

# Spider Mites

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The first thought most people have about spider mites probably relates to damage once inflicted to a favorite plant by tiny creatures they could hardly see. Roses are particularly vulnerable, but spider mites are pests of over 180 other plant species. Spider mites are neither spiders nor insects, yet they spin webs similar to their better known arthropod cousins. The bodies of mites are small and undifferentiated into distinct regions. Spider mites usually have eight-legs as adults, and their mouthparts (chelicerae) are designed specifically for puncturing the epidermal cells of host plants. Members of the spider mite family (Tetranychidae) quickly populate their hosts, and some spin visible webs on which they walk and lay eggs, especially when population densities are high.

The most common spider mite is the two spotted spider mite, Tetranychus urticae, which is found on numerous host plants.

Other common spider mites include the southern red mite, Oligonychus ilicis, which feeds on spruce, azalea, camellia, and related plants; the spruce spider mite, Oligonychus ununguis, which is the major mite pest of conifers worldwide; and, the European red mite, Panonychus ulmi, which is a pest on many fruit trees, grapes, and roses. The clover mite, Bryobia praetiosa, feeds on a number of herbaceous plants and turfgrasses; the boxwood mite, Eurytetranychus buxi, is found primarily on boxwoods. Most horticulturists are familiar with the microscopic cyclamen mite, Phytonemus pallidus (family Tarsonemidae), which can be a serious pest of many floricultural and foliage crops. It is closely related to the larger tetranychids, but does not spin silk.

The two spotted spider mite female is typically larger than the male and has a rounded posterior. The slightly smaller male appears to have longer legs, and his poste-

rior is more acute. The male typically moves around faster than the female.

In winter, females enter a diapause stage and overwinter wherever they can find protection in the soil, crevices, or ground litter. With the onset of warmer weather, females come out of diapause and begin laying eggs. In greenhouses, females do not diapause at all, so mite populations may be continuous throughout the seasons.

Females lay up to six eggs in a day and average one-hundred eggs in a lifetime. Eggs hatch in about eight days at 10°C, and require only three days to hatch at 24°C. Spider mites go through three developmental stages between egg and adult: larva (six-legged), proto-nymph, and deutonymph. During each molt, the mite attaches itself to the surface of the plant and forms a chrysalis.



Figure 1: Leaf with stippling damage caused by spider mites.

The first obvious sign of spider mite infestation is stippling on the upper surfaces of the leaves (Figure 1). This occurs when spider mites pierce

individual cells of a leaf with their chelicerae, releasing the cell's cytoplasm, including the chloroplasts. A heavy infestation of spider mites can reduce photosynthesis, cause leaf excision, and eventually cause death of the plant. A copious amount of webbing around the terminal ends of upright branches (Figure 2) is a sure sign of heavy spider mite infestation.

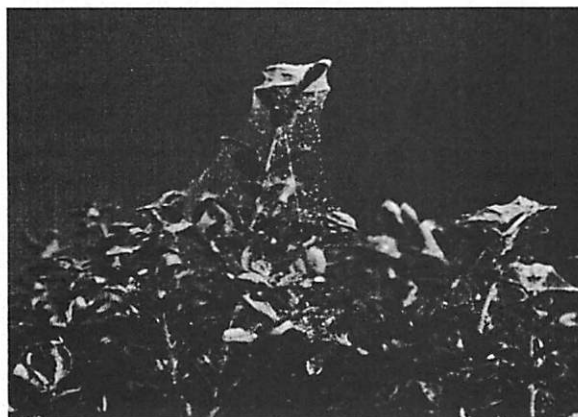


Figure 2: Webbing associated with heavy spider mite population.

It has been suggested that the reason the webbing is attached to the tops of plants is that this is the area where humidity is lowest. The webbing is laid down everywhere the spider mites go. This can be easily seen with magnification on the underside of leaves.

Detection of spider mites for making treatment decisions can be accomplished by viewing the underside of leaves using a 10x lens. Another detection method is to beat

leaves and stems over a white piece of paper. Dislodged spider mites can be seen as little "specks" running around on the paper. The size of the spider mite "specks" on the paper is about the same size as the period at the end of this sentence.

Cultural controls for some spider mite species can be attained by maintaining an environment that is high in humidity and low in temperature. High humidity encourages pathogenic fungi that attack the mites, and low temperature slows the mites' reproductive rates.

Encouragement of natural enemies such as lady beetles, predatory thrips, predatory bugs, and predatory mites (Phytoseiidae) is helpful in suppression of mite popula-

tions. Natural enemies may be encouraged by keeping plants healthy, by choosing chemical sprays specific for mites and by spraying only when the pest population density has reached an economic (treatment) threshold. Most broad-spectrum chemical pesticides kill the beneficial insects and mites, and thus induce an increase in the spider mite population.

Chemical control is usually needed at some point. Spraying with a labeled acaricide kills only the nymphs and adults; the eggs are unaffected by most acaricides. Therefore, two treatments should normally be applied at an interval of approximately one week. Current recommended pesticides and application rates are available at county extension offices.

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