

## Unsightly Leaf Galls: Are They as Bad for Trees as They Look?



Severe bladder gall on maple (*A. Bergdahl, NDFS*)

From: NDSU Crop & Pest Report, No. 11. July 5, 2012

Mites and insects that form galls on the leaves and twigs of trees have been especially prevalent this year and have

*In this issue*  
 Unsightly Leaf Galls:  
 Are They as Bad for Trees  
 as They Look?  
 Eriophyid Mites  
 Aphids on Broadleaf Trees

caused significant concern among tree owners. Galls occur on many species, vary in size and take on a range of

forms. Gall forms include: large, round bumps or woody galls; smaller, thin, finger-like projections called bladder galls; red felt-like patches referred to as erineum and even

(pronounced 'air-ee-oh-fy-id') that cause various types of erineum, bladder galls and growth defor-



Erineum mites (*S. Katovich, USFS*)

multicolored hair-covered galls called 'hedgehog' galls. Galls are formed as a tree's response to feeding or egg-laying, when gall-forming mites and insects inject leaves and stems with growth-altering compounds using specialized body parts. The compounds stimulate irregular growths that form the gall which may serve as a food source and/or a protective structure for various stages of insect development.

mations.

- Psyllids (sill-ids), which are tiny insects that resemble flies (a common example is hackberry nipple gall).



Ash flower gall mite (*J. Goltz, NDSU Ext.*)

The major groups of organisms that cause galls are:

- Eight-legged mites, primarily eriophyid mites

## Unsightly Leaf Galls (cont)

- Gall-forming adelgids (small fly-like insects that are responsible for eastern spruce gall and Cooley spruce gall, both found in North Dakota).
- Gall-forming aphids (for example, the poplar petiole gall aphid).
- Tiny cynipid wasps that are responsible for the formation of corky round galls on the branches oak trees (oak bullet gall). Certain species of cynipid wasps also form furry-looking 'hedgehog galls'.

Despite the sometimes severe appearance of these galls, they



Rough oak bullet gall wasp  
(*W. Cranshaw, CSU, Bugwood.org*)

are seldom a threat to tree or shrub health – reduced aesthetic qualities of landscape

trees is the major consequence of galls. In cases where gall formation is very heavy and compromises more than 30 percent of the leaf area of the entire tree, control may be warranted. Also, if less than 30 percent of the circumference of



Hedgehog gall on white oak  
(*L. Hyche, Auburn University, Bugwood.org*)

a section of a twig is free of galls, dieback can be expected and control efforts are advisable.

Controlling mites and insects that form galls on broadleaf trees is difficult. While an early spring application of a systemic insecticide soil drench may provide effective control, this has occasionally been documented to make other insect problems worse. Foliar sprays of a systemic insecticide can provide some level of gall-

forming mite and insect control, but will also kill beneficial insects that prey on gall-forming mites and insects and could eventually represent a natural control. Further, mite and insect populations can achieve some level of resistance to a repeatedly applied pesticide, thus, rotating classes of control chemicals is recommended.

Horticultural oils can be applied in spring before bud break, and again directly after bud break, but the timing of this application is critical for achieving control. Horticultural oils and soaps are considered reduced-risk treatments and generally will not harm beneficial insects.

Since the populations of gall-forming mites and insects fluctuate greatly from year to year, patience and maintaining overall tree and shrub health is often the best prescription.

*Aaron D. Bergdahl  
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## Insects Frequently Confused with Emerald Ash Borer

<http://www.ag.ndsu.edu/ndsuaq/invasives/emerald-ash-borer/north-dakota-eab-look-alikes>

# Eriophyid Mites

We have received many samples of woody ornamentals with galls and distortions on the leaves at the Schutter Diagnostic Lab. These can be mistaken for damage from plant growth regulator type herbicides (2,4-D, tordon, clopyralid or aminopyralid). Actually, much of this damage is caused by the microscopic eriophyid mite. Mites may be found inside galls and curls. They may also be free-roaming (vagabonds or vagrants). This type cause milder scorch or curling of leaf margins. Leaves may take on a stringy appearance. Below is information from a fact sheet written by Ruth O'Neill, MSU entomologist.

Please note: Using pesticides to control eriophyid mites is **EXTREMELY** hazardous to beneficial insects. The mites are well protected in the leaf tissue. Also, some years are more conducive to mites than others (weather dependent).

Therefore, I do not recommend pesticides with the exception of dormant oils, insecticidal soap and neem.

*Linnea Skoglund*

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**E**riophyid mites are common sap-feeding pests of both indoor and outdoor plants. Feeding by eriophyids damages many plant tissues and often produces abnormal growths.

**Description:** Eriophyids are minute (less than 1/100"), yellow, carrot-shaped plant-feeding mites. There are many thousands of species, commonly called blister mites, rust mites, bud mites, gall mites, or "leaf vagrant" eriophyids, depending upon the type of injury they cause. Eriophyids are found on a wide variety of perennial plants.

