

Woody Ornamental Tips

Insects and Plant Galls

By Gary A. Dunn, Department of Entomology

Galls, common on many plant species, are abnormal outgrowths of tissue produced when a plant attempts to recover from an injury caused by an insect or other organism. The term "gall" refers to the bitter taste of this abnormal plant tissue, a result of its high tannic acid content. Some galls have commercial value. They are used in the manufacture of inks, dyes, tannic acid, medications (astringents) and food.

Causes

Insects and mites are the largest group of gall-producing agents. They include gall midges (Diptera), gall wasps (Hymenoptera), aphids or plant lice (Homoptera), caterpillars (Lepidoptera), beetles (Coleoptera), thrips (Thysanoptera) and mites (Acari). Many other organisms—including fungi, slime molds, bacteria, viruses and nematodes—and chemical and mechanical irritants may cause gall formation.

Each insect produces a characteristic gall. The physical appearance of galls varies with the type of insect causing the gall and the part of the plant affected. Galls occur on virtually any plant part, from the growing tips to the roots, but most frequently form on leaves, leaf stems, twigs, branches, stems, buds, flowers and roots.

How galls grow

Following injury inflicted by the mouthparts or egg-laying organ of an insect or mite, galls grow in two ways: by an enlargement of individual plant cells or by an increase in the number of cells. These growth patterns are the plant's response to potent growth-stimulating substances secreted by the egg-laying adult or developing immature insect.

Some insects live within the developing galls. These galls generally consist of an outer protective layer and an inner nutritive layer. Through years of evolutionary trial and error, gall insects have found out how much they can feed before killing the developing plant tissue.



Fig. 1. Maple bladder galls on silver maple, caused by eriophyid mites, *Phyllocoptes quadripes* and *Eriophyes confusus*.



Fig. 2. Eastern spruce gall on Norway spruce, caused by the gall aphid (adelgid) *Adelges abietis*.

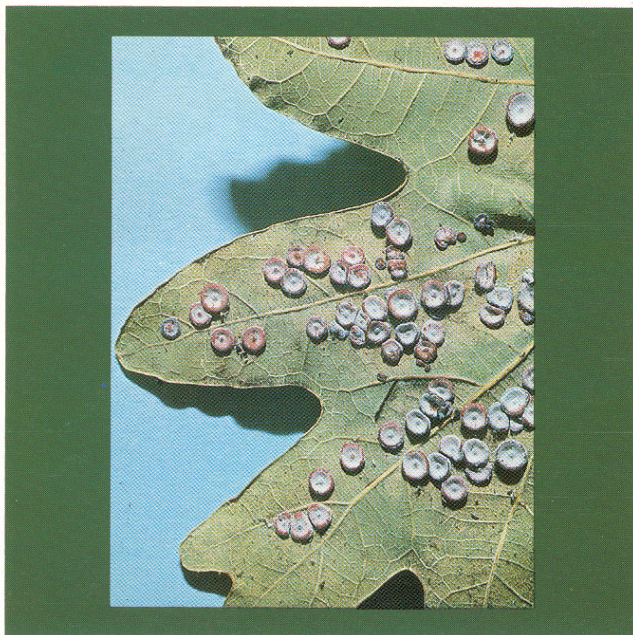


Fig. 3. Oak spangle gall on white oak, caused by a gall wasp, *Xystoteras poculum*.

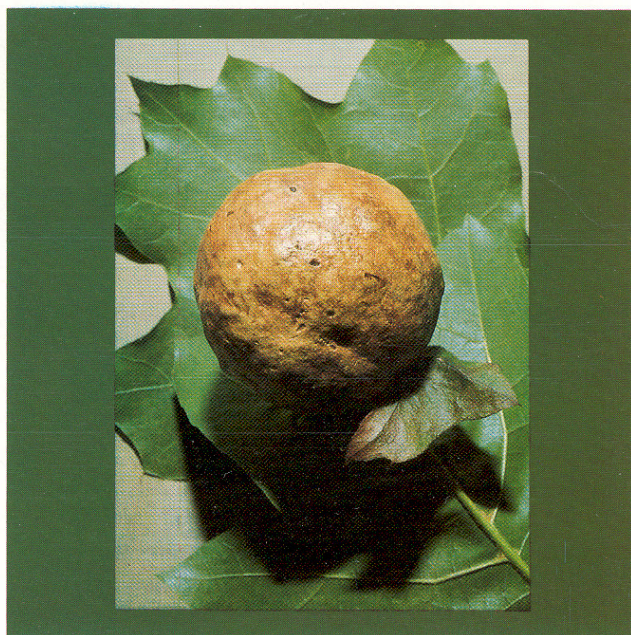


Fig. 4. Oak apple gall on black oak, caused by a gall wasp, *Cyrips* species.

Control

Galls generally DO NOT affect the overall health and vigor of the plant, and most gall-producing insects, especially those on foliage, DO NOT warrant control with insecticides. Also, a gall is a part of the plant and no insecticide can remove it! Therefore, any gall control must be undertaken before galls form.

Because the timing of insecticidal sprays is absolutely critical, and because the life cycles of many gall insects

are poorly understood, a chemical may not provide the degree of protection desired. Better control can often be achieved by hand picking and destroying the green occupied galls.

Apply dormant oils in early spring or late fall to provide some control of gall-producing aphids and mites on buds and foliage. Other gall insects may require the use of insecticides to achieve control. Apply malathion, diazinon or similar ornamental tree sprays in mid-April and again in early May, before the galls begin to form.