

Insect and Mite Galls

Fact Sheet No. 5.557

Insect Series | Trees and Shrubs



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How Galls Are Formed

Galls are abnormal growths of plant tissue that form in response to a wound, infection by various microorganisms, or the feeding and egg-laying activity of certain insects and mites. Galls occur on almost any plant tissues. The most common are leaf, stem and flower galls produced by insects and mites.

Galls often are unusual in form, conspicuous, and frequently cause considerable concern. Galls produced by insects and mites rarely cause serious threat to plant health. Most gall-maker populations fluctuate from season to season. The occurrence of many in one year usually is followed by few the next.

Galls are produced by plant cells stimulated to abnormal growth. Galls from insects and mites usually result from chemical secretions produced during feeding or egg laying. The chemicals act like natural plant growth hormones. Galls also may form following mechanical injury from insect feeding.

Insect and mite galls are produced when plants are growing rapidly, when new leaves are expanding or shoots are lengthening.



Figure 1: Thickening of the petiole produced by poplar petiole gall aphids. Photograph by D. Leatherman.

Mature plant tissues are insensitive to various gall-making stimuli. Consequently, most galls start in late spring and early summer when adult insects become active and lay eggs. On a few plants that produce new foliage over a period of several months, multiple generations of the gall-making insect can occur, such as honeylocust podgall midge. In general, gall makers have only one generation per year.

The gall-making insect or mite develops within the plant gall. The gall continues to expand as the gall maker feeds. Once formed, galls may remain on the plant for long periods, even though the insect may leave it shortly after the gall develops. Many galls are not seen until after the insect or mite leaves the gall, as with Cooley spruce galls.

Groups of Gall Makers

Many insects and mites make plant galls on woody plants. For example, over 700 types of galls occur on oaks alone. The following are the most important gall makers in Colorado.

Eriophyid or gall mites make a variety of plant galls. Small finger-like galls, pocket galls, or felty masses of plant hairs (erinea) on leaf surfaces are common types produced by these mites. Irregular growths on flowers or buds of ash and cottonwood are produced by other species of gall mites. Some gall mites that feed on top of leaves also produce irregular leaf curls similar to the injury caused by herbicides such as 2,4-D or dicamba.

Psyllids or jumping plant lice are best known for producing the common nipple gall on hackberry. However, other psyllids make tiny blister galls on hackberry leaves or infest developing buds.

Gall-making aphids, adelgids or "woolly aphids," include a variety of gall makers that primarily affect evergreens. The most common and conspicuous adelgid in Colorado is the Cooley spruce gall adelgid,

Quick Facts

- Galls are abnormal growths of plant tissue caused by a wound, infection by a microorganism, or the feeding and egg-laying activity of certain insects and mites.
- Although galls are conspicuous and unattractive, they rarely cause serious damage.
- Once galls start, formation is largely irreversible.
- Under most circumstances, control is not recommended.

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Table 1. Treatments recommended for some gall-making insects and mites

Insect/Mite	Treatment
Cooley spruce gall adelgid	Sevin, permethrin, imidacloprid horticultural oil
Eriophyid mites	Sevin, permethrin
Gall wasps	None Recommended
Hackberry nipplegall maker	Orthene, imidacloprid
Honeylocust podgall midge	Permethrin, bifenthrin, spinosad, imidacloprid
Pinyon spindlegall midge	Spinosad, imidacloprid
Poplar petiole gall aphid	Horticultural oil (dormant application)
Poplar twiggall fly	Imidacloprid

which produces a cone-like gall on spruce. See fact sheet 5.534, *Cooley Spruce Galls*.

The most conspicuous galls produced by the gall-making aphids are the various stem and petiole galls on cottonwood and poplar. Other gall aphids produce strikingly distorted leaves (pseudo-galls) on ash, aspen and cottonwood. Woolly aphids, found on apple and crabapple, attack wounded areas of branches and trunks and cause cankers to develop.

Gall wasps are the single largest group of gall-making insects. Gall wasps produce a wide range of galls from woody, rounded galls on stems or leaves to woolly or mossy galls. Essentially all insect galls found on oak or roses are produced by gall wasps.

Gall midges are a common and diverse group of gall-making insects in Colorado. Most gall midges produce undistinguished swellings of leaflets or needles on such plants as honeylocust or pinyon. Swellings of flower parts or fruit also may be produced by gall-making midges.

Gall flies include the poplar twiggall fly, abundant in eastern Colorado. This insect develops in the new shoots of aspen and some poplars, producing spherical swellings. Although the poplar twiggall fly leaves these galls during late winter and early spring, galled twigs continue to grow for years, producing large knot-like growths. See 5.579, *Poplar Twiggall Fly*.

Control

Although galls are conspicuous and unattractive, they rarely do any real damage to plants. Gall-making is cyclical and problems often subside with natural controls. Furthermore, once galls start, formation is largely irreversible. Under most circumstances, control is not recommended. Occasionally, heavy infestations that occur repeatedly over several seasons may slow the growth of the plant or make the appearance unattractive.

The eriophyid mites and a few gall-making insects that overwinter on the plant may be controlled with dormant oils. However, most galls are produced by insects that move to the trees as new growth develops in the spring. They can be controlled only with sprays that cover the leaves during the egg-laying period. Repeat applications often are needed.

Insecticidal control of plant galls can be difficult to achieve because sprays usually must be timed to coincide with periods when the gall-makers are laying their eggs. Also, for some gall-making insects, such as the poplar twiggall fly, there are no effective controls. If an insecticide is applied, the treatments listed in Table 1 are recommended for some gall-making insects and mites.



Figure 2: Galls produced by the hackberry nipplegall psyllid.



Figure 3: Severe galling produced by the honeylocust podgall midge.