

Nut Weevils

Ric Bessin, Extension Specialist

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Nut weevils can be very serious pests of native and non-native nut trees. These damaging insects begin to attack the kernels in the developing nuts while the nuts are still on the tree. However, problems often are not noticed until the nuts are harvested and opened. Occasionally, these weevil grubs are found in homes or other places nuts are stored.



Figure 1. A nut weevil

Pecan Weevil, *Curculio caryae*

This is a serious late season pest of hickory and pecan. The greatest damage is caused by the grub that feeds directly on the developing kernel.

Adults are reddish-brown and densely covered with olive-brown hairs and scales. Body length is about 3/8 inch long exclusive of the snout. The female has a snout as long as her body, while the male's is about half that of the female's snout.

Two types of damage are caused by this insect; mid-season adult feeding on young nuts causing premature nut drop, and grub damage to the kernels that usually occurs after shell hardening.

Adult weevils emerge from the ground in late August through September, about the time nuts begin to harden. Peak periods of adult emergence usually follow heavy rains. After the nut kernels have hardened, the female uses her long snout to chew a hole in the side of the nut and deposits her

egg in little pockets in the nut. Creamy white grubs with reddish brown heads hatch and feed inside the nuts during the fall, reaching 3/5 inch in length.

When mature, the grub chews a perfectly round 1/8 inch hole in the side of the nut and falls to the ground in late fall or early winter, usually between late September and December. They make earthen cells in the ground where they remain as a grub one to two years. Most of the grubs will pupate the following fall. Some, however, do not pupate until the fall of the next year. Adults emerge during the summer following pupation. The entire life cycle requires 2 to 3 years to complete, most of it in the soil.

Weevils usually move only a short distance after emerging and often attack nuts on the same trees year after year, so long as there is a crop of nuts. Weevils apparently prefer trees growing in low areas or those near hickory trees. Early maturing varieties are most susceptible to the weevils. Hickory nuts are attacked by the pecan weevil as well.

Monitoring for Pecan Weevils

Trees can be jarred beginning in mid-August to determine when to apply insecticides. Place a large harvesting sheet under the trees and jar the limbs with a padded pole. The adult weevils will fall onto the sheet and remain motionless for a short period. When three or more weevils are jarred per tree, insecticide applications should begin. Peak emergence cycle usually follow rains. Otherwise spray applications should begin when shell hardening begins and repeated at 10 to 14 day intervals.

Those not prepared to spray can reduce weevil injury by periodically shaking weevils onto a harvesting sheet. Dislodged beetles usually remain motionless on the sheet and can be easily collected and destroyed. Shaking should begin after the first heavy rain in early August and continue through mid-September or until no weevils are collected.



Figure 2. Chestnut weevil grubs.



Figure 3. Larger chestnut weevil adult

Lesser Chestnut Weevil and Larger Chestnut Weevil *Curculio sayi* and *Curculio caryatipes*

Of the larger and lesser chestnut weevils, the lesser chestnut weevil is the more common of the two species of weevil infesting chestnuts in Kentucky. These weevils breed exclusively in chinquapin, American and Chinese chestnuts. At one time these weevils were common, but since the passing of the American chestnut they have become much less common.

The 1/4 inch lesser chestnut weevils emerge from the ground beginning in late May until July, about when the chestnuts bloom, but do not lay eggs until the fall. Egg laying begins when the nuts are nearly mature and most eggs are laid after the burr begins to open. Eggs are usually laid in the downy inner lining of the brown shell covering the nut. Eggs hatch in about 10 days and larval development is completed 2 to 3 weeks later.

Soon after the nut falls to the ground, the grubs chew a circular hole in the side of the nut to enter the soil. Most of the lesser chestnut weevil grubs overwinter the first year as grubs, pupate the following fall, and overwinter the following winter as adults.

Some pass two winters in the grub stage and a third winter as adults before emerging from the ground. The life cycle is completed in 2 to 3 years.

The biology of the larger chestnut weevil differs from that of the lesser chestnut weevil. Adults begin to emerge in late July and August. The adult is 3/8 inch long exclusive of the snout. The female has a 5/8 inch beak and the male's is 1/4 inch.

Larger chestnut weevils begin egg laying soon after emerging, before egg laying begins with the lesser chestnut weevil. Eggs hatch in 5 to 7 days and the larvae feed for 2 to 3 weeks before leaving the nut. Larger chestnut weevil grubs chew an exit hole in the side of the nut and drop to the ground usually before the nuts fall. Grubs overwinter in earthen cells in the ground. Pupation and adult emergence takes place the following summer. A few grubs will overwinter a second year before pupating. The life cycle is completed in 1 to 2 years.

Management

Weevil infestations can be reduced by picking up chestnuts daily and after curing, heat them to 140°F for 30 minutes to kill the larvae in the nuts. A cold treatment of holding the nuts at 0°F for four days may also be effective, but it may also affect the nuts' flavor. Sanitation is important, always collect and destroy fallen nuts before the larvae have a chance to escape and enter the soil. Trees can be jarred similar to monitoring for pecan weevils to determine the presence of adult weevils.

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