Agricultural Extension Service ● University of Minnesota

FACT SHEET

Plant Galls

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Plant galls are quite abundant in both rural and urban areas. They attract attention because of their unusual shapes and colors, and because many homeowners prefer damage-free ornamentals in their yards.

Large numbers of galls can appear one year and few the next, or galls may be abundant year after year on the same plant. The abundance of galls is related to the abundance of the insect, mite, or nematode causing the gall. There is not enough knowledge about most gall-forming organisms to predict their abundance.

How Galls are Formed

The young of insects or mites initiate the formation of most galls through their feeding activity. Certain chemicals produced by these young cause the living plant cells to increase rapidly in size or numbers. The exact mechanism for gall formation is not fully understood, but it is most remarkable that the galls produced on specific plants by a given insect or mite are similar in shape and size year after year.

Aphids, midges, wasps, and beetles are the main insects which form galls. Eriophyid mites are also prominent gall formers. In addition, some galls are produced on plants subject to nematodes, fungi, bacteria, and viruses.

Types of Galls

Leaf galls (figures 1-5) may appear as curling of leaf margins, shriveling of the leaf, or wart-like growths on leaf blades or petioles. These wart-like growths may be smooth, spiny, or velvety.

Stem and twig galls (figures 6-8) are extremely variable depending on the insect or mite responsible. Shapes range from slight swellings to large, irregular, and sometimes spiny masses.

Bud galls (figure 9) deform buds in various ways. Flower structures may be altered to look like spines, leaves or shapeless masses. Such growths can be numerous enough to destroy the aesthetic value of a tree. Occasionally, most notably on chokecherry, the developing fruit is transformed into a tough, bladder-like structure.

Root galls (figure 10) may be small, gnarled lumps of plant tissue, either localized or spread throughout the root system. Sometimes the root is replaced by a mass of hair-like rootlets.

How Injurious are Galls?

Galls are rarely abundant enough to seriously affect the normal growth of the plant. However, bud galls on conifers can lead to deformed growth of the tree and, occasionally, twig galls can kill the affected twig.

In young trees, large numbers of galls may reduce growth. Control of the causal organism may then be necessary. On mature trees, however, gall control is rarely justified.

Control of Gall-Forming Insects and Mites

For plants, such as roses, galls can be pruned when they are discovered. The gall material should be removed from the premises so reinfestation is less likely to occur. The same is also true for leaf galls. Removing the leaves in the fall also may help in reducing the numbers of gall-forming organisms.

Some simple procedures are necessary when considering using chemical controls. The insect or mite causing the gall must be vulnerable. Once the gall is formed, a contact pesticide will not control the pest. Insects or mites which affect new plant growth require treatment just before bud development begins. Late applications have minimal value, although they may slow the development of additional galls.

For chemical control, use 2 teaspoons of 50 to 57 percent malathion per gallon of water or 1 pint per 100 gallons. Malathion is effective on both insects and mites. Tedion and Kelthane are especially effective for mite control.

Some Common Galls

Maple Bladder Gall (figure 1) -- A small eriophyid mite causes the globular swelling on the upper leaf surface of soft maples. As the gall develops it changes from yellowish green to pink, to red and finally black. The quantity of these from tree to tree in a given year is enormously variable, as is year to year abundance. Early season malathion treatment of severely infested young trees has some value, but treatment of mature trees is not recommended.

Maple Spindle Gall (figure 2) -- The spindle-shaped gall is caused by a mite which is quite different from the bladder gall mite. Galls are up to 1/4 inch in length, form in the summer, and are variable in color. Malathion applied at bud break will reduce spindle gall mite populations.

Elm Leaf Aphid Gall (figure 3) -- Leaves of American elm show the tightly rolled edges caused by the feeding of large numbers of this dusty appearing aphid. The aphids hatch from eggs deposited on elm the previous fall. This aphid is most abundant in urban forest. It secretes large amounts of honeydew, the sticky material we find on cars and sidewalks early in the summer. Often enormous numbers of predators will literally wipe out these aphid populations. Malathion, with detergent added to the mixture, can be applied to small trees. Do not treat large trees.

