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Rains Bring Pecan Weevils in Oklahoma

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Recent rains across the state have brought a flush of pecan weevils out of the soil and into our pecan trees. Many commercial growers have treated once already on early maturing cultivars; however, they also realize that the job is not complete. Keep in mind, pecan weevils can continue to emerge and seek out oviposition sites through the month of October. We must be diligent in combating this pest each year. Once the majority of a crop has reached the dough stage (no water inside) of development the pecans are ready for weevil egg-laying activity.

When applications are made for pecan weevil and trapping is used in that area to monitor for these insects, it is important to remove the trap tops and allow dead and/or dying weevils to attempt to climb back into the canopy. They will continue to be exposed to a toxic level of chemical and will eventually die. You have to assume that the insecticide chosen will provide 7-10 days of control. To help determine the next spray date, once seven days has passed since the last application, trap tops can be replaced and monitoring should continue.

Even in commercial operations where weevils are controlled each year it is not unusual to make 2-3 applications for this pest. This can be particularly true for those that retail their product to the general public. You can ill afford to have customers discover one weevil in a sample of nuts. For those wholesaling their product a little weevil damage can be sorted out by the cleaner, grower or buyer; however, the problem can continue to compound itself in the future. Many things will go into making the decision to treat or not treat for this important pest, but problems ignored in one year can affect future infestations.

Concerning insecticide choices; many growers are making a transition for pecan weevil control by using some formulation of pyrethroid insecticide (Warrior®, Proaxis®, Asana®, Mustang-Max®, etc.) instead of Sevin®. The reasoning behind this change has been economics, with costs for Sevin® continuing to rise and pyrethroid costs remaining steady in most cases. While this may be a good choice for some, it could create a potentially greater problem for others. If you

do not have a closed cab system, some pyrethroids (the newer ones in particular) could be potentially more toxic than Sevin®. The active ingredient in Sevin®, known as Carbaryl has an oral and dermal LD_{50} of around 260 and 4000 mg of chemical/Kg of body weight, respectively, while those same numbers for Warrior® (lambda-cyhalothrin) are 68 and 664, respectively. Remember, the lower the number, the more potentially toxic the chemistry. Proaxis®, which is simply a different isomer (gamma-cyhalothrin), very similar to Warrior, has an oral and dermal LD_{50} of 79 and 632, respectively. This suggests that these newer pyrethroids are potentially more toxic to the applicator than Sevin® insecticide.

A relatively new insecticide available this year for pecan weevil and other pecan insects is Endigo ZC®, which represents a combination product containing the same active ingredients as Warrior® (lambda-cyhalothrin - 9.48%) and Centric® (thiamethoxam – 12.6%). Availability may be limited in 2008; however, product should be widely available in 2009. The confusing issue with these many similar products is that Warrior® contains 11.4% active ingredient and another formulation called Warrior II® contains 22.8% active ingredient; however, the rates applied per acre are adjusted by half for the latter compound, since it contains twice as much active ingredient. Endigo® rates are also adjusted for the lower amount of active ingredient per gallon. An additional insecticide that has gained popularity with growers on many commodities, including pecan is a product called Silencer®. This product contains the same active ingredient as Warrior® only a little more (12.7%), yet it is labeled at the same rate as Warrior®. Many growers have been purchasing Silencer® for considerably less than Warrior® in this simply makes good business sense. I have not had the opportunity to evaluate this product, but because it is the same active ingredient and I have received excellent testimonials from other commodity groups, I would suspect its performance is comparable to Warrior®.

When making insecticide choices carefully examine university trials and ask others about performance of new materials. This puzzle on active ingredients may help explain why activity on pecan weevil may vary. In OSU trials, Warrior® has proven to be more efficacious than Mustang-Max® or Proaxis® and grower testimonies have borne this out. Different active ingredients may be the answer to this puzzle between Warrior® and Mustang-Max®, but why are the two isomers of cyhalothrin (Warrior® and Proaxis®) different? The answer is on the label. Warrior® contains twice as much active ingredient per gallon than Proaxis® and yet the usage rates for pecan are identical. All of this latter information on chemicals points to the most important aspect of making chemical applications; read the label and know what you're getting for your money.

