

CONTROL OF RED SPIDER AND FALSE SPIDER MITES ON ORCHIDS







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WHAT ARE WE GOING TO TALK ABOUT TODAY

- HOW TO IDENTIFY THE PROBLEM MITES ON YOUR ORCHIDS.
- **LEARN ABOUT THEIR LIFE CYCLE SO YOU CAN IMPLEMENT THE CORRECT CONTROL MEASURES AND TIMING.**
- HOW TO RECOGNISE THE PRESENCE OF SPIDER MITES THROUGH DAMAGED LEAVES.
- **USING CHEMICAL CONTROL MEASURES.**
- USING LESS TOXIC CHEMICAL CONTROL MEASURES.
- **USING BIOLOGICAL CONTROL MEASURES.**
- NATURAL PREDATORS.
- **HOME REMEDIES .**



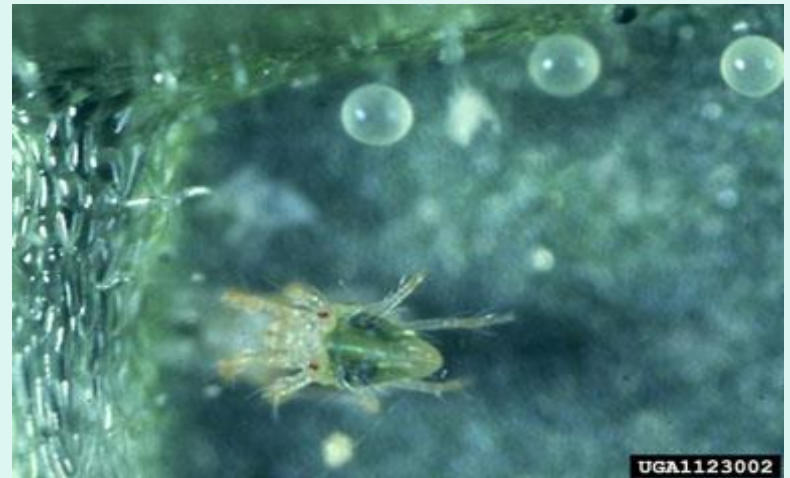
	<u>Plant feeders</u>	<u>Fungi feeders</u>	<u>Scavengers</u>	<u>Predators</u>
Colour	Green, brown or dirty red. Not bright red.	Transparent, or opaque to off white. Black or very dark brown. Not red.	Off-white to pale pink, often with a white longitudinal stripe. Not red.	Often bright red. Pale yellow through to mid brown. A few are bright yellow or orange.
Movement	Spider mites walk fairly quickly when disturbed. Other plant feeders walk very slowly.	Move slowly or very slowly when disturbed.	Run rapidly when disturbed. Front legs 'twitch' as though the mites are nervous.	Most are fast moving hunters, and run very quickly when disturbed.
Location	Exposed locations on the leaves and fruit.	Usually found around sooty mould or debris, especially under the calyx.	May occur in large numbers around patches of sooty mould and debris.	Exposed locations on the leaves and fruit. Some aggregate in small groups under leaves.
				

WHAT ARE SPIDER MITES

- Mites are tiny creatures related to spiders and ticks, they are not insects.
- Plant-feeding mites can be thought of as plant parasites and are often amongst the most serious pests to cultivated orchids.
- Two mite species that are pests on cultivated orchids are the two-spotted and false spider mite or (flat mite).

IDENTIFICATION OF THE PROBLEM MITES ON YOUR ORCHIDS

- **Two-Spotted Mites** are also known as spider mites or red spider mites. Two-Spotted mites are very small (0.5mm).
- Difficult to see without magnification.
- Microscopic pearl like eggs.
- Adults are **yellow-green** with a large dark spot on each side of the abdomen. With the onset of cooler conditions in autumn they become **reddish-orange**, and eventually lose their characteristic dark body spots, although they retain the bright red eye spots.
- **Male** is smaller and has a more **pointed abdomen**, whereas the **female** is approximately 0.65mm long and **oval in shape**.
- Nymphal mites closely resemble adults, but are generally smaller and paler in colour.



TWO-SPOTTED MITE

CONTINUED



TWO-SPOTTED MITE CONTINUED

Two-spotted mite is the single most important pest of ornamental plants and cut flowers in Australia. Causing premature leaf and bud drop. It is a serious pest to outdoor crops, including strawberries grapes, blackcurrants, bananas, raspberries, kiwifruit, sweet corn, maize, peas and tomatoes.

Also found on capsicums, Melons, roses, carnations etc.



