

Pest and disease management tips for olive groves



The main pests and diseases affecting olive groves in Australia are: Scale insects, Lace Bug and Peacock Spot

Scale insects

There are two types of scale insects that attack olive trees in Australia; soft scale and armoured scale.

- Soft scale species belong to the Coccidae family and include the Black Olive scale (*Saissetia oleae*) and the Soft Brown scale (*Coccus hesperidum*)
- Armoured species belong to Diaspididae family and include: Oleander scale (*Aspidiotus nerii*), Red scale (*Aonidiella aurantii*), San Jose scale (*Comstockaspis perniciosus*) and Olive scale (*Parlatoria oleae*)

Most soft scales often have only one or two generations per year, while most armoured scales can have several. Eggs of both types of scales are usually hidden under the mother's cover and are not visible. Eggs hatch into tiny, usually yellow crawlers with legs. The female adult dies soon after the eggs have hatched. Some armoured scale species give birth to live young.

Crawlers walk over the plant surface, are blown by wind to other trees, or can be inadvertently moved by people or birds.

Armoured scales settle down permanently after a day or two in the crawler stage, molt and begin to form their characteristic covers. Soft scales move around for a while longer but also eventually settle at permanent feeding sites.

Sooty mould is an unsightly fungus that is often associated with scale infestation. The mould grows on the excretions (honey dew) produced by the scale insects as they feed on the tree. The fungus does not cause any direct damage to the trees but can cause a significant reduction in photosynthesis by blocking sunlight from the leaves. Sooty mould can only be removed if the insects producing the honeydew are controlled. Once the scale insects are gone the honeydew supply stops and the sooty mould will slowly dry and flake off with exposure to sunlight and rain.

Scale - Biological control

Beneficial insects that are natural enemies of scale can be used to help manage scale. These include: the scale eating lady beetles (*Rhizobius* spp.) The larvae of these predacious lady beetles can be found under the female soft scales feeding on scale eggs and crawlers. Many parasitic wasps are important natural enemies of scale, including species of *Aphytis*, *Coccophagus*, *Encarsia* and *Metaphycus*.

Parasite activity can be monitored by checking scale covering for the round exit holes made by emerging adult parasites and by turning armoured scale over and looking for immature parasites.

Growing flowering plants around the grove will help to augment natural enemies. Adult parasitic wasps live longer, lay more eggs, and kill more scales when they have nectar or honeydew to feed on. Excessive amounts of dust from roads or cultural operations can disrupt the activities of natural enemies resulting in

reduced scale control. Conserving resident natural enemies is an important component of biological pest control.

Ants deter natural enemies, and if large numbers of ants are climbing up trunks to tend scales they should be controlled. Deny ants access to plant canopies by applying a sticky material (such as Stick'em) to the base of the tree trunk.

Insecticides can have direct effects on natural enemies by killing them or indirect effects by eliminating their hosts and causing starvation. In some cases, insecticides such as mineral spray oil can be successfully integrated into the system without harming natural enemies.

Beneficial insects including: *Metaphycus* sp. and ladybirds are available from specialist insect suppliers in Australia.

Scale - Cultural control

Canopy structure and density will have a major influence on the development of scale.

Scale prefer moist, dark, environments with mild temperatures for optimal growth. Regular pruning opens the canopy and exposes scale to sunlight, higher temperatures and drier conditions. Pruning to provide open, airy trees will help discourage scale and favor the activity of beneficial insects.

Open canopies will also help improve the penetration of sprays through the trees making spray applications much more efficient.

Scale - Chemical control

At the time of writing, Pyriproxyfen (Admiral rate-0.5ml/L), Fenoxycarb (Insegar 0.3 to 0.4 g/L) and

mineral/botanical oils are the only insecticides registered in Australia for control of scale in olives.

Admiral is a hormone regulator that works by disrupting the reproductive processes of the insect causing a dramatic population decrease the following season. Admiral is regarded as having low mammalian toxicity and is manufactured by Sumitomo Chemical. In Australia, Admiral is available from the The Olive Centre in QLD (Tel: 07 4696 9845).

Insegar is a carbamate insecticide that acts as a growth regulator, it has an off label permit for olives until Dec 2011 and is available from E.E. Muir and Sons (TEL: 03 9931 2200)

Mineral and botanical oils work by smothering the young insects when they are at the crawler stage. Applications of these chemicals must be carefully timed to reach immature scale in the crawler stage. At later stages the scale are very resistant to treatments. The main crawler stages for scale are in spring and summer. A second crawler stage may also be present in autumn. At least two sprays during each crawler stage are necessary because treatments do not affect the eggs. The second spray targets crawlers developing from the eggs still unhatched at the time of the first spray.

Traps made of double-sided sticky tape can be used to determine when crawlers are hatching. Before crawlers begin to emerge in spring, tightly encircle several twigs or branches on the infested tree with transparent tape that is sticky on both sides. Change the tapes at regular intervals, about weekly, and examine the tapes with a hand lens to identify the crawlers. Once eggs begin hatching, scale crawlers get stuck on the tapes and appear as yellow or orange specks.

Apply insecticide treatments after a sharp increase in crawler production occurs or after crawler numbers have peaked and begin to decline.

