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Pecan Pests

Dr. Donn T. Johnson - Fruit Research/Extension

In this Issue:

- **Pecan Weevils.** The pecan weevil is the most devastating pest to pecans if not controlled. Adults should be emerging soon. Now is the time to monitor for pecan weevil adults by tying Circle traps around pecan trunks or setting out pyramid traps.
- **Hickory shuckworms** will become present in pecan groves over the next few weeks. These caterpillars feed primarily on hickory and pecan. The larvae mostly feed inside of the shuck reducing the nut quality and yield. The second generation of the shuckworm actually feeds inside the nut causing nuts to drop.
- **Stink bugs** mainly damage pecans during and after water stage, which for many varieties is either beginning now or in the next few weeks. The stink bug damage is not noticeable on the outside of the shuck but when the pecan is cracked it leaves a dark bitter tasting pit on the kernel. If a noticeable amount of stink bugs are present in the pecan trees see the MP144 for recommendations for insecticide control.
- **Walnut caterpillars** egg have been found and the second generation is beginning hatch. These caterpillars feed as a group as they defoliate branches on pecan, black walnut, butternut, hickory, oak, willow, birch, honey locust and apple. You can see egg masses on underside of leaves and later you can see two color phases of caterpillars: smaller caterpillars are red with white lines along body and a black head whereas larger caterpillars are black with white lines along body, fuzzy white hair and a black head.

Figure 1. Male and female pecan weevil (l) and walnut caterpillar egg mass (c) and defoliation of pecan (c) (Photos: B. Cowell)

- **Spotted wing drosophila (SWD)** is a new invasive pest of ripening, soft-skinned fruits (caneberries, blueberries, cherries, cracked peaches, strawberries). We are seeing SWD eggs, larvae and pupae in and on late maturing blueberries, and fall bearing raspberries and blackberries (**Fig. 2**). We continue to monitor for SWD in several Arkansas counties and are seeing trap increases in August (**Fig. 3**).
  Control: *We still recommend weekly insecticide treatments of fruit plantings when there are susceptible ripening or ripe fruit present.*

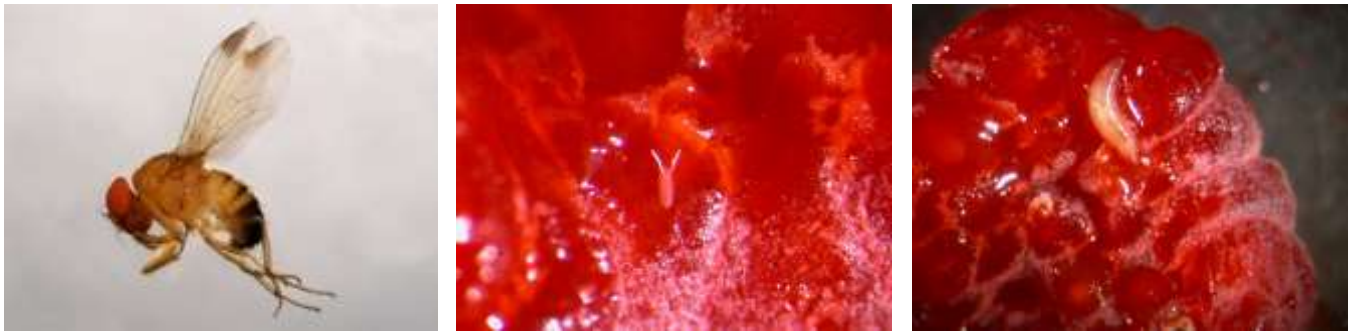

Figure 2. Spotted wing drosophila male (l; Photo: BC), egg with white breathing tubes inside the receptacle of a raspberry (c) and larva on a raspberry (r) (Photos: D. Johnson)

See online information about spotted wing drosophila at:

- Spotted Wing Drosophila Fact Sheet **(pdf)**
- Picture Sheet of Spotted Wing Drosophila: ID, Trap, Bait, Management **(pdf)**
- Workshop Talk on Detecting and Managing Spotted Wing Drosophila **(pdf)**