Potato Leafhopper Economic Considerations in Alfalfa and Peanut

Phil Mulder, Extension Entomologist

After a brisk round of southerly winds and rains, some insects that are not year-round residents find their way to Oklahoma. Normally, potato leafhoppers are year-round residents of the Gulf Coast states and will gradually migrate northward with spring winds. Because of wind dispersal, potato leafhoppers are likely to be a pest of alfalfa from June to October. Generally, the potato leafhopper poses the greatest threat (if any) in higher rainfall and humidity areas of the state, but this year that description fits many areas. In western Oklahoma, potato leafhopper populations decline as hot, dry conditions prevail unless they can find a suitable host and

adequate rain or irrigation. This is where crops like peanut, alfalfa and even horticultural crops such as pecan can serve as viable hosts for these insects.

The potato leafhopper adult is a light green, wedge-shaped insect about 1/8 inches in length. The nymphs closely resemble adults; however, they are smaller, yellow and wingless. Both adults and nymphs are very active; they can move sideways and backward as rapidly as forward when they are disturbed.

Both adults and nymphs use their piercing-sucking mouthparts to feed on alfalfa; however, the most serious damage is caused by the nymphs. Initial feeding is characterized by a wedge-shaped yellow area formed on the leaf tip known as “hopperburn”. This type of damage is already noticeable in peanut in the Ft. Cobb area. Heavy feeding causes the entire leaf to turn yellow and heavily infested fields take on a yellow color, even from a distance. Usually, damage is greatest along field margins. Although the chlorotic symptoms may be accompanied by some leaf drop and reduction in quality of forage, a more serious problem is stunting of plant growth and significant yield loss. Mowing ditches next to alfalfa fields can increase the chance of sustaining leafhopper damage because the leafhopper adults move (fly) from the mower noise into adjacent alfalfa.

Due to their minute size, the best means of detecting leafhoppers in alfalfa before damage is apparent is with the use of a standard 15 inch sweep net. Sample at least five spots across each field. In each spot take at least 20 sweeps before counting the number of adults and nymphs recovered.

Treatment is generally justified at these combinations of alfalfa height and leafhopper numbers:

Alfalfa Height (inches)	**Leafhoppers per sweep**
3	0.2
6	0.5
12 or taller	1.0

Besides height and leafhopper density, yield potential and stand age should also be considered in the treatment decision. For recommendations on insecticide choices in alfalfa consult OSU publication EPP-7150, Alfalfa Forage Insect Control.

Thresholds for potato leafhopper in peanut are not well defined and generally don’t become a serious problem until later in the season (late July to mid September). Peanut growers should

use caution when deciding to treat for this problem, particularly where leafhoppers are not easily seen. If the insects are common when walking through the peanuts and 25 to 30% of the plants show hopperburn then treatment can be justified. Unnecessary applications of insecticides during hot weather can lead to mite flare ups, so please be certain that control of leafhoppers in peanut is justified. Chemical recommendations on peanut can be obtained in OSU Publication EPP-7174, Pest Management Series: Peanut Insect Control in Oklahoma.

New Oklahoma Insect Pest of Woody Ornamentals: Japanese Weevil

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In late July, the Tulsa County OSU Cooperative Extension office was notified of some weevils devouring a dogwood in a southeast Tulsa neighborhood. Extension personnel promptly collected and sent several specimens to the OSU Plant Disease and Insect Diagnostic Lab. We tentatively identified the pest as twobanded Japanese weevil, *Pseudocneorhinus bifasciatus* Roelofs, a new species record for Oklahoma. This potentially serious pest of woody ornamental plants most likely arrived in our state hitchhiking on nursery stock. The extent of its distribution in Oklahoma is currently unknown.

