



## Mites in the Landscape

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Mites, spiders, lobsters, sowbugs and ticks are not insects but are closely related to them. All of these creatures have jointed legs and shed their outer skin as they grow. There are many species of mites. Some feed on plants and when numerous can cause considerable damage. Other mite species are predators and feed on other mites. Mites that are injurious to landscape plants are classified in the families Tetranychidae and Eriophyidae. Predaceous mites are in the family Phytoseiidae.

### Tetranychid Mites: Free ranging mites, spider mites

Mites in the family Tetranychidae are commonly found in the landscape. When mature, they appear as tiny spots that move slowly over the foliage. Some species in this group produce considerable amounts of webbing, but other species produce little or no webbing. Mites have piercing-sucking mouthparts. They insert their mouthparts into the plant cells and feed on their contents, thereby killing plant cells. At a distance, the plant injury appears as tiny tan spots, often referred to as stippling. If the mites are abundant the injury spots are so numerous that the foliage appears tan or brown and falls from the plant. After repeated, severe attacks the plant may die.

Spider mites deposit eggs on foliage or in crevices of plant bark. Fertilized eggs develop into females and unfertilized eggs into males. When the mites hatch from the eggs the young mites are six-legged, as are adult insects. As they continue to grow they shed their skins, a process called molting. After the first molt, mites have eight legs. The body color of the mature mite varies with the species, and in some species the color varies with the season. The color may be a light yellow-green or a dark gray-green or even bright orange. The body is rounded in the back and slightly pointed in the front.

Most species of these mites overwinter in the egg stage on the foliage or branches of the host plant, but other species overwinter as adults in protected areas of the plant or in debris below a plant. Overwintering eggs usually hatch in the spring when new foliage first begins to unfold. Species that overwinter as adults begin egg laying during spring growth of the host plant.

The length of time mites are in the egg stage depends on temperature. During the late fall and winter months, mites may be in the egg stage for five or more months, but in the spring and summer months the egg stage may last only several days.

When some tetranychid mites become abundant their webs become noticeable on the foliage. The affected foliage will have a rather glistening appearance. These mites will congregate in large numbers on the tips of twigs, needles, or leaves where mites balloon during windy periods. This method of dispersal on wind currents is characteristic of some of the smaller species of true spiders.

During the growing season mite behavior differs depending on the species. Some mite species are very active and produce more eggs and young during cooler parts of the growing season, whereas other species are more active during warm periods. These different types are classified as “cool season” and “warm season mites”.

**Cool Season Mites:** Mites in this group are most active during the spring and fall. They actively feed during this period and produce large numbers of eggs. Plant damage becomes noticeable in late spring and mid-to late fall. During the summer they become less active and do not produce as many eggs. Examples of mites in this group include the spruce spider mite, boxwood mite, and southern red mite.

**Warm Season Mites:** During the summer months high populations of these mites can develop. Foliar damage begins to be noticeable in early summer. Examples of mites in this group are the honeylocust mite, twospotted spider mite, and oak red mite.

### Eriophyid Mites: Erineum gall mites, vagrant mites, and rust mites

All mites in the family Eriophyidae are very tiny, barely visible to the naked eye. The mature mite has the appearance of an elongated cone with two pairs of legs at the broad end. Color varies among the different species from a cream to tan or even slightly pink. Some species feed externally on plant foliage (vagrant) while other species are found inside erineum or buds. Eriophyid mites overwinter in crevices or under bark, on branches, or trunks of plants.

During spring growth, eriophyid mites migrate from their overwintering sites to tender plant buds and begin feeding. The feeding of some species causes plant cells to grow rapidly into abnormal shapes often called galls. The gall tissues grow rapidly around the mites, which then live and reproduce within a small cavity of the gall. The mites may spend several months feeding inside the gall, but eventually the gall tissues deteriorate and the mites leave through a small opening and seek overwintering sites. In



other species, feeding causes gall formations, but the mites feed externally in the crevices of the gall tissues. Still other species feed externally on the plant tissues without causing gall formation. The plant damage caused by the external feeders (vagrants) is often called russetting. The foliage takes on a rust-colored appearance when damage is severe.

### Phytoseiid mites: Predaceous Mites

These mites feed on tetranychid as well as eriophyid mites. They usually overwinter in protected areas, such as under bark cracks. Their body shape is somewhat oval and slightly larger than the tetranychid mites, with the adult mite having four pairs of legs. The color varies from nearly transparent to a slightly cream color. As soon as warm temperatures arrive in spring they become active and move rapidly over the bark and foliage in search of plant-feeding mites. Their rapid crawling distinguishes them from the slow-moving tetranychid mites. These mites are very important in the natural control of the plant-feeding mites. A reduction in their numbers often accounts for a surge in the number of plant-feeding mites.

### Mite Management

In the initial planning stages of a landscape, it is often wise to consult with the local extension service or nursery about the susceptibility of different plants to mite attack. Often, future problems with mites can be avoided by selecting the right kinds of plants.

Even within a given plant species there appears to be some variation in mite susceptibility. There is probably some genetic variation within a plant species that can make a particular plant less susceptible to mite feeding. In established landscapes, some plants are attacked often and the damage can be severe, such as on winged euonymus.

Mite populations often fluctuate due to environmental conditions. Prolonged periods of rain are not favorable to the tetranychid mites. However, high humidity and lack of strong air movements, as may occur with plants growing under the eaves of a home, favor mite buildup. Some studies have shown that applying fertilizers that are high in nitrogen tends to promote an increase in mite populations. Drought often causes a buildup of dust on foliage, which also tends to favor mites and hinders populations of natural enemies. Plants that are attacked by mites need to

be watered during drought to avoid having the plants stressed by drought as well as by mites. Repeated spray applications of carbaryl and other conventional insecticides to control insects will kill predators but not plant-feeding mites. Without natural enemies, populations of plant-feeding mites often explode. Instead of using conventional insecticides to control caterpillars, choose *Bacillus thuringiensis*. For other insects, consider using horticultural oils and soaps. Beware that horticultural oil sprays will change the blue color of evergreens to green. The following year the new growth will be the normal color.

Plants that have a history of mite problems should be monitored about every two weeks during the growing season. Select a branch and vigorously shake it over an 8 1/2 x 11-inch piece of white paper. Tetranychid mites will appear as tiny, slow-moving dark dots. If more than 24 mites appear on the paper, an application of a miticide should be considered. Two applications of a miticide are nearly always needed to accomplish control. A single application will often control the mite nymphs and adults but will not kill the eggs. The young mites that hatch from the eggs will not be killed, because there may not be enough miticide residues on the foliage. The time interval between the applications varies with the season: during the cooler months a ten-day interval would be appropriate, but during the summer months consider about a seven-day interval.

Using a forceful stream of water from a garden hose, directed especially to the undersides of branches and leaves to dislodge mites. However, this technique needs to be repeated several times at three-day intervals to accomplish control.

The gall-making eriophyid mites are usually considered of no economic importance and no control is necessary. Those that feed externally and are not gall producers sometimes cause injury to plants such as spruce and baldcypress. Externally feeding (vagrant) eriophyid mites are difficult to monitor because of their extremely small size. The best time to control them is just after the first indication of spring growth. Be careful when using any pesticide on baldcypress, as foliar injury may result. It is always best to treat only one branch and wait at least two weeks to check for injury. Several new pesticides are registered for mite management. See the tables at the back of the book.