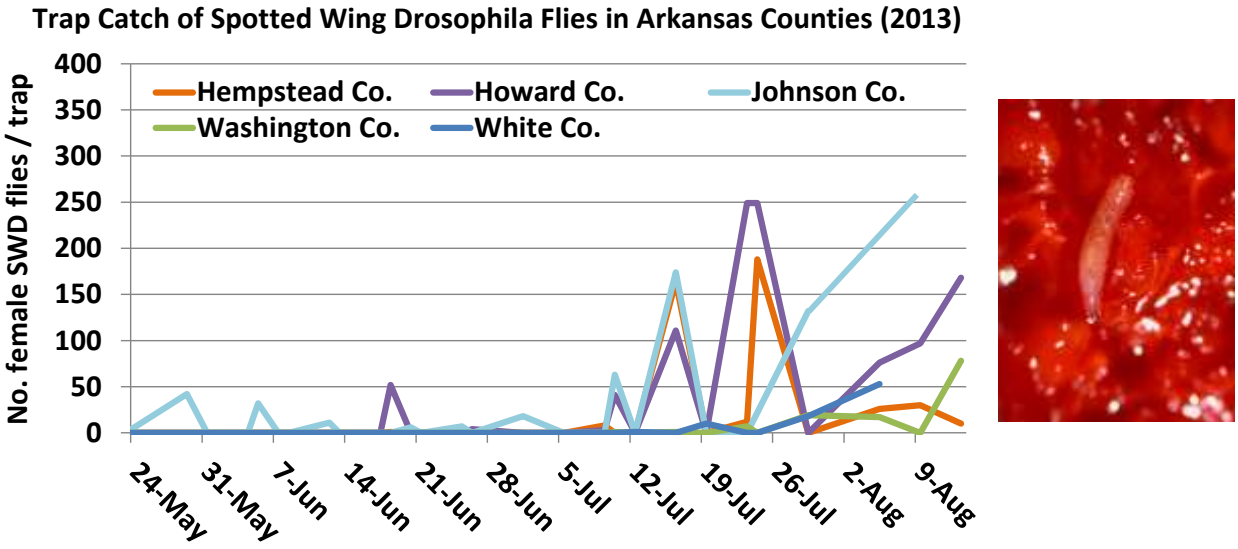

Figure 3. Confirmed numbers of spotted wing drosophila female flies captured in baited traps monitored in several Arkansas Counties.

Apple and Peach

Codling moth and Oriental fruit moth: Both pests continue to lay eggs and larvae enter fruit through harvest.

Control: Continue to apply recommended insecticide to prevent wormy fruit.

Figure 4. Codling moth larval entry into fruit with frass (l), larva inside apple (c) and Oriental fruit moth larva in a peach (Photos: D. Johnson).

Grape

- **Grape berry moth:** Small to large larvae can be found in damaged grape berries. Weekly, inspect 10 clusters on each of 30 vines along wooded perimeter and interior for discolored berries with GBM larvae inside berries.

  Control: If > 2% of clusters have 1 or more damaged berries with small larvae inside (new damage), then treat with recommended insecticide.

Figure 5. Grape berry moth larval damage of grapes (Photo: D. Johnson)

Control Recommendations and rates for insecticides for Fruit and Nut Insects:
Be sure to follow the preharvest internal (PHI) for insecticides applied close to harvest.
MP144 Insecticide Recommendation for Arkansas (2013) (**pdf**)
(http://www.uaex.edu/Other_Areas/publications/PDF/MP144/MP144.pdf)

Phytophthora in your Orchard

Dr. M. Elena Garcia - Fruit and Nut Extension

This summer, because of the overabundance of rainfall in many areas of the state, many fruit growers are reporting the decline and death of trees, vines, and shrubs. When samples have been collected and sent to the diagnostic clinic, the culprit organism causing these problems has turned out to be phytophthora.

Phytophthora is a common and widely distributed soil-borne fungus that attacks many plant species. There are several species of phytophthora that affect fruit crops, but the most common species is *P. cactorum*. All species require very wet or saturated soils to infect and cause significant damage.

Phytophthora diseases cause serious problems to some cultivars of apples and pears, but stone fruits, blueberries, strawberries, and raspberries are also affected. The most commonly affected areas of these plants are the roots and the scion portion close to the soil line, but other areas such as scaffolds and fruit may also be affected. The infected roots or trunk develop cankers which develop rapidly, girdling the affected area and resulting in death of the organ or the whole plant. Early above ground symptoms are a general lack of vigor, small yellow leaves, early defoliation, and poor terminal growth. The fruit is often small and highly colored, and it usually ripens early. These symptoms may appear only in limbs above the canker, while the rest of the tree continues to produce normal fruit. However, severely affected plants can die within a season.

Management

Phytophthora (collar and root rot) is difficult to control because it is rather hard to predict when it will make its appearance. Success in controlling this disease depends on the use of various proactive strategies:

Cultural

- Site selection: Select sites with good water drainage. As mentioned earlier, all Phytophthora species require saturated soils in order to infect and cause damage. Soils with poor drainage must be modified (installing drain tiles or diversion ditches).
- Planting plants on ridges or berms raises the crown above the zone of infection, providing some protection, especially during very wet years
- Plant resistance: There is natural resistance to this disease among fruit crops. In apples, some rootstocks such as the 'G' series have a higher level of resistance than M.26.

