Galls & Outgrowths

Galls are abnormal swellings or localized outgrowths (tumors) of plant tissue. They are extremely variable in size, shape and their location on the plant. Some are little more than a blister on the surface of a leaf while others are large, warty growths on leaves, stems, or roots. Host plant cells - in response to attack by fungi, bacteria, nematodes, insects, mites or other agents - produce galls.

Insect & Mite Galls

Most plant galls are caused by mites and wasps. The tissue growth is the result of irritation caused by the feeding of the insect or by powerful plant growth-regulating chemicals injected by the insect during egg laying or feeding. Each insect or mite produces its own distinctive gall formation. Often, the insect or mite can be identified by the gall shape. There are over 2,000 American plant galls caused by insects and mites.

More galls occur on oak than on any other host plant. At least 750 different galls have been identified on oak alone. Nearly all trees, shrubs and other plants have at least a few galls.

Generally speaking, most galls do not seriously harm the host plant. Some, in fact, are quite ornate and attractive. Unfortunately, most galls seriously detract from the beauty of the host.

Twig galls, such as those on oak, are generally harmful to the tree or shrub. Large numbers of these may kill individual limbs or the whole tree.

The actual life histories of the various gall-making insects and mites are too variable and complex to cover.

Many gall-producing insects and mites are parasitized by other insects and fed upon by various birds and animals. Simple removal and destruction of fallen leaves with galls will help to reduce the number of emerging adults that will produce the next generation. Where possible, all twig galls should be pruned out while green or before emergence holes appear.

Treatment: In most cases, chemical control is not feasible or effective. This is especially true in the case of large shade trees. Usually, chemical control must be applied in early spring, at bud break, to be effective.

Fungal Galls

Several different fungi cause enlargements and thickening of leaves and shoots. Affected plant parts are usually many times larger than normal, and are often discolored and succulent. Some leaf or stem galls turn brown and hard with age. The galls are unsightly but rarely harmful to the plant.

Treatment: Hand pick off galls as they develop at 1- to 2-day intervals and destroy. If galls are a severe problem one year, you may be able to spray a recommended fungicide next year to reduce disease. Start mancozeb sprays (such as Southern Ag Dithane) at budbreak and continue through the first of June. Foliage spraying is limited in effectiveness.

Bacterial Galls

Crown gall is a disease caused by the soil-inhabiting bacterium Agrobacterium tumefaciens. This bacterium infects many plants. It enters the plant through wounds in the roots or the base of the trunk (the crown). Galls form on roots, stems and crowns and can grow up to 10 inches in diameter,
depending on the plant species infected. The galls disrupt the flow of water and nutrients, weakening and stunting the top growth.

**Prevention & Treatment:** Avoid wounding the plants. Purchase only certified disease-free plants. Infected plants cannot be cured, although, they often survive for many years. To improve the appearance of shrubs with stem galls, prune out and destroy affected stems below the galled area. Sterilize pruning shears with rubbing alcohol after each cut. Destroy severely infected shrubs. The bacteria can survive in the soil for at least two to three years.

**Nematode Galls**

Nematodes are microscopic worms that live in the soil. Some nematodes (*Meloidogyne* species or root-knot nematodes) cause galls on the roots of susceptible plants. The galls are small, individual and beadlike in some hosts. In other plant species galls may be massive accumulations of fleshy tissue more than an inch in diameter.

Other root swellings must not be mistaken for root knot galls. Some ectoparasitic nematodes (nematodes that live outside the plant in the soil), such as sting and stubby-root nematodes, may cause root tips to swell.

Nitrogen-fixing bacteria (*Rhizobium* species) cause swellings on the roots of most legumes (such as clover, peas and beans). These swellings, called nodules, are easily distinguished from root-knot galls by differences in how they are attached to the root and their contents. Nodules are loosely attached to the root, while root-knot galls originate from infection at the center of the root, so they are an integral part of the root. In addition, fresh *Rhizobium* nodules have a milky pink-to-brown liquid inside them, while root-knot galls have firmer tissues and contain female root-knot nematodes (creamy white beads less than 1/32 inch in diameter) inside the gall tissues.

**Prevention & Treatment:** There are no chemicals available to homeowners to kill nematodes in planted soil. When nematodes are present, consider the following practices:

- Relocate the garden to a nematode-free area.
- Add soil amendments.
- Use root-knot nematode-resistant varieties.
- Remove all plants immediately after harvest.

Where root-knot nematodes are not present, the following procedures are recommended:

- Move the garden location every other year.
- Examine roots of transplants carefully for signs of very tiny galls. Avoid planting those that look suspicious. It is best to purchase certified disease-free plants.
- Fallow period with summer tilling.

See [HGIC 2216, Root-knot Nematodes in the Vegetable Garden](https://www hgic.clemson.edu/hgic2216) for more information.

**Lignotubers**

Lignotubers are bulbous tissue masses, which normally occur at the stem bases of most *Eucalyptus* species as well as some other plant species. Sometimes the greater part of the lignotuber is below the soil surface. Lignotubers are organs of food storage and regeneration. In the event that the aerial portion of the parent plant is destroyed by insects or fire, the buds and food reserves in the lignotubers enable aggressive new shoots to sprout when environmental conditions are favorable. As long as the crowns of the plants remain healthy, the buds in lignotubers remain dormant.