Eriophyid Mites
bud, blister, gall, and rust mites

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WHAT YOU SHOULD KNOW

- Eriophyid mites cannot be seen without a 20x hand lens or greater magnification.
- Eriophyid mites seldom cause serious injury or stress to plants; damage is normally aesthetic.
- Damage from eriophyid mites usually consists of leaf galls, bud or flower galls, blisters, scabbing, and deformities of leaves, stems, buds, and flowers.
- Control techniques include pruning, plant removal, insecticidal soap, horticultural oils, predatory mites, and broad-spectrum insecticides and miticides.

INTRODUCTION

Eriophyid mites are translucent, cigar-shaped microscopic mites that cause deformities on many plant species. These mites are noticed when their feeding causes abnormalities of plant tissues such as erineum, galls, brooms, leaf curling, blisters, rusts, silvering, fruit rusting, and deformed buds, catkins, fruits, etc. Fortunately, these mites rarely cause serious harm to plants, and control is seldom needed. In fact, eriophyid mites can serve as an alternative food source for predatory mites when their primary food source is absent. In that way, eriophyid mites can actually help reduce outbreaks of spider mites and other insects on which predatory spider mites feed, by allowing predatory mites to survive in the absence of their primary food. There are 1,859 species of eriophyid mites described from around the world with many species still undescribed. Needless to say, you are likely to encounter these mites some time in your gardening future.

GENERAL BIOLOGY

Family Name: Eriophyidae
Range: Worldwide
Hosts: Some mites are host specific, while others attack many plant, tree, and shrub species (Table 2).

Identification of Adult: Nearly invisible to the unaided eye (1/100" in length), cylindrical/cigar-shaped, tapering from head to rear, and translucent white (Fig. 1). Unlike most mites, eriophyids only have 4 legs located near the head.

Life History: Mites generally overwinter as fertilized adult females under bud scales, or protected sites on or near the host plant, and emerge at bud break in spring. Both males and females are present throughout the growing season. Reproduction is continuous, with generations completed every 2-3 weeks; overlapping generations are present.

Key Habits: Overwintering females emerge from under bud scales and other protected sites to lay eggs and feed on new foliage when buds begin to break in the spring. This time is most adventitious for insecticide applications. Some may transmit viruses that can deform plants or
cause economic losses to various crops.

Damage description:
Below are pictures of symptoms caused by eriophyid mites categorized by plant part.

Fig. 3. Galls caused by boxelder pouch gall mite (Eriophyes negundi). 3

Fig. 4. Leaf blisters on pear caused by pear leaf blister mite (Phytoptus pyri). 4

Fig. 5. Erineum on Rocky Mountain Maple caused by Eriophyes calaceris. 5

Fig. 6. Fingergalls on chokecherry caused by Phytoptus emarginate. 6

Fig. 7. Bronzing of pear leaves caused by pear rust mite (Epitrimerus pyri). 7

Fig. 8. Russetting of pear fruit by pear rust mite (Epitrimerus pyri). 8

Fig. 9. Cottonwood catkin gall mite (Eriophyes newessegii). 3

Fig. 10. Ash flower mite (Eriophyes fraxiniflora). 3

Fig. 11. Hackberry witches broom caused by Eriophyes celtis. 3

Fig. 12. Example of a stem gall mite (Aceria sp.) on maple. 3

Fig. 13. Poplar bud gall caused by Eriophyes parapopuli. 3

Fig. 14. Damage caused by rose rosette virus transmitted by Phyllocoptes fructiphilus. 4

PHOTO CREDITS
3. Whitney Cranshaw, Colorado State University, Bugwood.org.
6. Clark, J.C. University of California Statewide IPM Project.
**Control**

Eriophyid mite damage occurs on many plant species and often does not impact long term health. Because of this, chemical pesticides should not be considered a primary management option.

**Non-Chemical Control**

Cultural control practices that modify the growing environment can reduce the occurrence of unwanted pests.

- **Pesticide avoidance:** Overuse of insecticides and miticides can eliminate natural predators, and can lead to pest resistance, making long-term control difficult.

- **Monitor & count:** Periodic examination of plant material to reveal Eriophyid populations before they increase to damaging numbers.

- **Plant selection:** Use plants that are less susceptible to eriophyids, and that are adapted to Utah's climate. Contact your local USU Extension office for recommendations. Make sure plants or planting material you select are free from eriophyids.

- **Punish:** Remove infested leaves or branches and remove from the property.

- **Plant removal:** Heavily infested plants such as tomatoes and wheat, may need to be removed to reduce the spread of mites. Some mites have secondary sources of re-infestation.

**Chemical Control**

If severe infestations are causing major aesthetic damage, tree stress, or crop economic loss, insecticides/miticides may be necessary. Consider reduced-risk pesticides to limit negative impacts on beneficial insects and the environment. Occasionally, broad-spectrum insecticides/miticides, or those that kill not only your target pest, but many other arthropods, may be necessary for quick reductions in mite numbers. The downside of broad-spectrum insecticides is that they can eliminate predators and lead to chronic resistance in eriophyids and other insect populations (if used improperly).

**Reduced-Risk Chemicals**

- **Horticultural soaps and oils:** Apply dormant weight horticultural oils 7-10 days before bud break and again at bud break. Proper timing targets eriophyid mites and preserves beneficial arthropods. During the summer soaps and summer weight oils offer mite control or suppression. Proper timing can also target other pests, such as spider mites or scale. Use during or between applications of fungicides and other miticides or insecticides to prevent phytotoxicity before spraying the whole plant.

- **Koaln clay:** A fine clay applied to plants in a liquid solution. Koaln clay acts as a feeding deterrent, and requires full coverage of foliage (top and bottom) to be effective. Frequent applications are needed, but may cause plant stress if used too often (inhibits photosynthesis).

- **Sulfur:** Sulfur has long been used for mite control. Full coverage is necessary for control. Do not apply when temperatures exceed 90°F, or during periods of high humidity.

- **Neem oil:** Azadirachtin (group unknown) is a botanical insect growth regulator acquired from neem trees.

- **Predatory mites:** Naturally occurring predatory mites often feed on eriophyids and can keep populations at tolerable levels. Avoid the use of broad-spectrum insecticides to preserve predatory mites. Low or extinct populations of predatory mites may be supplemented with predatory mites available for order. One good option for hot and regions is Galendromus occidentalis (western predatory mite). Other species of predatory mites are available, but work best in humid conditions, such as in a greenhouse.

**Insecticides and Miticides**

Table 1 contains an abbreviated list of active ingredients effective against eriophyid mites. Make sure the host plant is listed on product label you choose.

- **When using pesticides, rotate the chemical group on a yearly basis to avoid insect resistance. Chemical groups are listed in Table 1.**

- **For gall-forming mites, once visible damage such as galls are observed, it is often too late to treat during that growing season.**

**Acting Ingredient**

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<th>Active Ingredient</th>
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<td>pyrethrins</td>
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Table 1. Broad-spectrum insecticides for Eriophyid mite control, and their chemical group. Use a different chemical group every year to minimize pest resistance.

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