Managing Spider Mites in the Home Environment

Arthur L. Antonelli, Daniel F. Mayer, Carrie R. Foss, and Carl H Shanks, Jr.

Spider mites (Fig. 1), like insects, belong to a large group of invertebrates called arthropods. They differ from insects and other classes of arthropods in having eight legs only as adults (larval mites have six pairs of legs). The closest relatives include spiders and ticks. Common species in the Pacific Northwest include McDaniel mite, citrus red mite, spruce spider mite, and the twospotted spider mite. The latter is the most common landscape and garden mite pest.

Spider mites are among the most serious pests on both yard and houseplants. As sucking pests they cause chlorosis (yellowing) of the leaves or needles (Figs. 2 to 4). When populations are high, the leaves turn brown and die, frequently resulting in leaf or needle drop. Sensitivity and susceptibility to mite damage vary among plant species. The economic threshold* or population level at which serious damage occurs varies from a few mites per leaf (on pears) to as many as 25 per leaflet (on raspberries). The host list for each mite species differs. The twospotted spider mite infests 100 or more different species of plants, while the spruce spider mite appears exclusively on conifers. One of its preferred hosts is the Alberta spruce a favorite landscape ornamental.

Fig. 1. Adults of McDaniel and twospotted spider mite.

Fig. 2. Damage of twospotted spider mite to raspberry leaves. (top: healthy leaves; bottom: damaged leaves).
Fig. 3. Webbing and damage of spruce spider mite.

Fig. 4. Damage to skimmia leaves by the citrus red mite.

Fig. 5. Secondary Pest Explosion. This model shows what happens when growers apply a broad-spectrum insecticide to control a primary pest even before an economic threshold was realized (E.T. 1). While the material may have been appropriate for leafroller control, it also impacted an effective predator that was nicely suppressing spider mites. The net result is that spider mites, previously undetected players, rapidly increased beyond their economic threshold (E.T. 2), thereby requiring an additional spray. Message: Use of a selective material for leafrollers would have preserved the predators.
Conditions That Encourage Infestation

Many years of observation and research by WSU experts in both field and plant clinics have shown that a hot, dry, and dusty growing season commonly leads to serious spider mite problems in landscapes. Mites become dehydrated during hot weather. Dust appears to cause further mite dehydration, forcing them to feed more frequently. Plants such as azaleas, that normally do not have mite problems, have more serious problems with spider mites when drought stressed than when grown under optimal conditions.

Spider mite problems frequently break out on plants grown where spider mite predator populations do not usually occur. This situation commonly exists in greenhouses. Similarly, moving houseplants to outdoor patios for the summer and returning them indoors when the growing season ends often brings in mite problems from the outdoors.

Another common source of mite pests, particularly for houseplants, is contamination from other outside sources, such as mites arriving on purchased or gift plants. The introduced plants may have light mite infestations that go unnoticed but eventually spread to other plants in your collection.

Insecticide use also causes mites to increase in the landscape and gardens. Many broad-spectrum insecticides eradicate or seriously suppress effective mite predators, including predatory mites, lady beetles, and young lacewing larvae. These predators could have maintained spider mite populations below injurious levels. Most insecticides do not control spider mites. Their use can cause a secondary pest explosion (Fig. 5). Insecticides that contribute to this phenomenon include carbaryl (Sevin) and certain members of the pyrethroid insecticide class. Other broad-spectrum insecticides can have the same effect.

Management Options

1. Prevention

Prevention is both a practical and an environmentally sound option. Points to consider:

Maximize the health of the plant. Unhealthy plants are susceptible to a number of pests, including mites. Locate plant materials in appropriate places, giving serious attention to soil drainage, light conditions, watering, and nutrient requirements. Refer to the literature or a known plant expert for guidance when you are unsure of the plant's needs.

Rogue or remove plants if they are chronic pest centers, attracting either insects or spider mites. This 1) eliminates a contamination source, and 2) relieves the need for pesticide sprays.

Avoid known spider mite hosts (for example, avoid spruce to avoid spruce spider mite problems).

Maintain an isolation room or area for newly acquired houseplants, away from other plants in your collection. Observe them frequently (with a hand lens) for a period of time. Remember, it is difficult to see spider mites or spider mite damage without a hand lens. Some plants may take several weeks to show a spider mite problem. Placing new plants with your collection immediately may result in disaster.

Avoid transfer of plants from indoors to outdoors and back again, as this often leads to infestation of mites.
Avoid protective or preventive sprays for any pest. Do not use any pesticide unless it is absolutely necessary for mites or insects. Monitor your plants and react accordingly. If an insect problem warrants chemical control in the landscape, avoid broad-spectrum materials, if possible. For example, if a caterpillar pest is out of control, try a selective product containing Bacillus thuringiensis, which will kill only caterpillars and will not harm mite predators.

2. Biological Control

Natural controls will operate for you under the right circumstances. You can conserve their effects by avoiding unnecessary use of pesticides and by using selective materials when possible. Purchase and release of spider mite predators, such as predatory mites, can augment naturally occurring predator populations. Evidence supports the usefulness of this approach in greenhouses, but little work has been done to show its effectiveness in the landscape in our area. Organisms for biological control are available from a number of companies. Ask your county extension agent or contact the authors for a list.

3. Chemical Control

Remember, mites feed on the undersides of leaves, so chemical coverage must be complete on both leaf surfaces. When chemical controls become necessary, home gardeners have limited options. Insecticidal soaps have successfully controlled spider mites. However, repeated applications are necessary, and the results may be inconsistent. Two synthetic conventional miticides are available to home gardeners in mixes with other pesticides. Consult your local cooperative extension agent or another reputable expert before buying one. Finally, do not use insecticides as "miticides." While some insecticides are labeled for mite control, usually they only suppress mites. Continued applications can result in mite populations that are tolerant or resistant to the insecticide.

*In many ornamental settings the aesthetic threshold plays a more immediate role relative to management action. The aesthetic threshold is the damage level that is unacceptable to the viewer, even though plant health may not be threatened.

By Arthur L. Antonelli, Ph.D., Washington State University Cooperative Extension Entomologist, WSU Puyallup; Daniel F. Mayer, Ph.D., WSU Cooperative Extension Entomologist, WSU Prosser; and Carrie R. Foss, M.S. WSU Cooperative Extension Coordinator, WSU Puyallup; Carl H Shanks, Jr., Ph.D., WSU Entomologist, and Station Manager, WSU Vancouver Research and Extension Unit.

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.
EB1750

Order a print copy