In the past, other insecticides have been registered with "off label permits" for the control of scale insects in olives in Australia these include : Methidathion (Supracide, rate-1.25m/L), Buprofezin (Applaud rate-3-6m/L).

Olive lace bug (*Froggattia olivinia*)

Olive lace bug is a serious pest of olives. Heavy infestations can cause loss of vigor, severe defoliation and reduced fruit yield. The bugs are sap-sucking insects that feed on the underside of the leaf causing a yellow mottling of the leaf surface which usually turns brown and eventually drops.

The olive lace bug can have numerous generations per year depending on the climate. New infestations can occur regularly throughout the growing season. Eggs that have over-wintered on the tree usually begin to hatch out in spring or late winter.

Olive Lace Bug - Chemical control

Monitor the trees in early spring for evidence of insect infestation. Apply insecticide treatments soon after lace bug activity is first noticed. Lace bug populations can build up rapidly if left unchecked. **At least two sprays are necessary 10-14 days apart to control each infestation.** Keep in mind that chemical treatments do not kill the eggs. The second spray (10-14 days after the first) targets the nymphs emerging from the eggs that were unhatched at the time of the first spray.

Low toxicity Pyrethrum products are effective in controlling olive lace bug. In Australia, the pyrethrum based insecticides registered for lace bug control are PyGanic and Py-Bo. Both products are available from The Olive Centre (Tel: 07 4696 9845).

PyGanic (rate-1ml to 2 ml /L) is a natural pyrethrum and is certified for use in organic groves.

Py-Bo (rate-1ml /L) is a natural pyrethrum that has been combined with a synthetic form of piperonyl butoxide (PBO) to increase the products potency.

Natural pyrethrum is extracted from the flowers of *Chrysanthemum* spp. and has a low mammalian toxicity. Applications of Pyrethrum products must be managed carefully if beneficial insects are being used in the grove as pyrethrum's are toxic to both the beneficial insect and the pest.

Good coverage is essential when using natural pyrethrums as they are contact sprays that have a very low residual life and break down quickly in sunlight.

Synthetic pyrethrum products mimic natural pyrethrum compounds but have the advantage that they have a longer residual life and are cheaper to produce. They are very effective in controlling lace bug. Research is currently underway to obtain approval for their use in the olive industry. Synthetic pyrethrum's are the active constituent in most household cans of fly spray.

A number of organophosphate insecticides have been given temporary registration for the control of lace bug on olives. These include: Dimethoate (Rogor, rate -0.75ml/L), Fenthion (Lebaycid, rate -0.75ml/L). Please check the current registration status of these pesticides with your agricultural supplier before use.

Olive Lace Bug - Cultural control

Lace bug are not difficult to kill but it is essential to obtain good spray coverage when applying chemical treatments. **Before spraying badly infested trees, it is recommended that severe pruning is undertaken to reduce tree height and to open the canopy.**

As well as making the management of the trees much easier, pruning will improve airflow and facilitate the

penetration of spray through the trees making control of pests and diseases much more efficient.

Pruning will also help rejuvenate badly damaged trees by encouraging new shoot development.

Once the infestation is controlled, regular monitoring of the pest is required on a fortnightly basis throughout the growing season. Usually "hot spots" will occur along the edge of the grove and/or in the vicinity of prior infestations. Hot spots start with the adult lace bug infesting a few trees. If these "hot spots" are sprayed as soon as the lace bug develops then the whole grove will not need to be sprayed.

Peacock Spot (*Spilocaea oleaginea*)

Peacock spot is a widespread fungal disease of olive trees that affects the foliage and to a lesser extent the fruit. The disease requires moist warm conditions to develop and usually becomes prevalent in autumn and spring. Small sooty blotches develop on the leaves, which in time grow into greenish-black circular spots that measure 2 to 10mm in diameter.

A faint yellow halo is often evident in the tissue around the spots. As the disease develops the leaves become yellow and fall. Most of the infected leaves will fall prematurely by the start of summer. In severely infected trees complete defoliation can occur.

Peacock Spot - Chemical control

Peacock spot is best managed by applying a preventive copper spray in late autumn. A second application in late winter is also recommended in areas subject to warm winters and spring rainfall.

If you missed these sprays an application in spring is recommended to prevent inoculum slowly building up and causing a major disease problem down the track.

Two fungicides are currently registered for the control of Peacock spot in olives: copper oxychloride (*rate-4g/L*) and copper hydroxide Kocide (*rate-2g/L*)

Peacock Spot - Cultural control

As with other pest and diseases pruning to provide open, airy trees is an essential management practice. Open trees will discourage Peacock Spot infection and make spray applications much more efficient.

General Spray information

When both a fungicide and insecticide need to be applied at the same time, mixing the two together in the same spray tank can reduce spray operations.

The compatibility of various chemicals can be checked on the product label or by contacting the manufacturer.

It is not recommend that chemical treatments are applied to the trees during flowering as some chemicals can cause flower abscission and disrupt fertilisation and subsequent fruit set.

Please note it is a legal requirement that label instructions are followed, if olives are not listed on the label of the pesticide, it is either not registered for use on olives or an off label permit is required.

Pesticide registrations and off-label permits for olives can be viewed and downloaded from the Australian Pesticides & Veterinary Medicines Authority **website:** www.apvma.gov.au (click on **search for a permit tab** then enter olive under the crop section).