Chemical

- Soil fumigation is considered not very effective because the fungus is never eradicated and it can be easily reintroduced into the fumigated soil.
- Fungicides can be effective in controlling this disease if used preventively, but are seldom effective in reviving the plant once moderate symptoms begin to show. Fungicide works best when cultural practices are utilized to decrease the incidence of this disease. Table 1 gives you the fungicide recommendations for phytophthora in the various fruit crops in the state. For more information on

labels and recommendations refer to the Arkansas Plant Disease Product Guide (MP-154) and Arkansas Small Fruit Pest Management Schedule (MP-467).

Table 1. Products Approved to Use on *Phytophthora* in Fruits

Crop	Ridomil Gold EC	Prophyt	Phostrol	Aliette WDG
	Labeled for	Labeled for	Labeled for	Labeled for
Apple	Yes-Bearing	Yes	Yes	Yes-Bearing
	Yes-Non-bearing			Yes-Non-bearing
Blackberry	No	Yes	Yes	Yes
Raspberry	No	Yes	Yes	Yes
Blueberry[1]	Yes	Yes	Yes	Yes
Grapes[2]	No	Yes	Yes	Yes- Non-bearing
Peaches	No		Yes	Yes- Non-bearing
Pears	?	Yes	Yes	Yes-Bearing
Pecans[3]	Yes		Yes	Yes-Non-bearing
Deciduous fruit[4]	Yes B and NB			No

1 On new plantings, do not apply more than 0.9 gal./A broadcast during the 12 months before bearing harvestable fruit, or possible illegal residues may occur. From the label.

2 No product labeled for Phytophthora in grapes in Arkansas. Prophyt, Phostrol, and Aliette WDG approved for other diseases in grapes in Arkansas.

3 AR Phytophthora not listed as a pecan disease (See Phytophthora shuck and kernel rot).

4 Unless labeled for bearing tree crops, don't apply to plantings bearing harvestable fruit within 12 months of last application.

Fig. 4. Crop and symptoms associated with Phytophthora

Crop	Symptoms	
Apple	In apple, Phytophthora spp. can attack both roots and trunk. Collar rot – affects the scion portion of the tree. It affects the bark tissues of the lower trunk at or above the soil line. This disease is not as common now because of the recommendations to raise the graft union above the soil tine at planting. Crown rot – is a disease of the rootstock portion of the tree. It affects the portion where the root joins the stem. This disease is more commonly found, mostly due to the planting of susceptible rootstocks, such as M.26. In both of these diseases, when the bark is pealed, the tissue underneath the bark looks dead and orange- or red-brown, eventually becoming brown as the decay continues. There is a distinct demarcation between the healthy and diseased tissue.	 
Brambles (Blackberry and raspberry)	Phytophthora root rot is common in raspberries than blackberries. Symptoms are first noticed when new primocanes (first-year canes) wilt and the shoot tips die back. Floricanes (second-year canes) of affected plants have weak lateral shoots. Leaves turn yellow or scorch from the margins. Often severe wilt and dieback occur during the first hot spell of the season. Roots and crowns are dark brown in color and lack fibrous roots. If the outer surface is scraped from the crown or main roots of recently wilted plants a reddish brown color can be seen with a distinct line where infected and healthy tissues meet. Infected tissue will eventually turn dark brown as the tissue decays. (http://www.ipm.ucdavis.edu/PMG/r71100811.html)	
Blueberry	Symptoms include yellowing of the leaves, lack of new growth, and root death. This necrosis (death) can vary from slight to extensive, with discoloration of crowns and main roots. In blueberries, it is very common to see areas within a planting where the plants die due to this disease.	

Grapes	Both crown and root rot occurs in grapes. It can occur on single vines or in small sections of the vineyard. The affected vines appear stressed and are smaller than nearby healthy plants. These plants often defoliate earlier in the fall than healthy plants. Cankers develop near the soil line and can extend both into the root and a short distance up the trunk. When the canker is cut, the tissue appears dead and brown and eventually darkens.	
Peaches	Both crown and root rots affect peaches. Aboveground symptoms first appear in the spring as decreased shoot growth. The leaves are sparse, small, and chlorotic (bleached in appearance) and fruit is small, highly colored, and often sunburned due to the lack of foliage. As the disease progresses, the whole scaffold may be affected. Trees usually die within a few months from the onset of symptoms. This decline tends to be more rapid in younger trees. The trunk tissue near the soil line appears brown. As the decay continues, cankers with necrotic edges develop, often seen with gum exudates. These cankers continue to expand and can girdle the tree.	 

Much of the information obtained for this newsletter was gathered by the authors at the University of Arkansas-Fayetteville. All chemical information is given with the understanding that no endorsement of named products is intended nor is criticism implied of similar products that are not mentioned. Before purchasing or using any pesticide, always read and carefully follow the directions on the container label. Compiled by: Donn T. Johnson, University of Arkansas, Department of Entomology, E-mail: dtjohnso@uark.edu and M. Elena Garcia, UACES- Department of Horticulture, E-mail: megarcia@uark.edu

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