



Ornamental Plant Damage By Eriophyid Mites (and What to Do About It)

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Introduction

There are hundreds of species of eriophyid mites. They are commonly divided into groups of gall, bud, rust, and blister mites, depending on the type of damage they cause. Their microscopic size makes their identification difficult. They are identified by their host plant or by the damage they produce. Most eriophyid mites are not considered to be serious pests because the damage is generally only aesthetic and rarely kills the plant.

Do not equate eriophyid mites with other species of mites that damage plants. Eriophyid mites are much different and smaller, and their infestation is usually less damaging – see Biology on page three.

Damage

Eriophyid mites are considered plant parasites because they seldom kill plants. They are host-specific, with each species usually feeding on a particular plant or plant part. The relationship between the host and the mite reflects a degree of specialization between the two.

Eriophyid mites penetrate plant cells and suck up the cellular contents, causing visible deformation or abnormalities. The response of the plant is specific to the species of mite feeding on it. When present, they may cause some plants to

form stem or leaf galls. Other common symptoms are russetting, folding, or blistering of leaves or flower petals.

Gall mites cause abnormal growth of leaf and stem tissues by injecting growth regulators into the tissues. The galls that the plant develops provide a protective pocket in which the mites can feed and reproduce (Fig. 1). There is an exit hole at the bottom of each gall. Galls may develop on the underside of leaves as hairy mats called erineia (Fig. 1). The leaf hairs provide the mites with food and protection. Feeding by the mite may distort the upper leaf surface. Most galls are on the leaves of plants, but they may occur on flowers, petioles, stems, and roots of plants. Galls are generally most abundant early in the year on new growth, foliage, and near the trunk.

Bud mites invade developing buds and fruits of particular plants (Fig. 2). Partial or



Figure 1. Erineum mites cause leaves to develop mats on the undersides leaves (left). Damage by maple bladder gall mite on sugar maple (right).



Figure 2. Blueberry bud mite damage.

total arrest of bud development or swelling of the buds (referred to as “big bud”) may result from an infestation in the bud tissue. The buds die after the mites leave.

Rust mites are generally not as damaging as other eriophyid mites, but do cause a bronzing, browning, or silvering of the leaf surface as a result of their feeding on the leaf’s cellular contents. Rolling and folding of leaf edges may also result (Fig. 3). Rust mites are often on the undersides of leaves, but may feed on both leaf surfaces.



Figure 3. Leaf curling caused by eriophyid mites.

Damage by **blister mites** is similar to the injury caused by gall mites, but the pocket is formed in the internal leaf tissue (mesophyll) rather than on the outer surface. This internal damage causes an external deformity of the leaf and is expressed as a discolored blister (Fig. 4).



The blisters dry out in the summer, leaving dead areas on the leaf blades.

Flower galls dwarf stalks by causing the shortening of stem internodes, or they may stimulate secondary development of leaf hairs.

Eriophyid mites may also cause “witches broom,” which is a cluster of brushlike growth of stunted twigs or branches on trees and shrubs.

Eriophyid Mites in Nevada

Poplar bud gall mite (*Eriophyes parapopuli*) is one species prevalent in Nevada. Various species of poplars, cottonwoods, and aspens are hosts to this mite. It prevents leaf buds from developing into normal leaves and stems and produces galls near the ends of new growth that are wrinkled and less than one inch in diameter. They are irregular, lumpy, solid masses of plant tissue (Fig. 5). The galls develop on one side of the twig, but eventually encircle the base of the bud or shoot. Young galls are greenish, but older galls are red to brown. Galls from



Figure 5. Three-year-old gall (left) and current year’s galls (right) on poplar.

previous years are gray-black. Lower branches are usually more heavily infested and may become crooked or stunted. Infestations may cause stress in the tree and make it more prone to other problems. Another species, *E. populi*, causes

multiple, irregular buds to be produced in poplars and cottonwoods.

The leaf gall caused by *Phyllocoptes didelphis* may also be found in Nevada. This mite infests quaking aspen (*Populus tremuloides*) and produces circular, shallow galls protruding from the upper surface of the leaf blade. The underside of the leaf is open and filled with solid, yellowish, irregular tissue. The mites reside within the nooks of the growth or partially on the surface of the gall. Lower shaded branches of the tree are more likely to be affected than limbs in the upper canopy in full sun.

Ash flower gall mites (*Eriophyes fraxiniflora*) damage male trees by feeding on the blooms and causing galls to form. The galls are large, blackened, irregular masses (Fig. 6). These aesthetically damaging mites are common in southern Nevada.



Figure 6. Ash flower gall mite damage.

Biology

Eriophyid mites are more closely related to spiders and ticks than to insects. They are long, ringed (annulate), and worm-like. Most other mites have four pairs of legs, but eriophyid mites only have two pairs, located near their heads (Fig. 7). At less than 1/100 of an inch long, eriophyid mites are among the smallest of mites and a hand lens or microscope is required for examination. They are poor crawlers, but their small size facilitates



Figure 7. A microscope is needed to see eriophyid mites.

travel between hosts by wind, water, insects, birds, and people.

Eriophyid mites reproduce rapidly. Fertilization occurs when females come in contact with sperm sacs left on the host by males. Females can lay as many as 80 eggs in one month under favorable conditions.

Most eriophyid mites have a simple life cycle in which they develop through three growth stages: egg, first and second nymphs, and adult. Some species have a more complicated life cycle. They alternate between a generation of only overwintering females called deutogynes, and a male-female generation, where the females are called protogynes. Alternating generations is more common in eriophyids that feed on deciduous, woody plants, and appears to be an adaptation based on the seasonal changes of the hosts. Adults live for about one month, and there are as many as six to eight generations per year where seasons are long (southern Nevada).

Management

Detecting eriophyid mites requires a thorough diagnosis of the plant's symptoms. Galls, blisters, or leaf bronzing are common symptoms of their presence, but other pests may cause similar tissue damage. Eriophyid mites usually do not cause serious injury, even large populations can be tolerated by plants, but the damage may be unsightly. Examining

plants early in the season will allow quick detection and removal. Look for any color changes or abnormalities in the leaves or buds. Closely inspect the foliage. To avoid problems with eriophyid mites, plant resistant varieties or keep uninfested plants away from susceptible varieties.

It is fairly easy to control eriophyid mites in ornamental plants. Infected leaves and twigs can be pruned off to eliminate adult mites and remove unattractive tissues. Burn or bag and dispose of infested tissues in the trash. Trees should be pruned in early spring when the tree is dormant and the mites are overwintering. All infected branches should be removed or else there is a great possibility of reinfestation.

Heavy infestations can be controlled with insecticides, but spraying plants will not get rid of the galls or erineae once they have been produced. Apply insecticides just after bud break in early spring. Dormant oil, carbaryl, dicofol, horticultural oils, and insecticidal soaps may be effective. Carbaryl is highly toxic to bees and should not be applied when they are active. Exposed mites are easily controlled, but most pesticides do not kill the mites living within galls. Caution: applying chemicals to control eriophyid mites may also kill beneficial insects.

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