

FACTS ABOUT GALLS ON OAKS

Eileen A. Buss, Associate Professor, Entomology & Nematology Dept., UF/IFAS, 352-273-3976, eabuss@ufl.edu

What is a gall?

- A gall is a growth of plant tissue that starts with an organism's (insects, mites, fungi) chemical and/or mechanical stimulus, which increases the plant's production of plant growth hormones (auxins, cytokinins, gibberellins, etc.).
- Galls are made of cells that are more numerous or larger than normal plant cells, or plant organs whose growth and development have been altered into unusual shapes.
- An insect gall forms because of the plant's response to the insect's egg laying, presence of the egg, and/or feeding stimulation by the larva. Plant cells are usually modified and enlarged, the plant tissue surrounds the egg or larva, and the gall protects and feeds the gall-maker.

Where are galls located?

- Usually occur on rapidly-growing plants or plant parts.
- On catkins, seeds, flowers, petioles, branches, stems, and roots; most occur on leaves and buds.

What do galls look like?

- Some galls are single-chambered (monothalamous) and contain only one gall-maker, and others are multi-chambered (polythalamous) and contain many gall-makers.
- The most common galls are described as blister, bud, bullet, oak apple, roly-poly, rosette, or stem galls.

What are the most common gall-making insects?

- Most gall-making insects are adelgids, phylloxerans, psyllids, gall midges, or gall wasps (cynipids).
- Of the more than 2,000 gall-making insects in the U.S., over 1,700 are gall midges or gall wasps.

Can insect galls hurt a tree?

- Leaf galls can be abundant and noticeable, but are usually not physically damaging.
- *Neuroterus* sp. leaf galls, however, make leaves look diseased after galls have dropped off the leaves, and may cause some defoliation.
- Occasional stem galls should not be physically damaging or reduce tree growth. However, severe infestations by some gall-maker species may alter branch angles, cause branch dieback, or tree decline.
- Some reports suggest that severely infested trees in nurseries may not establish well after being installed, but no studies have been done to confirm/refute this.
- If properly maintained, established trees do survive and outgrow a gall infestation in the landscape.

Are galls ever beneficial to have?

- Some galls/gall-makers are used in weed biological control programs.
- Galls containing tannic acid (e.g., oak galls) have been used to make inks and dyes, and to tan leather.

What should I do if my trees have galls?

- Learn what the gall-maker looks like. Many other insects live in galls, so monitoring exit holes is not enough for timing an insecticide treatment.
- Chemical control is not recommended for light infestations, especially in the landscape.
- Prune and destroy/burn galls, if possible. Chipping does not cut infested plant parts up enough.
- In tree nurseries or during heavy outbreaks, target gall wasps emerging from stem galls with a residual contact insecticide (e.g., acephate, bifenthrin, carbaryl), usually from December to March. Repeated applications may be needed, depending on the length of residual.
- Summer/fall applications are not likely to provide control, if the gall-makers don't emerge then.
- Most gall-makers on oaks are native and naturally occur in the landscape, and are not regulatory/quarantine pests.

June 2011



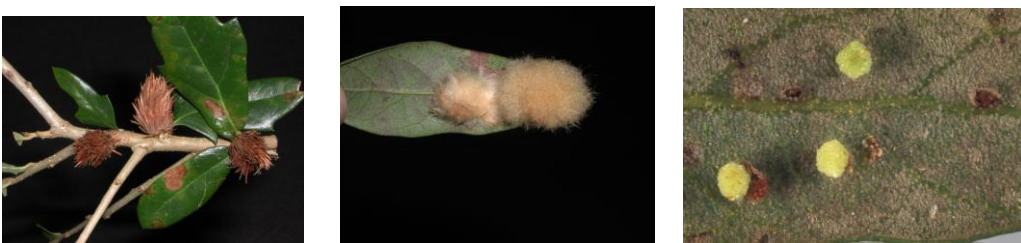
Bassettia pallida female from stem gall, emergence holes from a stem gall, and the suspected second generation leaf galls along the midvein of expanded leaves.



Callirhytis quercusbatatoides female (left) from a stem or "potato" gall (right).



Disholcaspis quercusvirens female from a stem gall and the stem or "bullet" galls. The second (sexual) generation is a tiny bud gall that develops from ca. January to March, then wasps lay eggs in young branches. The bullet galls have a sugary exudate that attracts stinging insects and ants from late summer to fall.



Andricus quercusfoliatus rosette galls (left), *A. quercuslanigera* leaf galls (center), and *Neuroterus* sp. leaf galls (right).



These are parasitoids of galls on live oak trees.