**Life Cycle:** Eriophyid mites become active in the spring as

soon as temperatures are sufficiently warm and host plants have broken dormancy. Species that induce galls (abnormal plant tissue growths) lay eggs within the galls. There are usually multiple generations per year. During the winter many species sequester themselves in tightly packed groups underneath bark flakes, in bark cracks, or in bud scales.

**Damage:** Feeding by most eriophyid species causes galls to develop, which protect mites from desiccation and predation as they continue to feed and reproduce. Rust mites cause bronzing or silvering of leaf undersides, leaf edge rolling, and leaf folding. Blister mites cause lentil-shaped galls between leaf layers that eventually dry out and turn brown. Erineum mites cause felt-like and sometimes brightly colored patches of thickened plant hairs on the undersides of leaves. Nail gall mites, finger gall mites, and bladder gall



Left: Finger galls induced by the linden gall mite, *Eriophyes tiliae* (Photo: Milan Zubrik). Right: Bindweed eriophyid mite.

## Eriophyid Mites (cont)

mites cause development of elongated pouches on the tops of leaves that often turn red with age. Bud mites invade bud tissue causing abnormal increase in bud size. Eriophyids may also cause fruit injury, flower galls, or “witch’s brooms” (brushy development of multiple twigs). Feeding by leaf vagrant species causes desiccation and bronzing of foliage.

- Natural enemies include predatory species of mites and

thrips, minute pirate bugs, big-eyed bugs, damsel bugs.

- Monitoring foliage with a hand lens is important. Problems with eriophyid mites sometimes develop unchecked because they are not easily visible. Eriophyid mite damage is frequently mistaken for disease or nutritional stress.
- Mites can be very refractory to treatment with conventional pesticides. Many insecticides cause mite numbers to flare, by killing natural ene-

mies. Galling species can’t be controlled with contact pesticides. If pesticides are to be used, careful selection of miticides is important.

Pesticides with activity against eriophyid mites include: Horticultural oils (Sunspray, Ultra-Fine, Purespray Spray Oil 10E, etc.), insecticidal soap (M-Pede etc.), wettable sulfur (Bonide 142 Dust Fungicide/Insecticide, etc.), acephate (outdoors only).

*Ruth O'Neill*



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# APHIDS ON BROADLEAF TREES

From: NDSU Crop & Pest Report, No. 10, June 28, 2012.

Populations of aphids that infest trees are generally higher, earlier in the summer than usual. This has led to a marked increase in homeowner requests for assistance on how to manage this common pest.

Aphids overwinter on bark and twigs as eggs. After hatching in spring aphids are able to reproduce without mating and when conditions are favorable, aphid populations can increase rapidly and build over the course of the summer. Aphids feed on plant juices causing stippling, discoloration and deformation of leaves.

Additionally, aphids are famed to have one of the least efficient digestive systems of all creatures, digesting only about three percent of what they ingest – the rest is excreted and is called ‘honeydew’. Homeowners become concerned/ aggravated by the large amount of the sticky substance that coats just about anything in close proximity to an infested tree. To make matters worse, the sugar-rich honeydew is often colonized by a black fungus called sooty mold that has an even greater negative impact

on the overall aesthetics of an area.

There are some important issues to consider when attempting to manage an aphid problem. These are outlined below.

## H2O (water):

Often the best treatment for aphids is spraying the affected tree with a strong jet of water. Once the aphids are knocked off the tree, they often cannot return and continue feeding.



Leafcurl ash aphid on green ash

This has proven to be effective for reducing aphid numbers to a tolerable level.

## Biological Control:

As aphid populations remain high, the populations of aphid predators such as ladybird beetles, lacewings will build and potentially reduce the population to a tolerable level in a natural way. If desired, it is possible to order beneficial in-

sects from online sources. These insects, in theory, provide an instantly high population of predators that can reduce the aphid population drastically.

## Chemical Control:

If compelled to use chemicals, a systemic insecticide application containing ‘acephate’ as the active ingredient is recommended for bringing an aphid problem under control. Although, while these products

kill aphids, they also kill other beneficial insects that are predators of aphids, which is counterproductive to control efforts. Additionally, it may be difficult to apply this type of chemical treatment to a larger tree.

Chemical soil drenches containing imidacloprid may prove to be effective as well. Soil drenches typically take a long time to reach all

portions of a tree, especially larger trees, so applications should be made early in the spring when buds are breaking – long before aphid populations get out of hand. This application will additionally protect treated trees from other pests that feed on the leaves and some boring insects.

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# Montana State University

## Urban IPM Program



The objectives of the Urban IPM Program

- Establish an IPM certification program for urban landscape and turf professionals.
- Develop resources for using IPM methods in the urban landscape.
- Train landscape professionals to be First Detectors for invasive pests.
- Educate homeowners/consumers in the basic principles of IPM.

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