

CIRCULAR PURPLE SCALE
Chrysomphalus aonidum (L.)

leaf and fruit drop and severe die-back of twigs.

1 PEST PROFILE
1.4.2 Seasonal occurrence
1.1 Distribution and status

In the USA, this scale is known as Florida red scale and in Australia as circular black scale. In southern Africa it is now a minor citrus pest due to effective biocontrol, but it has the potential to be problematic if the biocontrol complex is disrupted. It occurs most frequently in the Limpopo Province, Mpumalanga, KwaZulu-Natal coastal area and Swaziland.

There are four generations per annum and crawlers can establish themselves on foliage throughout the year and also on fruit when these are present. The most obvious increase occurs during mid- and late summer. Infestations tend to be patchy in particular orchards. The occurrence of damaging population levels of this pest are primarily the result of disruption of its natural enemies.

1.2 Description

The adult female circular purple scale is approximately 2 mm in diameter with a central white cap surrounded by two brown rings which are surrounded by a broad purple band. The scale body beneath the covering is yellow, as are the eggs. Yellow crawlers hatch from the eggs and settle to form white caps and later the nipple stage. Similar to red scale, the scale covers of both sexes are initially circular, but after the first moult those of the male become oval. The full size male scale cover is much smaller than that of the adult female. The minute winged males are seldom seen in the orchard.

2 MANAGEMENT ASPECTS
2.1 Infestation/Damage assessment

The approach to these topics is similar on non-bearing and bearing trees.

1.3 Infestation sites on tree

The circular purple scale is a pest of foliage and fruit. It can occur on both non-bearing and bearing trees. Its comparatively exposed habitats on the tree facilitate its control with chemical intervention where it is required.

2.1.1 Inspection

Foliage and fruit should be inspected at monthly intervals.

1.4 Damage
2.1.2 Treatment threshold

When 10% of fully expanded leaves or 10% of fruit are infested with live, unparasitised circular purple scale a treatment should be applied.

1.4.1 Symptoms

The tissue immediately surrounding an individual scale turns yellow; this is particularly noticeable on foliage. Numerous scales on leaves result in general yellowing of the foliage. The dark female scale offers a marked contrast to the yellow background. Severe infestations are particularly detrimental to tree condition and can lead to

2.2 Control options
2.2.1 Biological

Circular purple scale is effectively parasitised by at least six different parasitoids of which *Aphytis holoxanthus* DeBach is the principal species. This parasitoid, which closely resembles the *Aphytis* spp. associated with red scale, can maintain commercial control of the circular purple scale if it is not eliminated by insecticides or disturbed by ant activity. Extremely high temperatures can also have a negative effect on the control given by *A. holoxanthus*. Ladybird beetles (*Chilocorus distigma* and *Rhizobius* [=Lindorus] *lophantae*) also feed on purple scale.

2.2.2 Cultural

The control of ants will assist the biological control of this pest. Trees need to be skirted and weeds suppressed where ants are controlled with trunk treatments. Avoid planting other crops which require extensive use of pesticides adjacent to citrus orchards. Drift from aerial applications of pyrethroids on adjacent crops is a common cause of outbreaks.

2.2.3 Plant protection products

This pest is susceptible to the organophosphate-containing sprays registered for the control of red scale but the timing of the sprays to coincide with crawler production is more important.