LEAF DAMAGE CAUSED BY TWO-SPOTTED MITES

Red Spider mite feed by puncturing the epidermal cells of the leaves from which they suck the chlorophyll. This turns the leaves yellow and they will eventually drop off.

Other symptoms include conspicuous pale-coloured spotting visible on the upper surface of the leaves. They also secrete a very fine silk-like webbing under the leaves, which causes the leaves to appear silvery.

Leaves may have brown to black marks as well, possibly due to fungal attack in the damaged cells. This damage generally reduces the vigour of the plant. Mites may also transmit certain viruses.



IDENTIFICATION OF THE OTHER PROBLEM MITES

- False Spider Mites, but the name flat mite is preferred, as it is accurately descriptive and avoids confusion with spider mites. Flat mites are native to tropical and subtropical areas.
- Flat mites are smaller than two-spotted mite, Adults being only 0.3mm in size.
- Oval and flat in shape.
- Dirty green to red in colour.
- Lays small red eggs.
- Do not spin webs like two-spotted mite.
- Some times referred to as the Phalaenopsis mite as they are well known pest on Phalaenopsis plants.

FALSE SPIDER MITE

Flat mites - family Tenuipalpidae

Small (~0.3 mm in length), barely visible without magnification.

Oval and flattened in shape.

Dirty green to red in colour.

Stationary when feeding, move slowly when disturbed.

Small, red eggs laid singly in protected places on the leaves and fruit.

Citrus flat mite -
Brevipalpus lewisi
Worldwide
distribution,
Interstate
quarantine risk:
low
International
quarantine risk:
dependent on
destination



FALSE SPIDER MITE CONTINUED



DAMAGE DONE TO LEAVES FROM FALSE SPIDER MITES

Flat mites often feed on the upper surfaces of leaves and this will create a pock-marked appearance from empty and collapsed leaf cells. This type of damage is particularly easy to see on infested Phalaenopsis leaves. Flat mite feeding on thin leaves, particularly the underside, is similar to the stippling caused by Two-Spotted mite, but there is no webbing.



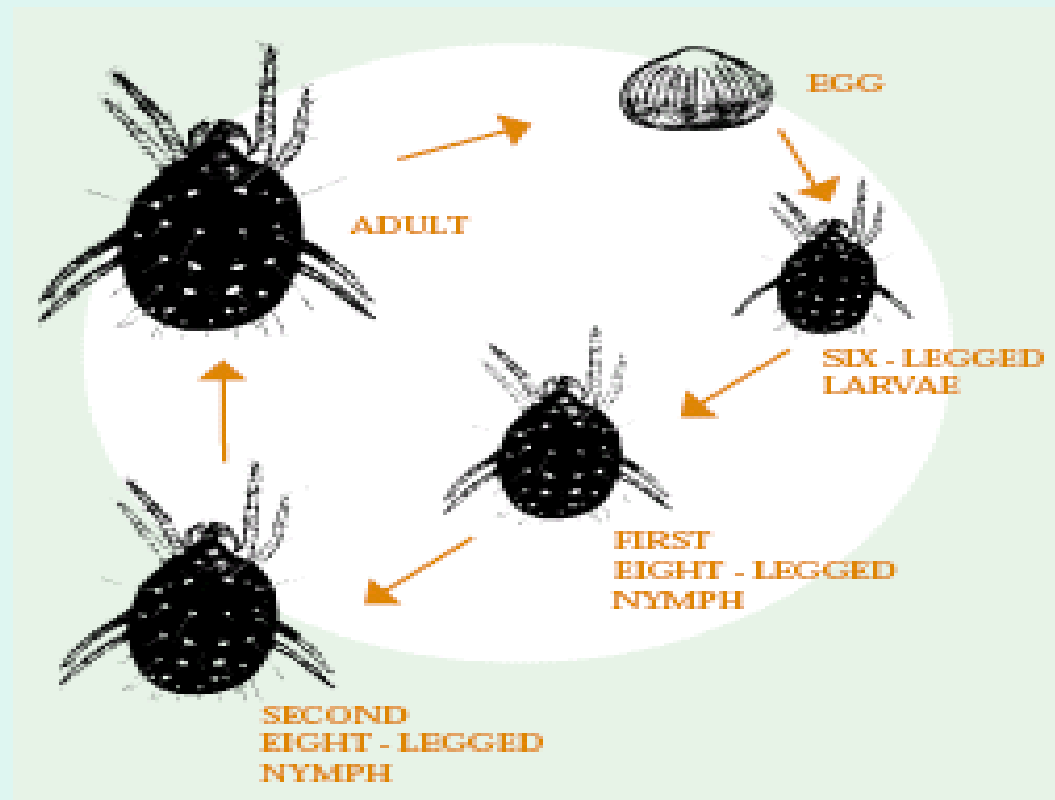
LIFE CYCLE OF SPIDER MITE

Developmental rates of mites are dependent upon temperature. In general, the higher the temperature the shorter the life cycle.