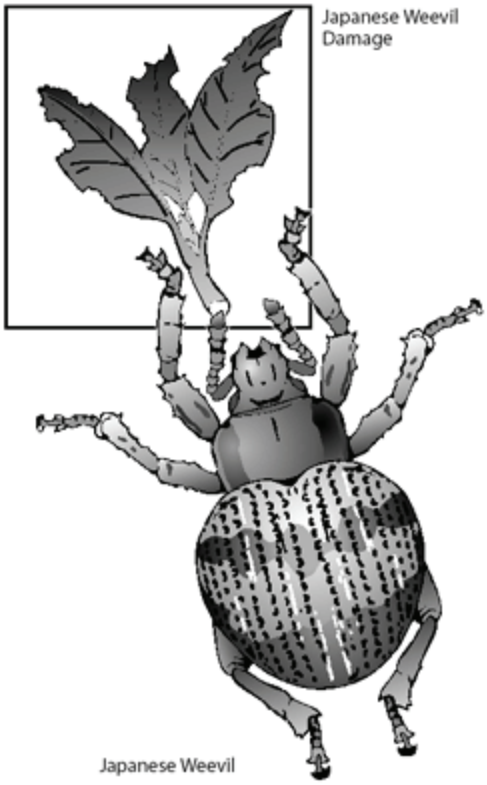
History. Japanese weevil was first collected in Philadelphia, PA in 1914, presumably imported with nursery stock from Japan (Wheeler and Boyd 2005). Since then it has been slowly expanding its range, probably aided by human activities. The latest report on its distribution (Wheeler and Boyd 2005) records it is established from the New England states south to Georgia and west to Illinois and Indiana. The weevil has been collected as far south as Florida.

Identification. This beetle is a stout, convex weevil measuring about 3/16 inch (5 mm) in length. It is distinctly pear shaped, with the wing covers (elytra) much broader than the pronotum (first dorsal segment behind the head). The weevil is covered with brown and grey scales, forming two more or less distinct cross bands on the elytra, with scattered, metallic pale blue scales on the sides and in bands on the legs.

Biology. According to Allen (1959), adults are leaf feeders and when abundant can cause significant damage. Larvae live in the soil and feed on the roots of mature host plants, but the extent of their feeding damage is not known (Day 2003). In the Northeast, weevils overwinter as adults, larvae, and eggs; in spring, adults begin feeding and laying eggs, while other stages continue their development (Allen 1959). Between mid May and late August, Allen (1959) counted at least 333 egg pods consisting of an average of 2.6 eggs per pod deposited by 42 weevils. In 33 pods examined by Zepp (1978), the average number of eggs per pod was 5.1. Females fold and glue leaves of the host plant and deposit eggs within the fold (Zepp 1978). The weevil is assumed to be parthenogenetic (Wheelerand Boyd 2005), meaning females reproduce asexually.

Common hosts. The two-banded Japanese weevil attacks a broad range of hosts, including "cherry laurel, broad-leaved evergreens, pyracantha, privet, barberry, euonymus, and many others" (Day 2003); forsythia, lilac, strawberry but not grasses (Allen 1959); mountain laurel, great rhododendron, multiflora rose, Allegheny blackberry, American bittersweet, flowering dogwood, gray dogwood, bittersweet, and nightshade (Maier 1983, 1986). The Florida specimens were collected sweeping in a soybean field. Wheeler and Boyd (2005) called it "an important pest of landscape plantings in the Northeastern and Midwestern" states, but noted that it has "received scant attention in the Southeast."

Damage. Chewing damage begins at the leaf margins, quite similar to the “notching” exhibited by the feeding of black vine weevil. Japanese weevils continue to feed from the margins to the central portions of the leaf, consuming large, rounded areas of tissue (Day 2003).



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