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INSECT NOTES

NUT WEEVILS

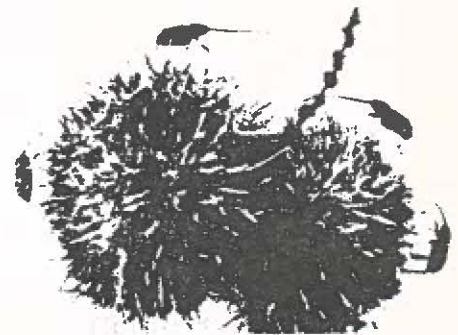
Many species of weevils attack the nuts of chestnut, pecan, hickory, chinquapin, other edible nuts, and the acorns of oak. The most troublesome are the chestnut weevils and the pecan weevil, because the hosts are planted for their nut crops. Hardly a bag of chestnuts can be picked or brought home from the store in the fall without producing numbers of grubs at the bottom after standing for a week or more.

Generally, these weevils have similar life cycles. Adults fly to host trees in July and August to feed and then lay eggs. Eggs hatch in 5 to 10 days, and larvae feed on the nutmeat for 2 to 3 weeks or more. Mature larvae tunnel out of the nut and burrow into the ground where they remain 1" to 12" inches deep in earthen cells. Some individuals may remain in the soil for 2 years or longer before emerging to attack the nuts again.

CHESTNUT WEEVILS

Two species of weevils attack chestnut and chinquapin: the large chestnut weevil, *Curculio caryatrypes* (Boheman), and the small chestnut weevil, *Curculio sayi* (Gyllenhal). Both are native to North America and were serious problems on American chestnut. They now are major pests of Asiatic and other imported species and varieties grown in home gardens and commercial orchards.

Adults of both species are brown, mottled with clay-yellow and yellowish beneath. The large chestnut weevil is 1/4" to 1/2" long. The small chestnut weevil is 1/6" to 1/3" inch long and somewhat darker. Males are smaller than the females. The snout is mottled tan to dark red brown and 1.5 times as long as the body in the female, and nearly as long as the body in the male. Thus, adults can chew through the bur to the nut to feed and to lay eggs. Mature larvae



Large Chestnut Weevil

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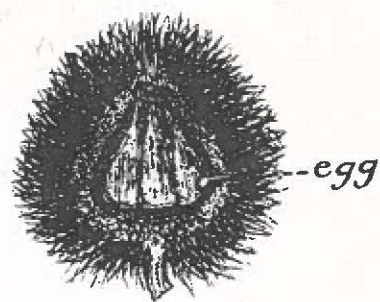
Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, and September 30, 1977, in cooperation with the U.S. Department of Agriculture. Mitchell R. Geasler, Director, Virginia Cooperative Extension Service, and Vice Provost for Extension, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061; Clinton V. Turner, Administrator, 1890 Extension Program, Virginia State University, Petersburg, Virginia 23803.

are grub-like, legless, curved and plump, cream colored with brown heads; 1/4" long for the small, and 1/2" long for the large chestnut weevil.

Weevils start egg-laying when nuts begin to form. There are some differences in habits and life history, as follows.

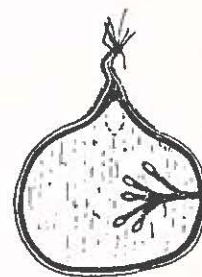
Adults of the **large chestnut weevil** emerge from the soil from late July to early September, fly to chestnut trees to feed, then lay eggs for several weeks, beginning in mid- to late August. A female may spend an hour or two chewing a tiny hole through the bur. The weevil inserts its ovipositor in a completed hole to deposit an egg on the silken surface of the kernel. Females lay an average of 25 eggs, but usually only 1 egg is deposited in a single nut. Eggs hatch in about a week and larvae feed in the nuts for 2 or 3 weeks or more before chewing through the shell to enter the soil. Egg laying punctures in the bur or

nut seldom are seen, but larval exit holes in the nuts are 1/8" in diameter. The larvae burrow 2" to 8" deep in the soil to remain in smooth-walled earthen cells until the next summer. After pupating for 10 to 20 days, new adults remain in the earthen cells for 2 to 3 weeks before emerging in late July and early August. Nearly half of the weevils may spend two winters as larvae to emerge the following year. Thus, most have a one-year life cycle, but survival is ensured in a year without a nut crop.



Large Chestnut Weevil

Adults of the **small chestnut weevil** emerge from the soil during May and June. They often congregate on catkins during flowering, but then scatter and seldom are found on the trees until the nuts begin to ripen. When the burs start to split, females drill a hole in the shell, depositing an average of 8 eggs per nut in the nutmeat. Larvae feed in the nuts for 2 to 3 weeks, then chew through the shell leaving an exit hole 1/6" in diameter, and enter the soil to make earthen cells 3" to 10" below the surface. The next year, most pupate in early fall. The adults remain in the cells through the winter to emerge in the spring. However, some overwinter the second year as larvae and pupate the next fall, spending the third winter as adults that emerge the following spring. Thus, most weevils of this species have a two year life cycle; some, three, and a few take 4 years.



Small Chestnut Weevil

Control

If only a few trees are grown, fallen nuts should be collected and removed daily before larvae can emerge and enter the soil. After 3 to 4 years, the weevil population will be greatly reduced.