The egg may take upwards of 3 wks to hatch for flat mites, but only 1-2 days for two-spotted spider mites, at standard indoor temperatures.

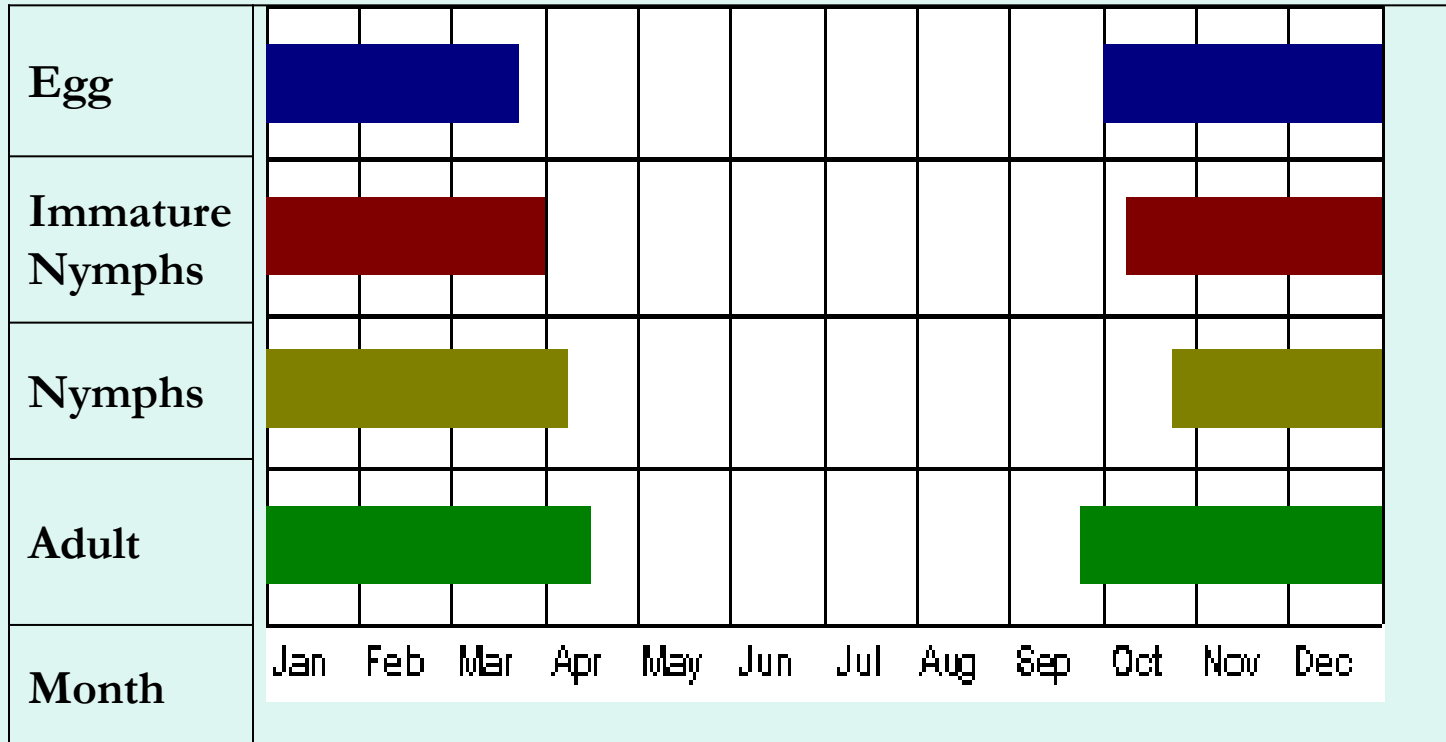
While larval & nymphal stages usually take 5-6wks to reach adulthood for flat mites it may take only 1-3 wks for two spotted mite.

While flat mites take 6-9wks to complete a generation, two spotted mite can take as little as 7 days in optimum conditions.



CORRECT TIMES TO SPRAY FOR SPIDER MITE

SPRAY TWICE A YEAR - ONCE IN THE **SPRING** AND ONCE IN THE **AUTUMN**, BEFORE WINTER.



