

## Eriophyid Mites

The following is mostly derived from a section of the PNW Insect Management Handbook, written by J.L. Mellott (Oregon Dept. of Agriculture) and G.W. Krantz (Oregon State University).

### Common Eriophyid Mite Pests

Eriophyids (Fig. 1) are elongate, annulate plant-feeding mites, which are referred to in the literature as blister mites, rust mites, bud mites, or gall mites, depending on the type of damage they cause. Unlike spider mites, eriophyids have only two pairs of legs so that the elongate posterior portion of the body must be dragged along the substrate. Since eriophyids are among the smallest of mites (less than 1/100 of an inch in length), field identification of species on the basis of their morphology usually is difficult or impossible. Identification of the mite, however, often may be made on the basis of the host plant, or on the appearance of the plant tissue, which the mite has injured. Eriophyids are found almost exclusively on perennial hosts and, unlike many spider mites, illustrate a high degree of host specificity.

This preference for particular host plants, along with a tendency to cause predictable symptoms on those plants, greatly simplifies identification of common eriophyid species.

Of the several hundred described eriophyids, relatively few are considered to be serious pests. Some species of importance in the Northwest are referred to below\*, the diagnoses of symptoms which indicate their presence in the plant host. Management measures for important Northwest eriophyids are described under appropriate crop headings (see index listing under "Mites").



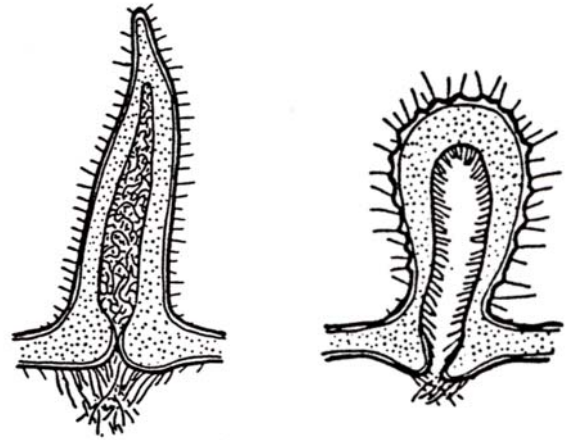
**Fig. 1. An electromicrograph of an eriophyid mite. Courtesy of USDA.**

### A. Bud Mites

Invasion of bud tissue by bud mites may result in partial or complete arrest of bud development, or in abnormal increase in bud size. Arrested development of blackberry buds infested by the redberry mite, *Acalitus essigi* (Hassan) (Fig. 2) results in the failure of drupelets to ripen as the season progresses. The filbert bud mite, *Phytoptus avellanae* (Nat.) feeds on and within leaf and flower buds and catkins. Development of raspberries and loganberries may be arrested by early season feeding of the dryberry mite, *Phyllocoptes gracillis* (Nal.). The bud mites of filbert, *P. avellanae* and *Cedidophyopsis vermiformis* (Nal.) cause infested buds to swell up to several times normal size, destroying their capacity to develop further. As the swollen buds deteriorate in late winter and early spring, the mites leave them in enormous numbers, investing newly developing buds nearby.



**Fig. 2. Redberry mite damage on blackberry. By E.P. Breakey.**



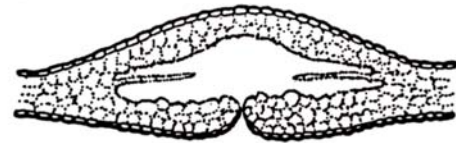
**Fig. 3. nail (left) and finger (right) galls.**

### **B. Gall Mites**

Gall-forming eriophyids cause a type of tissue “pocketing” on affected leaves in which the pocket is virtually closed, and in which abnormal growth of leaf hairs provides a protective mat for the eriophyid inhabitants. The linden gall mite, *Phytoptus tillae* (Past.) and the bitter cherry gall mite, *P. emarginatae* (k), are examples of Northwest eriophyid species, which bring about formation of closed galls on the upper leaf surfaces of their hosts. The linden mite gall is a nail type, while the cherry gall mite causes development of finger galls (Fig. 3). A bladder-like closed gall is formed in the presence of the maple bladder gall mite (Fig. 4), *Vasates quadripedes* Shimer. The formation of hairy patches or *erinea* on the underside of affected leaves constitute “open galls,” in which pocketing of tissue is nominal (Fig. 5). A typical erineum is produced by the walnut blister mite, *Eriophyes erineus* Nal. on the undersides of affected leaf tissue in regions of the Northwest where the host occurs.



**Fig. 4. Maple bladdergall mite galls. By K. Grey.**



**Fig. 5. Erinea, or “open galls” (top)  
Blister-type galls (bottom)**

### C. Blister Mites

Unlike the gall mites which pocket leaf tissue to form a protected feeding site, blister mites actually invade the leaf mesophyll, causing an internal deformity of the leaf (Fig. 5), which is expressed externally as a discolored blister. The pear leaf blister mite, *Phytoptus pyri* Pgst. (Fig. 6), is an important member of this group. Russeting and deformation of fruit also are ascribed to this species. A similar blister mite occurs on apples.



**Fig. 6. Pear leaf blister mite damage.**  
By R.S. Byther.

### D. Rust Mites

Feeding injury by rust mites is expressed as a bronzing, browning or silvering of the affected leaf surface. Secondary effects include leaf edge rolling and folding. Rust mites may feed on either leaf surface but commonly are encountered on the undersides of leaves. The peach silver mite, *Aculus cornutus*, the apple rust mite, *Aculus schlechtendali*, and the pear mite, *Epitrimerus pyri* (Nal.), are important examples of rust mites found in the Northwest. All three species may bring about premature defoliation of their hosts if infestations are heavy. *A. schlechtendali* may serve as an alternate food source for certain predatory mites which normally feed on spider mite pests of fruit trees. Their role, therefore, may be

considered beneficial in some circumstances. *A. comatus* (Nal.), a relative newcomer to the Northwest, causes typical rust mite injury on the dorsal and ventral surfaces of filbert leaves and may cause leaf edge rolling.

### Additional Notes on Eriophyid Mites

In addition to typical leaf, bud and fruit injury, eriophyid species may cause “witches broom” (adventitious twig development), flower galls, shortening of internodes, or secondary development of leaf hair. A great number of species have been described simply as “leaf vagrants,” since the injury they cause is not associated with distinctive symptoms. The wheat curl mite, *Eriophyes tulipae* K., a minor pest of wheat in western Oregon, has been recorded as a problem in bulb storage where it feeds between tissue layers of onion, tulip, or garlic buds. Species of *Trisetacus* occur in a variety of conifers, causing injury to needles, buds, and fruit.

Eriophyids are the only important mite transmitters of plant viruses. *E. tulipae* is a proven transmitter of kernel red streak of corn, wheat spot, and wheat streak mosaic viruses in eastern United States, while *Cecidophyopsis ribis* (West W.), a currant bud mite found in Washington state, transmits currant reversion.

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NOTE: Illustrations of many of these species appear in H. H. Keifer's *Eriophyid Mites of California*, Bulletin of the California Insect Survey. Vol. 2, No. 1, 1952. Detailed information on these and other mites of agricultural importance may be found in “Mites Injurious to Economic Plants” by L. R. Jeppson, H. H. Keifer, and E. W. Baker (Univ. of Calif. Press: 614 p., 1975), and in “An Illustrated Guide of Plant Abnormalities Caused by Eriophyid Mites in North America,” by H. H. Keifer et al. (USDA, ARS, Handbook 573:178 pp., 1982).