PENNSTATE

College of Agricultural Sciences • Cooperative Extension

Entomological Notes

Department of Entomology

GALLS ON OAK

There are a variety of gall-forming species of small wasps that commonly infest oak, *Quercus* spp., trees in Pennsylvania. Most leaf galls on oak cause little or no harm to the health of a tree. However, twig or branch galls may cause injury or even death to a heavily infested tree. Two common species of twig gall-producing insects are the horned oak gall wasp, *Callirhytis cornigera* (Osten Sacken), and the gouty oak gall wasp, *C. quercuspunctata* (Bassett). These species are in the insect family Cynipidae. Both the horned oak gall wasp and the gouty oak gall wasp are known to occur from southern Canada to Georgia. Each of these galls may be diagnosed by their unique characteristic size, shape, and color.

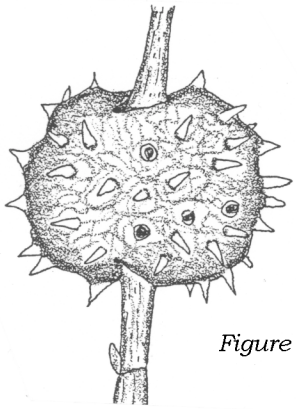

Figure 1. A horned oak gall on a twig.

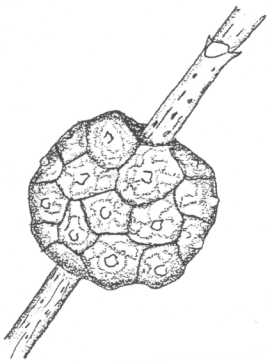

Figure 2. A gouty oak gall on a twig.

DESCRIPTION

Galls are abnormal plant growth or swellings comprised of plant tissue. Galls are usually found on foliage or twigs. These unusual deformities are caused by plant growth-regulating chemicals or stimuli produced by an insect or other arthropod pest species. The chemicals produced by these causal organisms interfere with normal plant cell growth.

The horned oak gall wasp, *C. cornigera,* attacks the twigs of pin, scrub, black, blackjack, and water oaks. The gouty oak gall wasp, *C. quercuspunctata*, develops in the twigs of pin, scarlet, red, and black oaks. Both of these woody twigs galls on oak look similar, but the horned oak gall has small horns that protrude from around the circumference of the gall (Figs. 1 & 2). One adult gall wasp emerges from each of these horns.

LIFE HISTORY

The life cycles of the various gall-forming wasps are highly variable. Two or more years are required for gall wasps that develop in woody twig galls to reach maturity. Gall-forming wasps usually overwinter as adults in protected places away from the host tree. As the buds break in the spring and the leaves begin to expand, these small wasps start to lay their eggs in expanding plant tissue. During the egg-laying process or early larval-feeding period, specialized body glands secrete growth-regulating chemicals that interact with certain plant chemicals to produce these abnormal growths. After a brief period of cell growth, gall development stops completely. The insect is confined within "its house" and feeds only on gall tissue during the remainder of its development. Once these galls are formed, they do not continue to use nutrients from the host plant.

DAMAGE

In general, most leaf galls on oak in Pennsylvania do not affect the health of the host tree. A few can cause leaves to drop prematurely, or distort them so that photosynthesis (the plant's food-making process) is interrupted. Galls generally are aesthetically objectionable to homeowners who find them unattractive and fear that galls will cause damage to the health of their oak trees.

MANAGEMENT

Chemical control is seldom suggested for management of leaf galls on oak. Cultural methods of control may be effective in reducing the impact of these insects. Some fallen leaves may harbor various life stages of gall-producing pests. Therefore, it may be useful to collect and destroy all infested leaves. Some of these pests overwinter in twigs and branches of oak. Where such woody galls are detected, prune and destroy the infested plant material when the galls are small and have just started to develop.

Once a gall begins to develop, it is almost impossible to stop or reverse its development. Unless registered insecticides can be applied when gall wasps are flying, they offer little or no effective measure of control. Lack of serious plant damage from leaf galls and the difficulty in proper timing of insecticide applications pose a strong argument against the use of insecticides to reduce galls on oak.

WARNING

Pesticides are poisonous. Read and follow the label directions and safety precautions. Handle them carefully and store in original, labeled containers—out of the reach of children, pets, and livestock. Dispose of empty containers quickly, in a safe manner and place. Do not contaminate forage, streams, or ponds.

Gregory A. Hoover
Sr. Extension Associate
Dept. of Entomology
Revised March 2004

TS-19