



## The Galls on Those Plants

By Dawn Pettinelli, UConn Home & Garden Education Center

Lately we have received a number of emailed pictures of strange-looking growths on a variety of plants from bean leaves to grape branches and azalea stems. Most of them have turned out to be galls. These curious structures are mostly due to insect or mite activity but can also be caused by bacteria, fungi and viruses. According to the Missouri Botanical Garden, there are at least 1500 species of gall producing organisms. Galls have been a natural phenomena for eons with fossils of gall infected seed ferns dating back more than 200 million years.

Galls may occur as bumps or warts, knobby growths, fingerlike appendages, thickened stems or even blob-like formations. When galls occur on leaves, they are more of a curiosity; occasionally they can be harmful to woody plants if they occur on stems and affect the plant's vascular system. Sometimes plants can become severely stunted or weakened if gall formation is widespread or occurs over multiple years. Since galls are initiated by living organisms, factors that affect the organism such as weather, population numbers and susceptibility of host plants, ultimately determine the likelihood of gall formation.

Galls come in a variety of shapes, sizes and colors depending on the organism that causes them and the plants they form on. Many are more unpleasing aesthetically than they are harmful to the host plant. Because most galls do not cause significant economic damage, the life histories of many gall producers are poorly understood. The scientists who study galls, referred to as cecidologists, have been able to share some general biological observations about these unique plant structures.

While galls can be found on a wide variety of plants, those in the rose, willow, sunflower, juniper and oak family appear to have the highest percentage of galls caused by insects. Oaks, in particular, serve as hosts to over 500 species of gall producing wasps, mites, aphids and midges. Almost anyone who has spent time outside has come across those oak 'puff balls'. Formally known as oak apple galls, these 1-inch diameter or so spheres form on the leaf's petiole or midrib. They become brown and papery as they mature. The larva of a gall wasp develops inside and eventually the adult emerges as is evidenced by a small hole in the gall.

Not only are oak galls fascinating, but they are useful too. In past times in Europe and Asia Minor, they were collected as a source of tannins. Tannins are used when making leather from animal skins as well as in dyes and inks.

Galls initiated by insects start either with feeding or egg-laying. The insect, through its saliva or other chemical stimuli, causes plant cells to multiply. This may be a defensive tactic by the plant but in doing so, a mass of tissue is produced, which ends up serving as food and shelter for the developing larvae. The larvae continue to feed and eventually complete their life cycle and chew a hole through the gall to emerge as an adult.

Azalea galls are caused by a fungus that affects members of the Ericaceae family including azaleas, rhododendrons, blueberries and the like. Spores produced during cool, wet springs land on leaves, stems and flowers and develop into bulging masses as the summer progresses. These masses become covered with white spores about now which can spread this disease throughout the plant, weakening it. It is recommended that these masses be removed and disposed of offsite.

Crown galls are known to affect more than 600 plant species in over 90 plant families. They are caused by a soil dwelling bacterium and can cause significant damage especially in orchards. The tumorlike galls form on stems and roots and in sufficient numbers can adversely affect the plant's vascular system and kill the stem or root that they form on. Even if the bacterium is eliminated by using a specific pesticide that targets this organism, the galls will continue to grow. Apparently, this bacterium is able to transfer some of its DNA into the host plant's genetic makeup causing the host cells to continue to divide uncontrollably. One of the most common ornamental plants that we see infected with crown gall is euonymus. It seems this plant can survive quite a while with crown gall. Control measures would just be to dig up the euonymus and replant with a species not in any of the previously listed susceptible families. Once the bacterium is in the soil, it remains there for years.



*1 Crown Gall*

While they can at times be unsightly, galls truly are a marvel of nature. Look for them while working in the yard or just out enjoying nature. It would be extremely difficult to control the organisms that produce galls so just admire the mysterious and complex relationships between plants and these unique gall producing organisms.

If you do have questions about galls or on any other home or garden topic, feel free to call the UCONN Home & Garden Education Center, toll-free, at 877.486.6271, visit their web site at [www.ladybug.uconn.edu](http://www.ladybug.uconn.edu) or contact your local Cooperative Extension Center.



2 *Azalea Gall*