Kansas Insect Newsletter

For Agribusinesses, Applicators, Consultants and Extension Personnel

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Wheat

Wheat aphids (both bird cherry-oat and greenbugs) continue to cause concern around the state. It seems that populations are most common in southeast and south central parts of the state. However, natural enemies, both lady beetles and parasitoid wasps, are also present and growing conditions are good. So, treating for aphids is always a possibility, but has not often been justified. It takes a pretty healthy population of aphids (30-50/tiller) with no lady beetles or mummies (indicating the wasp is active) and less than ideal growing conditions before an insecticide application to prevent damage from aphid feeding is justified. Both species of aphid can transmit a virus that causes barley yellow dwarf, but a foliar insecticide application now will not guarantee the disease has not, nor will be, transmitted to the plants.

Alfalfa

Alfalfa weevils are rapidly developing across the state. This infestation should be winding down in the next 7-14 days at these summer-like temperatures, as pupation has started and there are even a few newly emerged adults. Infestations in central KS are the worst I have ever seen. Some fields have 6-12 larvae/stem and take only 2 days to completely skeletonize an entire plant. Don't be too quick to evaluate insecticide applications. Sometimes it may take 36-48 hours for the insecticide to be effective, especially with the numbers we are seeing. All these insecticides are contact insecticides and some of these larvae are well-hidden/protected inside terminals and leaves and take a while to move around enough to come into contact with the insecticide.

Alfalfa weevils (sample: 10 sweeps) from
DK County, KS
March 28, 2011

Untreated Approx. 1,640 larvae	Treated 30 hrs. before Approx. 173 larvae

Samples taken from same field

Jeff Whitworth *Holly Davis*

"Presto-Chango" – The Amazing Disappearing Act

And as if by magic, they no longer exist. The oft recommended practice to curtail the spread of pine wilt disease is to cut-and-burn infected trees **IN A TIMELY MANNER!**

The sequence in Figure 1 depicts the process.

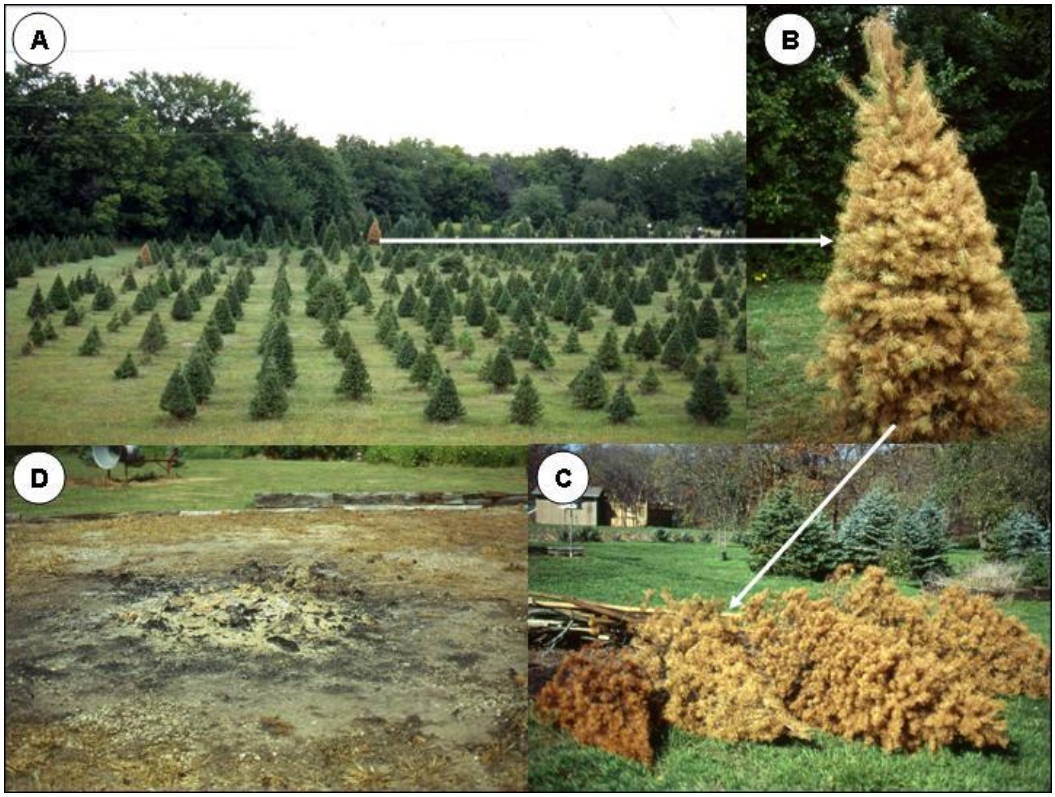

Figure 1

Most people who have experienced/dealt with Pine wilt disease know that the rationale for the cut-and-burn recommendation is based upon the fact that (in Kansas) the **major** vectors of the pinewood nematode [commonly referred to as the Carolina Pine Sawyers (*Monochamus carolinensis*) --- longhorned/cerambycid beetles (Figure 2)] overwinter both as larvae and pupae. While populations within individual trees are synchronous, populations between trees may be asynchronous. Thus in some trees, larvae will be overwintering whereas in other trees, pupae will be the overwintering stage.

