



Insect Induced Plant Galls

Most plant galls are abnormal plant tissue growths caused by the feeding or egg laying activity of insects and mites. (Fungi and bacteria also cause galls but are not dealt with here.) Because of their unusual forms, textures and colors, homeowners may become concerned. However, galls seldom threaten a plant's health and their numbers are highly variable from season to season. For these reasons, control is not necessary in most cases.

How Galls Are Formed

Galls are natural plant products. Either mechanical damage or salivary secretions (introduced by immature insects and mites) initiate abnormal production of normal plant growth hormones. These plant hormones cause localized plant growth that can result in increases in cell size and/or in the number of cells. The outcome is an abnormal plant structure called a gall.

Gall formation usually occurs during times of fast growth (generally late spring) of new leaves, shoots, flowers, etc. The insect or mite develops inside the gall and the gall continues to grow as the insect/mite feeds and matures. Mature plant tissues are usually unaffected by gall-inducing organisms.

A variety of organisms are capable of initiating galls. The most common are: eriophyid mites, gall midges, gall wasps, aphids (plant lice), and psyllids (jumping plant lice). Many species of plants are affected.

Common Types of Galls

Leaf galls are any galls appearing on leaf blades or petioles (stem that attaches the leaf to the twig). Leaf galls are the most common galls and may appear as curled leaves, blisters, nipples, or erineums (hairy felt-like growths) on the upper or lower leaf surface.

Stem and Twig Galls are any deformation restricted to these plant areas, ranging from slight swellings to

large knot-like growths.

Bud and Flower Galls are deformations of bud or flower structures. The size and shape of these structures is altered.

Galls and Plant Injury

Galls are growing plant parts and require nutrients just like other plant parts. It is possible that galls "steal" vital energy and adversely affect plant growth. This is more likely a problem in young plants. In most cases galls are not abundant enough to harm the plant. However, there are exceptions; some galls may inhibit branch formation or distort foliage and flowers.

Control

Most galls do not adversely affect plant health; therefore, chemical control of the causal organism is generally not necessary. However, galls can be pruned out when they are first discovered. Miticide and insecticide applications are an option, but the required precise timing of sprays is difficult. To be effective, sprays must be timed to coincide with initial insect/mite activity before gall formation begins. Once galls start to form, they conceal the causal organism and control is difficult if not impossible.

Common Galls in Minnesota

Maple Bladder Gall. An eriophyid mite causes this bladder or pouch-like gall on red and silver maples. Galls form on the leaf tops and change in color from yellow-green to red and finally black as the season progresses. Mites overwinter under bark cracks and crevices, then migrate to opening buds in the spring. Mites feeding on the leaf undersides initiate gall formation and inhabit galls throughout the summer. These galls are not detrimental to the tree; the tree puts out enough foliage (without galls) to maintain its vigor. Treatment is only for aesthetic purposes.

Maple Spindle Gall. Sugar maple is the most common host for the eriophyid mite that causes this gall, though it is sometimes seen on red and silver maples. Galls are purplish, spindle-like structures found on the upper leaf surface. Gall color gradually changes from green to yellow to crimson as the season progresses. Life history of this mite parallels that of the maple bladder gall mite. Treatment is not necessary to protect tree health.

Hackberry Nipple/Blister Gall. Two closely related psyllids or jumping plant lice are responsible for these galls. Both species overwinter as adults under bark cracks and crevices. They appear in spring and lay eggs on the underside of unfolding leaves. Nymphal feeding results in abnormal cellular growth which forms galls around the insect. The blister galls, initially green, are slightly raised areas on the upper leaf surface that eventually turn black. Nipple galls found on the lower leaf surface are light green and nipple-shaped. They are larger and more conspicuous than blister galls.

Trees generally do not suffer from either gall type, but repeated heavy infestations may damage trees. Often these insects are more of a household nuisance than a tree pest, for their small size enables them to penetrate some screens and invade households. Control is not necessary from a tree health standpoint. However to control psyllids before they enter the home, a spray application of acephate (Orthene) will reduce populations when leaves are expanding in spring. To control both galls and psyllids, apply Orthene at or before 1/2 leaf expansion. If only psyllid control is desired, spray trees with Orthene at 3/4 full leaf expansion.

Jumping Oak Gall. This gall is caused by small cynipid wasps and occurs mainly on white oak, although other oak species can be affected. Galls are globular, seed-like, and occur on leaf undersides, often between major veins. Each gall has a single larva and galls drop to the ground from July through August. The name stems from the fact that these galls move on the ground after falling from trees. This is due either to movement of the gall-forming wasp, or a parasite of the wasp. If abundant, these galls may cause premature leaf

drop but control is usually for aesthetics.

Maple Velvet Gall. Many species of eriophyid mites cause these circular or oval patches of dense hair-like mats (erineum) on various maple species. The felt-like erineum patches can be found on both the upper and lower leaf surface and are often concentrated at leaf ends. The mite life cycle is similar to other eriophyid mites attacking maple: adults overwinter under bark cracks and crevices and move to young leaves in the spring. The often bright red or crimson color attracts people's attention to these galls. They are not detrimental to the tree and control is not necessary.

Erineum galls are found on many species of trees and shrubs including: viburnum, birch, crabapple, hawthorn, serviceberry, linden, elm, beech and walnut. Some of these mites are active throughout the growing season and can be effectively controlled for aesthetic reasons.

Ash Flower Gall. This gall is caused by an eriophyid mite that feeds on staminate (male) flowers of green and white ash. Mites overwinter under bud scales, bark cracks and crevices, then start feeding as buds open in spring. Galls are initially small and green; they gradually grow throughout the summer. By mid to late summer galls begin to dry and turn brown. They will turn black by season's end and can stay on the tree for up to two years. Gall density varies greatly from season to season, possibly depending on overwintering mite survival. Trees affected by ash flower gall may be visually displeasing, but this is the only damage. If desired, use sprays in spring at flower bud break to control mites. A registered miticide should give adequate control.

When performing chemical applications, always read, understand and follow the product manufacturer's instructions and rates.

After assessing your site and plant health, your Consulting Arborist can make specific recommendations regarding treatment for your important landscape plants.