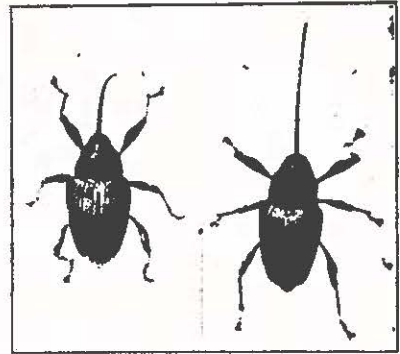
Four weekly foliar applications of Sevin (carbaryl) should be made beginning in late July when the weevils move to the trees to feed and the kernels begin to form, as determined by cutting open a few burs. Use Sevin 50% WP at the rate of 6 lbs./100 gal. or 6 tblbs./gal. For agricultural or

commercial use, the rates per 100 gal. for other formulations are: 2 1/2 to 3 3/4 lbs. Sevin 80S; 2 to 3 qts. Sevin 4F; and 2 to 3 qts. Sevin XLR PLUS. The higher rate is best for weevils. There is no "days to harvest" restriction on the use of Sevin. Make the last application before shuck split. Sevin may result in the increase of spider mite and aphid problems.

A soil treatment of Oftanol granules under the trees every other year, as recommended for grubs in turf, may help to reduce the numbers of weevil larvae and adults in the ground.

PECAN WEEVIL

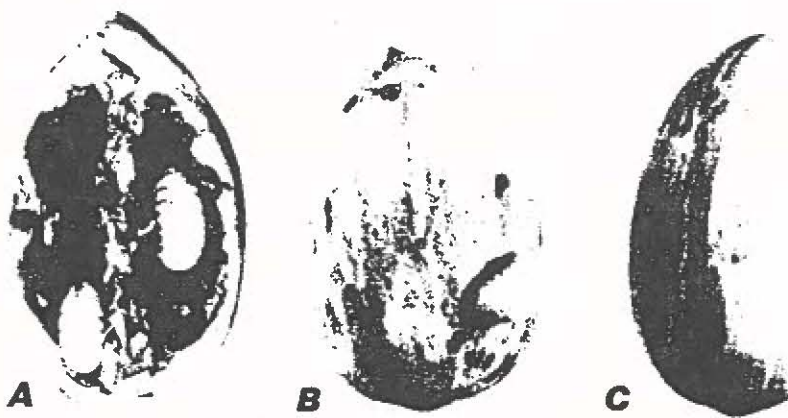
The pecan weevil, *Curculio caryae* (Horn), is a major pest of pecans and hickories. Pecans are not widely grown in Virginia, but small plantings and trees in home yards may develop infestations, especially where hickories are nearby. Pecan varieties that mature early (Schley, Stuart) are most commonly infested. Late maturing varieties (Teche, Van Deman) usually are not attacked unless earlier varieties had a very light crop or the crop was destroyed before weevils completed egg-laying.



Pecan Weevil

Weevils can damage the nuts at different times. Before the shell hardens, adults feed on the kernels in the "water stage". Soon after, a brown stain appears at the feeding site, and the shucks turn brown, shrivel, and drop to the ground. This loss often goes unnoticed; but, when crops are light or infestations are severe, it can be serious. More obvious and damaging is the injury to the nuts when the weevils lay their eggs in the nutmeat, which is consumed by the larvae as the nuts grow to maturity.

Adult weevils are dark brown with light brown or gray scales. The female body is about 3/8" long with a snout slightly longer than the body. Males are smaller with a snout not quite as long as the body. Mature larvae are yellowish, legless, fat, curved with brown heads, and 3/8" to 1/2" long.



A-in nut

Pecan Weevil Larvae
B-emerging

C-exit hole

The peak of adult emergence from the soil is mid-August in Georgia, particularly after heavy rains soften the soil. Males and females fly to trees, usually those under which they emerged, and feed on the center of immature nuts. After kernel formation occurs, females chew through the shuck and shell to lay 2 to 4 eggs in separate pockets of the kernel. Eggs hatch in about a week and larvae feed on the nutmeat for 3 to 4 weeks. Most larvae leave the nuts from the end of September until late December or later, and enter the ground 4" to 12" to construct earthen cells. They may remain as larvae in cells for 1 or 2 years. The weevils pupate in September and October but remain as adults in the cells to emerge the following summer. Thus, the life cycle may take 2 or 3 years.

Adults usually fly to the trees under which they emerged, as long as a good nut crop is produced. Even in orchards, some trees near severely infested trees may have few weevils year after year. Emergence is most likely after soaking rains. Trees in low areas and adjacent to hickories are usually most frequently infested. All types of hickory nuts are attacked by the pecan weevil, sometimes called the hickory nut weevil.

Control

Shucks of infested nuts cling to the shells. If a few trees are grown, cull out, pick up and destroy nuts with tight-clinging shucks daily through harvest to help reduce weevil populations.

Jarring trees after a good rain will dislodge many adult weevils onto harvesting sheets, where they can be collected and destroyed. Dislodging weevils at weekly intervals during the egg-laying period until no weevils are recovered will help reduce populations. Jarring also is used to find out when adults are first active in the trees, to determine optimum spray timing.

Three weekly foliar applications of Sevin (carbaryl) beginning in early August when the nutshells begin to harden are suggested. The 50% WP formulation can be used at the rate of 5 lbs./100 gal. (5 tblsp./gal.). For agricultural and commercial use, the rates per 100 gal. for other formulations are: 1 1/4 to 3 lbs. Sevin 80S; 1 to 1 1/2 qts. Sevin 4F; 1 to 2 1/2 qts. Sevin XLR PLUS; and 1 to 2 1/2 qts. Sevin SL (SL is labeled for commercial use only).

John A. Weidhaas, Jr.
Extension Entomologist