Plant Disease and Insect Advisory

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Destroy Volunteer Wheat and Reduce Threat of Other Wheat Pests

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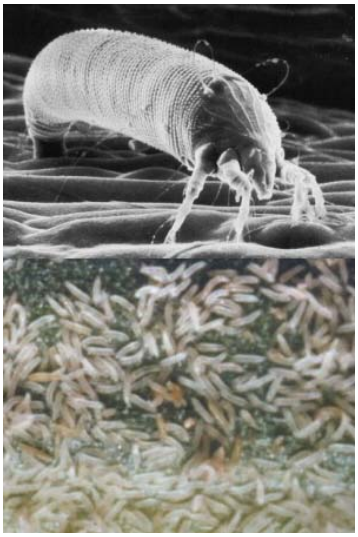
The unharvested wheat from this past growing season left a huge seed bank of potential ”volunteer” wheat in many fields that could germinate every time we receive significant rain. This volunteer wheat acts like a nursery for wheat pests such as the Hessian fly, wheat curl mite and cereal aphids. Damage from these pests can be reduced by eliminating their “home” at least two weeks before the wheat crop is seeded.

Hessian fly over-summers on wheat stubble, and will increase in number on volunteer wheat when it becomes available for food. Adult flies “hatch” from their pupal cases when we get a triggering rainfall event of at least a half inch. Hessian fly development depends on temperature, but can be completed in about 21 days in warm weather. Adults will lay eggs which will hatch and develop on volunteer wheat. Those flies can complete development and infest other wheat plants that are available later in the growing season. Wheat seed that is treated with Gaucho or Cruiser will help control Hessian fly infestations in the wheat crop, but seed treatments are not 100% effective in every climatic condition, so any practice, such as destruction of volunteer wheat will reduce fly numbers and help achieve better control with an insecticide seed treatment.



Wheat curl mite is a vector of wheat streak mosaic virus. They can build on wheat plants in large numbers, and move with prevailing winds into a newly emerged wheat field. Wheat streak mosaic virus can cause heavy yield loss, especially when young plants are infected in the fall. There is no chemical control for wheat curl mite, so the primary practice of controlling volunteer wheat is the most effective way to reduce wheat curl mite, and thus, wheat streak mosaic virus.

Cereal aphids that attack wheat live on other plants during the summer until wheat is again present. Besides being a direct pest of wheat, the bird cherry oat aphid and the greenbug are vectors of barley yellow dwarf virus. Volunteer wheat can serve as a source of aphids and disease, which can be moved over into a wheat field later in the growing season.

Volunteer wheat can be controlled with tillage, or a nonselective burndown herbicide such as glyphosate. In either case, volunteer wheat must be killed at least two weeks before the crop is planted. Tillage will kill volunteer wheat almost immediately. An herbicide application will likely take a week to ten days to completely kill volunteer wheat, so the actual timing of the herbicide application needs to be at least three weeks prior to planting. Whatever the control mechanism, it is very important to kill volunteer wheat now to ensure a healthy wheat crop later in the season.

Late-Season Pecan Weevil Situation – Lessons from the Past

Phil Mulder, Extension Entomologist

Several phone calls and other inquiries have crossed my desk lately asking about pecan weevils in 2007. The overriding question thus far has been, "where are the weevils this year." Relatively light populations across the majority of the state have been the norm. Many growers have reported single digit numbers since they began their yearly monitoring and trapping. I would suggest that the light population numbers are attributable to several factors. First, the heavy rainfall that preceded the normal emergence period for adult weevils led to early suicidal emergence. This is likely in several locations that had heavy rainfall through mid to late July. In fact, two pecan producers located in central and south central Oklahoma, who began trapping in July notice heavy peaks in late July and have recovered very little since that time. The second possibility is that flooding in many orchards may have adversely affected the weevil population. In some instances this may be possible since flood water sat on orchard floors for weeks. I had mentioned in earlier news releases that weevil mortality from the floods was unlikely but that was before the rains persisted for so long. The final possibility, and the one that concerns me the greatest is the possibility that weevil populations have not peaked. In previous studies conducted throughout Oklahoma using Circle

traps, we have consistently seen the peak in emergence to occur about the third week in September.

I am hopeful that the first scenario described above is the explanation for the fate of our weevil population in 2007; however, I caution all growers to please continue to monitor and trap in their areas to be certain we do not miss a late flush of adult beetles. This is exactly what happened to many Oklahoma growers last year. Several growers suspended treatment about the time that the cultivar Pawnee began shuck split and consequently got burned on their other varieties or natives. Pecans will continue to be susceptible to weevil attack up to shuck split. We must continue to learn from those bad experiences in the past, to avoid falling into the same trap for the future.

On another note about 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 to lower in some 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.

