

Spider Mites

by Dr Jacinta Burke

My roses were growing well. I had been fertilising at the right times so the plants had put on strong growth in the spring. A spraying program had been implemented to prevent black spot, powdery mildew and aphids, the leaves were nice and clean. I even had enough flowers to enter in the novice section at the show. Then suddenly at the beginning of summer, without warning, things started to go terribly wrong. In one part of the rose garden the plants started to look sickly. The older leaves were going a bronzed yellow and then white. Within a fortnight leaves were withering on the bush, going brown and falling off. I soon found the cause – two spotted mites. Using a magnifying lens I was able to see the telltale webs crawling with innumerable numbers of mites on the backs of the leaves. I decided to find out more about this dreadful scourge.

Identification

Spider mites are usually first found on trees or plants adjacent to dusty roadways or at margins of gardens. This was certainly true in my situation. The infestation started next to my gravel drive at one end of one of my rose beds. Plants under water stress are also highly susceptible. There had been some but not a lot of rain so maybe this was another contributing factor.

Spider mites are tiny (about 0.4 mm) arachnids related to spiders having two body segments (thorax and abdomen) and eight legs. The name "spider mite" comes from the silk webbing most species produce on infested leaves. The presence of webbing is an easy way to distinguish them from all other types of mites and small insects such as aphids and thrips, which can also infest leaf undersides. The two-spotted spider mite, *Tetranychus urticae*, was originally native only to Eurasia but now has a cosmopolitan distribution much to the ire of horticulturalists. The two-spotted spider mite is orange, green, or yellow, with two dark spots on the abdomen. It has a mouthpart, which it uses to pierce the epidermis of the leaf and suck out the contents of the cells below. After feeding, the leaf tissue collapses leaving scars where the green plant cells have been destroyed. Spider mites can eat a large variety of foods. They feed on hundreds of types of plants, including most vegetables, food crops, and ornamentals such as roses.

Life Cycle

Two-spotted mites reproduce sexually. Mated female spider mites over-winter on leaves of suitable plants, leaf litter or other garden debris. In the spring the female commences laying eggs. The adult spider mite can lay about 100 eggs. Each egg is translucent and pearl-like. It hatches into a larva, which then goes through two nymph stages before becoming an adult. The complete life cycle may take seven days in hot weather to three weeks in cooler weather. Spider mite populations can build up to enormous numbers and decimate roses in a very short time if the conditions are right. In hot, dry weather, plants that are very close to a wall, fence or each other with little air circulation and little water offer a haven for these pests. Under these conditions their numbers



Mottling indicates infestation of red spider mite



Advanced infestation of red spider mite

can increase exponentially. They feed on the underside of rose leaves, especially the older leaves making them appear colourless particularly along the veins. Dust and dirt on leaf surfaces reduce the cooling effect of transpiration and favour proliferation of the mites. Miniature roses seem to be more susceptible to infestation by spider mites and can completely defoliate in a matter of days. As foliage quality declines on heavily infested plants, female mites catch wind currents and disperse to other plants. Dense populations may undergo a rapid decline in late summer when predators overtake them, host plant conditions become unfavourable, or the weather turns cooler as well as following rain.

Management

The critical facts are:

1. Sprays that kill mites will not kill their eggs.
2. All eggs that were present when spraying will hatch within five days.
3. When eggs hatch they can grow to adulthood and start laying more eggs after five days.
4. It is therefore essential to spray again five days later.
5. Mites live and feed on the undersides of rose leaves. They start near the ground. As their numbers increase they migrate upwards to the top of the bush and to other bushes. If they are present in higher leaves they are already very numerous. It is important to detect them in the lowest leaves before this happens.
6. Any spraying must completely cover the undersides of all rose leaves. Mites can be clearly seen with a magnifying glass (X 4 magnification).
7. Infected leaflets have pale patches spreading from the central vein. Examine the underside for mites. They feed and then move. The movement confirms their presence.

These mites appear around October/November in the Melbourne area, and through the summer months. If they have not come to your garden by year's end they are unlikely to bother you.

I had been using *Confidor* to control aphids but it has been found that broad-spectrum insecticide treatments for other pests frequently cause mite outbreaks, so it is best to avoid these

pesticides when possible. The broad-spectrum pesticides reduce the numbers of beneficial mites. To get the two-spotted mite population under control quickly I sprayed with Vertimec. This spray cannot be used more than twice in one season due to the risk of resistance. Since the pest numbers were high I repeated the spray five days later. Subsequent control of the mites was done by spraying the plants with water, especially under the leaves, more often to increase the humidity and to keep the leaves free of dust and dirt. This was done at a time when plants had sufficient time to dry off before the evening.

Insecticidal oils or soaps can be used for management so I commenced a regular spraying program of Eco-Oil, which will smother the two-spotted mites and keep them under control.

It is important to remember not to use soaps or oils on water-stressed plants or when temperatures exceed 32°C as it may lead to plant injury. Oils and soaps must contact mites to kill them, so excellent coverage, especially on the undersides of leaves, is essential.

Two-spotted mites can also be controlled effectively with the use of predatory mites. These mites are like the plant-attacking ones, except that their food consists of other species of mites. They are relatively cheap, are readily available from companies which breed natural enemies and have no toxic or other undesirable side-effects. The most commonly used species in biological control is *Phytoseiulus persimilis*. Predatory mites can be obtained from a number of companies in Australia. The Australasian Biological Control Association can be contacted on the freecall number 1800 000 160 to find your nearest supplier. When using biological control methods it is not possible to use harmful chemical sprays as these will also kill the beneficial predators.

Neem Oil has also been recommended as a method of control. Neem contains an oil extract from *Azadirachta indica*, a 40-foot (12m) tall tree, native to parts of South Asia. Neem acts as a botanical pesticide, effective in fighting against spider mites.

I plan to include horticultural oil as part of my regular spraying program in an effort to smother what mites may be present and prevent them from building up to the devastating numbers that they did last summer.