

## MUSSEL SCALES

*Lepidosaphes beckii* (Newman)

*Lepidosaphes gloverii* (Packard)

### 1 PEST PROFILE

#### 1.1 Distribution and status

The mussel scales are found in those parts of southern Africa with a mild, humid climate. Populations decline if temperatures exceed 29°C or the relative humidity drops below 70%. Infestations are often patchy and sporadic. Mussel scales are phytosanitary pests for some markets.

#### 1.2 Description

The scale covering of the adult female citrus mussel scale, *Lepidosaphes beckii*, is 2 to 3 mm long, resembles a mussel shell and is approximately two and a half times as long as it is wide. The scale cover of the immature male is shorter and narrower than that of the female. The adult male is winged and emerges from beneath the scale cover to disperse. In both sexes, scale coverings have a greyish or purplish-brown colour. The female lays 40 to 80 white eggs under the scale cover. White crawlers hatch from the eggs and after settling start secreting coarse waxy threads. Later, fine cottony wax threads are secreted which coalesce to form the scale cover.

The long mussel scale or Glover scale, *Lepidosaphes gloverii*, is narrower than the citrus mussel scale and is approximately five times as long as it is wide. It is less common than the citrus mussel scale.

#### 1.3 Infestation sites on tree

The tree framework provides a permanent base for mussel scales. From there, crawlers move to foliage and fruit. These pests prefer the shady parts of the tree and are therefore found on the lower and inside leaves, fruit and branches of the southern side of the tree.

### 1.4 Damage

#### 1.4.1 Symptoms

Leaves turn progressively yellow as they become infested by scale and eventually drop. In the case of severe infestations the combined effect of leaf drop and wood infestations can lead to die-back of twigs and branches. Severely infested fruit are also likely to drop. The scale on fruit is more firmly attached than red scale and is difficult to remove in the packhouse with high-pressure descalers.

#### 1.4.2 Seasonal occurrence

As with red scale, the mussel scales occur on citrus trees throughout the year. Four generations per annum have been recorded in the Eastern Cape.

## 2 MANAGEMENT ASPECTS

### 2.1 Infestation/Damage assessment

#### 2.1.1 Inspection

Both exterior and interior foliage, twigs and fruit on the shady side of the tree should be inspected at monthly intervals.

#### 2.1.2 Treatment threshold

In the case of non-bearing trees treatment must be applied when an average of three adults per terminal leaf are noted. In general mussel scale should be controlled on the tree framework and foliage before it becomes established on a new crop.

### 2.2 Control options

#### 2.2.1 Biological

Citrus mussel scale is parasitised by *Aphytis lepidosaphes* Compere, which closely resembles the *Aphytis* spp. associated with red scale, and *Aspidiotiphagus citrinus* (Craw), a minute parasitoid (approximately 0.5 mm long). Both parasitoids are widespread in southern Africa and in the absence of broad-spectrum treatments, ants and dust, are effective in controlling mussel scale. Long mussel scale is also parasitised by *A.*

*lepidosaphes* but the parasitism is not as efficient as for citrus mussel scale and infestations of this scale are most common where trees are never sprayed for the control of scale insects. Several ladybird beetles also attack mussel scales.

### 2.2.2 Cultural

As in the case of circular purple and also red scale, the elimination of ant activity is regarded as an important adjunct to the biological control of mussel scale. Where this is being effected with trunk treatments it will be necessary to skirt trees and control weeds.

### 2.2.3 Plant protection products

In regard to the timing and number of treatments required in relation to scale density, the same approach can be adopted to that advocated for the control of red scale. However, there is likely to be more opportunity for approaching the control of mussel scale on a spot spray basis than in the case of red scale. Mussel scales are susceptible to the oil and organophosphate sprays that are registered for red scale control.