

NSW Cut Flower Industry

Managing Scale Insects in Cut Flowers

Description

Scale insects, belonging to the superfamily Coccoidea, are small, immobile pests, many of which have a covering that partially protects them from predators and some chemical treatments. There are two major types of scales - armoured (hard) (family Diaspididae) and unarmoured (or soft) scales (family Coccidae). Examples of common armoured scales are red scale, latania scale, rose scale and white palm scale. Examples of common soft scales are white wax and pink wax scales, black scale and soft brown scale. Adult females are generally sedentary and lay eggs or live young under their bodies, from which the young crawlers emerge and disperse prior to settling. Male scales may either be present on plants (they are usually much smaller), free-flying insects or not present in some species. As multiple generations occur in a year, populations can build up reasonably rapidly if left unmanaged, and they spread from hot spots.



Figure 1. Ants attending soft scales



Figure 2. Black scale with crawlers and parasitoid *Scutellista*

Quick Facts

- HOST PLANTS:**
 Scale insects can infest a wide range of plants, particularly perennial species. They are normally located on stems and leaves. There are two types of scales - armoured (or hard) and unarmoured (or soft) scales.
- WHERE TO CHECK:**
 Inspect the stems, twigs and leaves
- WHEN TO MONITOR:**
 Regularly monitor plants during the growing season, especially during warmer months when scale populations tend to increase, and crawlers emerge
- HOW OFTEN TO MONITOR:**
 Conduct inspections at least fortnightly during peak growing periods, and monthly during other times of the year
- ACTIONS:**
 Upon detection of scales, take immediate action by removing heavily infested plants, cleaning plant debris, and applying suitably timed control measures

Damage

Scale insects feed by sucking sap from leaves, twigs and branches. Hard scales commonly cause yellow or brown spots on leaves, and can also cause apparent water stress, distorted growth and dieback. Soft scales excrete a sugary-water exudate known as honeydew which is deposited on plant parts below the infestation. Honeydew deposits encourage the growth of black sooty mould fungus making plant material unattractive and unsaleable as well as attracting ants which, in turn, protect the scales from natural enemies.

Prevention

- **Inspection:** Always inspect incoming and mother stock for signs of scale infestation.
- **Sanitation:** Remove infested plants/plant material and minimise staff movement in infested areas.
- **Ant Control:** Manage ant populations as they protect soft scale insects from natural enemies and help spread scale crawlers.



Image: Dr Robert Spooner-Hart

Figure 3. Armoured scale on leaf

Monitoring

- **Visual inspections:** Examine both sides of leaves, stems, twigs and branches for scale insects and associated damage, including black sooty mould and ant activity.
- **Use a hand lens:** Inspect plants with a 10x hand lens to detect crawlers and parasitised scales (parasitised scales show exit holes where parasitoids have emerged). Adult female scales can be removed and examined on a contrasting background (e.g. white or black) to detect eggs or hatching crawlers (or even larvae of parasitoids).
- **Check life stages:** Identify the presence of eggs, crawlers, and adult scales to determine appropriate management action. Timing of most chemical options requires targeting crawlers and early-stage nymphs.



Image: GAC Beattie

Figure 4. White wax scale

Control

Cultural

- **Inspect and quarantine new plants:** Ensure that new stock is free from scale insects before introducing them to the growing area.
- **Remove infested plant material:** Remove and dispose of heavily infested plants or plant parts.
- **Weed management:** Keep the growing area and surrounding areas free of weeds and other plants (including natives) that might harbour scale infestations.
- **Optimal plant spacing:** Ensure adequate spacing between plants to improve air circulation and reduce the survival and spread of scales.
- **Sanitation:** Regularly clean and disinfect recycled pots, tools, and growing areas to prevent scale insects from spreading.
- **Ant Control:** Control ants in soft scale infestations as they spread crawlers and protect the scales from natural enemies.
- **Physical removal:** When only a small number of plants are present with low levels of infection, squashing or rubbing off scale insects is an option. Use rubber gloves when doing this to prevent skin irritation.

Biological

- **Beneficials:** There are a number of commercially available natural enemies that can assist in managing soft scales, including *Cryptolaemus montrouzieri* and green lace wings (*Mallada signatus*), and for hard scales Chilocorus lady beetles (*Chilocorus circumdatus* (red) and *C. baileyi* (blue)) and wasp parasitoids (*Aphytis lingnanensis* and *A. melinus*).
 - » Many naturally occurring natural enemies, including lacewings, lady beetles and parasitoids that are not commercially available can play a significant role in managing scale populations.
 - » Ant activity in plants infested with soft scales should be discouraged and managed by targeting ant movements or their nests.
 - » There are also several fungi that may infect and kill scale insects, although these are unlikely to substantially reduce populations except late in the season when numbers are already high.

Chemical

Timing of application and effective plant coverage of pesticide application are critical for effective management of scales, as crawlers and young nymphs are the most susceptible stages to most registered products. Select insecticides that are least harmful to natural enemies to be compatible with biological control.

Image: andreaobzerova



Take Aways

- **Proactive monitoring** is essential for early detection and effective management of scale insects.
- **Cultural practices** such as regular inspection, pruning, and sanitation are crucial in preventing and restricting spread of infestations.
- **Biological control** should be prioritised to reduce reliance on chemicals and to preserve natural enemies.
- **Chemical control** should be used minimally and strategically with careful consideration of resistance management and timing of applications.

References / More Information

- <https://www.horticulture.com.au/globalassets/hort-innovation/resource-assets/ny15002-scale-insects-pest-mgmt-plan.pdf>
- <https://www.agric.wa.gov.au/control-methods/aphids-mealybugs-and-scales?nopaging=1>
- <https://bugsforbugs.com.au/whats-your-pest/scale-insects/>

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