

LivingWithBugs Guide

identification, life cycles and management

Spider Mites

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Many garden and landscape plants are damaged by spider mites (Acari: Tetranychidae; Fig. 1). Some plants are more susceptible than others and during dry summers spider mites will be more numerous and damage will be more apparent. Mites can deform or even kill plants. Fortunately, spider mites and their damage are easy to recognize once you have learned the tell-tale signs.

Adult mites are very small, generally dark green to black but occasionally yellow to red in color. They have eight legs in all active stages except for the six-legged larva. Adult females are considerably larger and darker than other stages (Fig. 1). It is often difficult to distinguish adult males from nymphs.

On broadleaf plants spider mites live and feed generally on the underside of leaves. Colonies may be covered by fine *spider web-like* protective webbing. Feeding removes the green leaf color leaving behind a speckled or “stippled” appearance (Fig. 2). Stippling marks the areas where the “machinery” of the leaf has been removed.

Heavy infestations cause bronzing and leaf drop (Fig. 3). Spider mites favor warm, dry weather found during mid-summer. The spruce spider mite (the pest of arborvitae, Douglas-fir, Alberta spruce and other conifers), however, can be a problem in the spring and fall as well (see our article about spruce spider mites). As a rule, spider mites are more dam-



Figure 1. Two-spotted spider mites. Adult female (center right), eggs (shiny balls) and smaller, adult male (left). Leaf vein runs across top. View as seen through a good-quality microscope.

aging when plants are water stressed or lack nutrients. Damage will be worse during relatively dry years.

Spider mites develop from an egg (Fig. 1), through a six-legged larva, two nymphal stages (protonymph, deutonymph) to the adults. Development time can be as short as a week under ideal (warm) conditions. Popula-

tions and their damage can therefore build rapidly during summer. Most spider mites survive winter months as mated adult females (spruce spider mites are an exception here as well).

What To Do

Keep plants well-maintained with adequate water and fertilizer. Plants that are adequately watered

Questions?

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and fertilized more easily tolerate spider mite damage. Give plants plenty of “elbow room” as crowding will probably stress plants and cause a spider mite outbreak and other pest problems.

The best control for spider mites is rain or other



Figure 2. Spider mite feeding injury, or stippling, of a bean leaf. Green cells are emptied leaving behind the light-colored surface seen here. Mites generally feed on the leaf underside, between the veins.

overhead irrigation. Rainwater literally washes mites off the plant and they are unable to crawl back. A good rain shower drastically reduces spider mite numbers. Unfortunately, soaking rains are often too few and far between during summer when spider mites are the biggest problem. Heavy overhead watering, however, can be just as effective. Be careful not to damage leaves with the water spray and don't apply when leaves can stay wet for more than a few hours. For example, don't wet leaves in the evening.

The next best controls for spider mites are natural enemies. Many predators feed on these tasty morsels. Lady beetles, syrphid flies and lacewings are the best known but by far the most effective spider mite hunters are other mites, called *predator mites* (Acari: Phytoseiidae; see our ar-

ticles about Natural Enemies and Predator Mites). Naturally occurring phytoseiids often work best but native populations can sometimes also be *augmented* with mites you release.

Finally, you may need to control spider mites

Feeding removes the green leaf color leaving behind a speckled or “stippled” appearance.

with chemicals at certain times or risk losing your plants. Commercial growers have access to pesticides that specifically target spider mites (miticides) or spider mite eggs (ovicides). Some of the better (and more expensive) materials exhibit very low human toxicity and low impact on non-target organisms.

The choices that gardeners have for spider mite control are more limited. Use the following method for low toxicity but highly effective spider mite control.

- First, scout for mites. Hold a piece of white paper under the leaves where you suspect an infestation. Tap on the branch hard enough to dislodge any mites (but not too hard!). If spider mites are present they will appear as tiny, dark flecks on the white paper – about the size of ground pepper.

- Pick a sunny, warm (about 75- 85 °F) day. In the morning hose off the plants to remove as many mites and eggs as possible. This washing will remove dust, dirt and other debris that favors mites as well. Use high water pressure, but be careful not to damage the plant.
- Mix up a solution of insecticidal soap. Apply spray to all leaf surfaces where mites might be hiding. Do the application in the morning because soap can burn foliage when it is hot. Before the soap solution dries wash it off the with the hose. This final step will remove residual soap that might burn tender leaf tissue.
- Repeat these steps at 1-2 weeks until you no longer find mites.
- This procedure will work for houseplants as well.

Take the plants outside and hose away!

One final caution: insecticidal soap solution should be almost clear with a slight milky color.

Don't use the solution if it is milky white or solids form in the container. This is an indication that the soap has "gone bad" and may damage your plants.

For conifers (arbovitae, spruce, pine, fir, etc.) the procedure is a little different. Spruce spider mite (*Oligonychus ununguis*) is the most common spider mite on conifers and unlike others they produce a winter egg that can be found on stems and needles even in the middle of winter. These eggs can be effectively controlled by late winter applications of horticultural or dormant oils (see our article about Spruce Spider Mite).

During summer, spruce spider mites can usually be controlled with washing and insecticidal soap as outlined above.



Figure 3. Paired-leaf experiment. In this experimental setup twenty adult spider mites were confined to the leaf (peppermint) on right by a sticky barrier (not visible). The leaf on the left remained mite-free. After fifteen days the leaves were compared, injured vs. uninjured. Injured leaves were dehydrated, and *continued to lose significantly more water* than did uninjured leaves. Injured leaves were also unable to carry out normal physiological processes. Injured leaves were shed (abscised) at a greater rate, too.