively using systemic materials to protect all new growth.

**2.1.2 Bearing trees**

**2.1.2.1 Inspection**

The edges and lower surfaces of young leaves must be thoroughly inspected weekly at the commencement of each growth flush for the presence of psyllid eggs and newly settled nymphs.

**2.1.2.2 Treatment threshold**

Treatment must be initiated when one or more psyllid eggs and/or nymphs are noted on new growth or when one or more adult psyllids are caught per week on yellow traps.

**2.2 Control options**

**2.2.1 Biological**

Various parasitoids and predators attack citrus psylla eggs and nymphs. However, the parasitoids are hyperparasitised and do not reach adequate numbers to control the pest to the extent that the spread of greening disease will be stopped.

**2.2.2 Cultural**

Pruning stimulates tree growth which is subject to psyllid attack. Pruning should therefore be timed so that the regrowth coincides with a treatment that will kill ACT.

**2.2.3 Plant protection products**

**2.2.3.1 Soil treatments**

The systemic organophosphate dimethoate EC can still be used as a soil treatment. For soil application, this product is recommended only on rough lemon and Empress mandarin rootstocks. It is applied under the foliage drip zone from where it is taken up by the roots and distributed through the tree. Three methods can be used to apply it:

- If flood irrigation is used the basin can first be filled with water and the required amount of dimethoate EC can subsequently be distributed evenly over the water surface. Alternatively, the material can be evenly applied to the surface of the basin which can then be filled with at least 25 mm water.
- Where micro-irrigation is used dimethoate EC must be uniformly applied to the soil under the foliage drip zone using watering cans. Thereafter the normal irrigation programme must be activated to wash it into the soil.
- With the aid of fertigation apparatus dimethoate EC can be directly fed into the pipe system used for micro-irrigation so that the mixture is applied during a normal irrigation round.

Product	Dosage/m <sup>2</sup> drip zone
Dimethoate EC	7.5 – 10 ml

Note that on bearing trees, dimethoate EC

cannot be used after white bud stage due to residue restrictions.

Imidacloprid (either 70 WG or 350 SC formulations) registered as a soil drench for control of aphid, leaf miner and thrips on citrus nursery trees and for control of aphid and leaf miner on non-bearing trees will also provide protection against ACT.

### 2.2.3.2 Trunk treatments

Undiluted **methamidophos** or **acephate** can be applied to the trunks of citrus trees with a closed system applicator. Refer to TRUNK APPLICATION PROCEDURE in Chapter 2 for more information on these treatments.

Undiluted **Mospilan** SL (or generic) can also be applied to citrus tree trunks at the rate of 2 ml/m<sup>2</sup> canopy surface area using a closed system applicator.

### 2.2.3.3 Spray treatments

The spraying of trees with conventional spray equipment is only recommended for trees with a trunk diameter in excess of 150 mm. One of the following materials can be applied as an outside film spray.

Product	Dosage/100 ℓ water
Mevinphos 150 EC	20 ml
Phosdrin 500 SL	6 ml
Chlorpyrifos 480 EC	60 ml <sup>1</sup>
Dimethoate 400 EC	40 ml <sup>2,3</sup>
Dursban 750 WG	38 g <sup>1</sup>
Profenofos 500 EC	75 ml <sup>2</sup>

<sup>1</sup>Not later than 90% petal fall for some markets

<sup>2</sup>Only on spring flush before 50% petal fall

<sup>3</sup>Not recommended on rough lemon and Seville orange trees

### Comment

Due to the serious nature of greening disease it is difficult to conduct trials for registration that have an untreated control. Few chemicals are therefore registered for the control of this pest. However, several insecticides (other than Applaud) that are effective against mealybug and scale insects are likely to suppress ACT for at least 2 weeks.