Hackberry Nipple Gall (figure 4) -- A small, mottled, jumping plant louse (or psyllid) is responsible for this gall. The adult lays its eggs on the undersides of the leaf. As soon as the egg hatches, the resulting nymph begins to feed, thus initiating the development of this gall. Mature psyllids emerge from the various galls at about the same time. These are sometimes enormous in number. Their small size permits them to go through 14-mesh window screen, where because of their abundance--they cause concern to homeowners. The galls do not harm the tree. Fine mesh screens will keep them from entering the house.

Cone-like Gall on Blue Spruce (figure 5) -- A tiny aphid feeding on the developing bud produces this gall which closely resembles a cone and can lead to asymetrical development of the tree. When such galls are few in number, they can be removed by hand. Large numbers will require an application of malathion at bud break.

Petiole Gall of Poplar (figure 6) -- Aphids feeding at the base of the newly developing leaf causes the leaf stem to fold back on itself forming a closed cup. If the cup is opened during the summer, a large number of aphids are usually observed. The cottonwood tree may lose a few leaves from this gall, but is not otherwise affected. No control is suggested.

Oak Bullet Galls (figure 7) -- The round, hard, woody galls so commonly seen on Bur oak are caused by a small wasp. You can often observe tiny round exit holes by which the adult wasp left the gall. The galls may cause the twig to die; however, enormous numbers of galls have been observed on apparently healthy trees.

Long Spruce Cone Gall (figure 8) -- This twig gall, caused by the feeding of an aphid, can be found both on forest and urban spruce trees. The gall resembles a pineapple, develops rapidly, and varies in length from 1/3 to several inches. The insect resides in closed chambers within the gall. Occasionally, damage can be severe enough to disfigure the tree. Small numbers of galls can be pruned; an early season application of malathion would be required in more severe infestations.

Ash Flower Gall (figure 9) -- Only developing male (or staminate) flowers on black or green ash are enlarged through feeding by the mite causing this flower gall. The galls harden and turn black in the fall. They are very common in northern Minnesota forests as well as in the city. Trees are seldom killed by the galls, although green foliage can be severely reduced. Malathion applied when bud scales begin to fall will provide the best control.

Root Gall of Parsley (figure 10) -- Nematodes, or tiny round worms, stimulate the formation of these root galls. There are a few instances where economic damage to various crops can result. Root galls caused by a variety of organisms are common, but not being readily visible, go unnoticed.

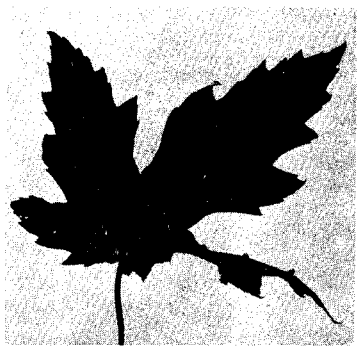

Figure 1. Maple Bladder Gall

Figure 2. Maple Spindle Gall

Figure 3. Elm Leaf Aphid Gall

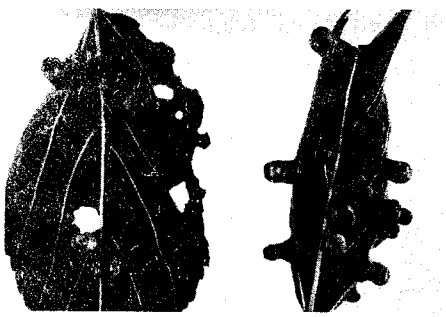

Figure 4. Hackberry Nipple Gall

Figure 5. Cone-like Gall on Blue Spruce

Figure 6. Petiole Gall of Poplar

Figure 7. Oak Bullet Galls

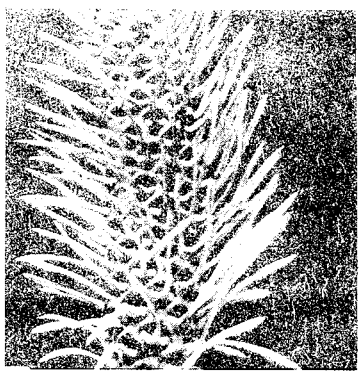

Figure 8. Long Spruce Cone Gall

Figure 9. Ash Flower Gall

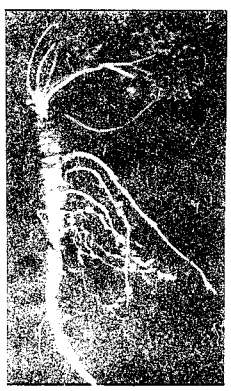

Figure 10. Root Gall of Parsley

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