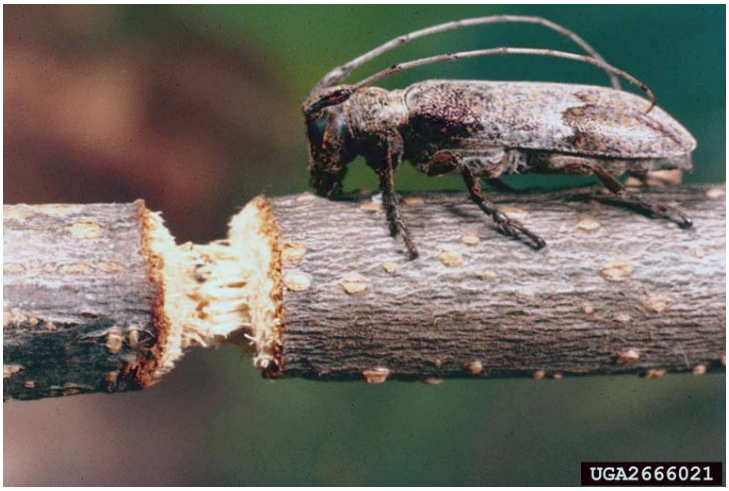
A final word about switching chemicals too quickly before examining the information at hand is when making your choices, carefully examine university trials and ask others about performance of new materials. While many of the newer pyrethroids are similar, their active ingredients may vary in activity on pecan weevil. 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 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 when making applications, read the label and know what you're getting for your money.

Twig Pruner and Girdler, Identification and Management

Phil Mulder, Extension Entomologist

Beginning soon is the time of year when growers, start calling about excessive twig and branch dropping due to twig girdlers and twig pruners. Hence; the purpose of this article, to save some concerns and provide some information about these occasional pests. Note that I spoke of "these pests", because these insects are not the same species and their biology and damage will differ. Management of the problem can sometimes take the same route and this will also be discussed.

Throughout the pecan growing regions of the United States, starting in late summer, growers may notice excessive numbers of twigs and small branches falling from trees. Initially, these may be associated with heavy storms or winds; however, at close inspection the twigs appear to have been neatly severed. If the twig has a smooth outer cut all around the bark with a jagged center area, this is typical of the twig girdler, *Oncideres cingulata*; however, if the cut appears smooth inside the bark, but the bark is raggedly cut then this is damage from the twig pruner, *Anelaphus* (=*Elaphidionoides*) *villosus*. In Oklahoma, both can be encountered but the twig girdler is likely more common on pecan or hickory. Damage from the twig pruner is more commonly found on oak but can also appear on pecan.



Twig girdler adults begin to emerge in August and continue through October. Adult girdlers are long-horned wood boring beetles (Family: Cerambycidae) that attack hardwoods. They are about ¾ of an inch long, stout, grayish brown with a lighter colored band across the hard wing covers (elytra). The antennae will typically be as long as the beetle's body. The damage described above is created by the female beetle, who chews a V-shaped groove around a small twig, thereby girdling it. She will then deposit an egg beneath the bark in the section of the twig beyond where the cut was made. This is done because the larva is unable to develop in healthy sapwood. The larva that hatches bores into the dead twig to feed and will overwinter in the fallen twig. The larva can excavate the entire center portion of small twigs, depositing frass and wood shavings throughout the tunnel. Pupation occurs within a cavity inside the twig.

In contrast to girdlers, twig pruner adults emerge during the spring, about the time of budding and initiation of spring growth. Adult pruners are about ½ inch long, slender, grayish-yellow to brown, with long antennae. It will also possess spines on the first few joints of the antennae and at the tip of the elytra. Pruners will attack a wider variety of trees than girdlers including; oak, hickory, maple, chestnut, pecan, sweetgum, redbud, hackberry and even some fruit trees. Unlike the twig girdler, the damage described above for twig pruners is created primarily by the larval stage. Once the adult female chews a hole in the bark at the leaf axil near a twig tip, she will then lay an egg in that location. The hatching larva will then bore into the twig and feed on the wood as it tunnels down the base of the twig. In late summer, when the larva is about to pupate, it begins to make concentric cuts through the wood outward from the center and generally stops chewing when it reaches the thin bark. The larva will migrate to the severed

portion of the branch and overwinter as a pupa in the fallen twig or branch (they can infest braches up to 2 inches in diameter). Both insects produce only one generation per year.

Management strategies for these insects are similar and should involve gathering of fallen branches and twigs in the fall and early spring. In addition, some selective pruning can be done during the fall and winter if infested twigs can be identified. All infested materials and prunings should be burned or taken completely away from the orchard. Chemical treatment is generally not practical, unless damage is readily evident and extensive. Using Sevin insecticide late in the season for weevil control will help in reducing populations of these beetles. Long term reductions in girdler and pruner populations can be experienced by thorough sanitation, pruning and burning of infested materials.

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