Note: Coloured bars indicate periods of peak activity in each of the life cycle stages

WHERE DO THEY COME FROM

- Typically, mites are always present in low numbers. This makes managing cultural conditions important for mite control. Mites will readily move between plants, float on air currents, be introduced on new plants or contaminated from other plants at shows, meetings etc.
- Outside trees and plants can harbour mites, for example mango trees attract great numbers of mites.
- Colonization of your plants by mites can be done at anytime, but severe problems may not show themselves until favourable environmental conditions are present. (Hot, dry, rain-less conditions).

CONTROLLING SPIDER MITES WITH THE PROPER CHEMICALS

- The following miticides are very effective in the control of spider mites: **STEALTH, ACRAMITE FLORAMITE & VERTIMEC.**
- **CHEMICAL CONTROL.** Persistent populations of mite infections usually demand the need for synthetic pesticides. Especially in commercial and large orchid collections, where fast knock down is needed. People should be aware that most common insecticides are not effective against mites. Pesticides designed for mite control are called miticides.

PROBLEMS USING CHEMICAL CONTROLS

- Apart from the obvious health hazards to humans, if the proper safety protections and precautions are not observed. Other problems can arise, when chemicals are used frequently and without proper spraying programmes. Add this to the failure to introduce chemicals from a different chemical group, will all lead to mites developing resistance to those chemicals. This has already been seen with the indiscriminate and over use of **Kelthane**, which has almost become ineffective on mite in orchids. For this reason it is recommended that a product be only applied no more than twice per season. Usually in Spring and Autumn.

LESS TOXIC CHEMICAL CONTROLS

- Insecticidal soap sprays such as **NATRASOAP** and horticultural oil like **PEST OIL, ECO-OIL/NEEM OIL** can be effective. These products work by smothering the mites, so a complete coverage of all sprayed plants is essential. Plants usually require 3 applications 7-10 days apart.
- Mites do not build up resistance to these products.

HOME MADE SPRAYS AND REMEDIES

- SOAK COTTON BUDS IN 100% PURE EUCALYPTUS OIL AND PLACE IN A 2 LITRE PLASTIC SOFT DRINK BOTTLES AND PUNCH FOUR AIR HOLES IN THE BOTTOM OF THE BOTTLE. HANG BOTTLES AMONGST YOUR PLANTS AT ABOUT 3 METRE INTERVALS. THE OIL SLOWLY EVAPORATES, PERCOLATES OUT OF THE BOTTLE THROUGH THE AIR HOLES, AND DIFFUSES AROUND THE PLANTS KILLING THE MITES. AS THE SMELL VANISHES REPLACE WITH FRESH OIL-SOAKED COTTON BUDS IN EACH BOTTLE.
- A home made spray for two-spotted mite is made by mixing together 4 cups of flour, 1/4 cup of milk and 20 litres of water. Mix up only as much as you need at a time. Alternatives to this recipe suggest trying buttermilk instead of milk.
- Use wettable Sulphur

PHYSICAL CONTROLS

- There are some easy things you can do that will have a big impact on spider mite numbers. Use a high pressure hosing in the early morning 3 days in a row, concentrating under the leaves.
- Try to control weeds in and around your orchid houses.
- Remove infested leaves and pick up fallen leaves as they all harbour mites.
- Maintain High Humidity

BIOLOGICAL CONTROL OF SPIDER MITES

Organic gardeners have an advantage regarding spider mite control. Common organic practices such as making compost, mulching the soil and avoiding chemical Insecticides help to encourage predatory mites, a major predator of two-spotted mite. A healthy garden will have a resident population of predatory mites to keep mites under control. Predatory mites are abundant in the top layers of soil, humus and animal manures.

Predatory mites are available commercially from **Beneficial Bug Co**, PO Box 436, Richmond NSW 2753 Ph 02 45701331; **Bio-Protection**, PO Box 384, Kilmore, VIC 3764 Ph 03 57810033



NATURAL PREDATORS

- Lacewing, Black and spotted ladybirds, predatory mites, damsel bugs, wasps and hover fly larvae.



FINAL WORD

- **Monitor** your plants regularly.
- Practice **prevention** by creating a non conducive environment for pests.
- If you use a chemical controls do not spray in the heat of the day as you may get burning and cause phototoxicity in the leaves.
- Encourage natural predators especially the predatory mite.
- While Two-spotted mite/false spider mite feeding on the leaf are rapidly paralysed from chemical sprays, immature mites may be seen for up to 7 days after application. This is because eggs laid on the day of application may still hatch and the resulting mites need to be controlled by a second spray. Between 7-10 days.
- Immediate action is required if mite numbers exceed 3-5 mites per leaf.