Figure 2

What is critical is that the burn/destruction of overwintering forms be accomplished before transformation into the adult stage and their subsequent emergence and dissemination of the pinewood nematodes to healthy trees. Initiation of beetle emergence was determined by cutting diseased trees (Figure 3A), storing individual trunks in sterite containers (3B) through the winter (3C) and monitoring for the appearance of beetles the following spring.

Figure 3

In two instances, first beetles emerged beginning the third week of May (Table 1). In 2000, and 2010, 100% and 90% (respectively) of the emergence had been completed in approximately 1 month's time. In each instance, samples were maintained an extra year to determine any additional emergence --- there was none.

Table 1

Date	2001	2010	Date	2001	2010
5/21	0	3	6/09-16	14	24
5/22	26	5	6/17-23	1	23
5/23-26	35	25	6/24-30	0	6
5/27	6	0	7/01-07	0	2
5/28	19	3	7/08-14	0	4
5/29-31	13	11	7/15-21	0	2
6/01-04	12	23	7/22-28	0	0
6/05	5	5	7/29-8/01	0	0
6/06-08	10	15	8/02	0	1

People ask why it is recommended that trees killed by pine wilt disease be burned by April 1 if the beginning of beetle emergence is more than a month in the future. The thought is that if trees are not cut and burned during the "down time" of winter months when other activities would not preclude that task, the chore would be put on-the-back-burner (I know, horrible pun) or forgotten as springtime activities take precedence.

The tree in Figure 4A exemplifies (on a small scale) the result of timely burning. When stripped of branches and debarked (Figure 4B), from top to bottom, there were 106 "entry holes" (4C – white circle) where pine sawyer beetle larvae bored into the "wood" to complete their development. After the removal of the remaining bark, there were an additional 7 holes (4B – yellow circle). Burning that single would have destroyed 113 potential beetles. Thus within-Christmas-tree-plantation-sanitation is a management option observed by Christmas tree producers.

Figure 4

Unfortunately in this instance, despite best efforts, pine wilt disease remained a continual problem for this producer. This was because of pine sawyer beetles (from adjacent properties) continued to move into the plantation (Figure 5B & C).

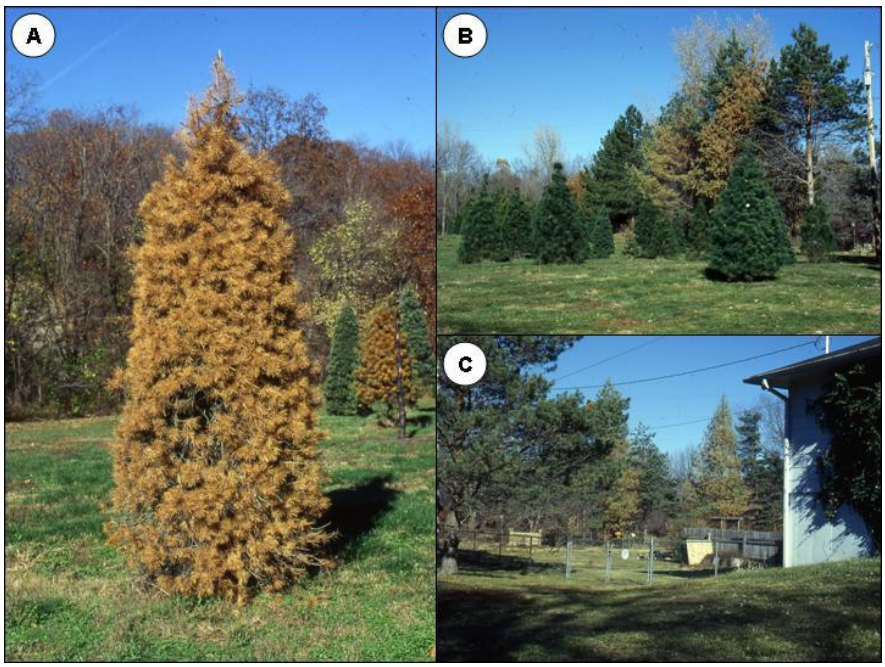

Figure 5

An extreme example of massive numbers of pine sawyer beetle production is best demonstrated at the apartment complex noted in last year's KIN. To refresh, there was a progressive decline in a tree line adjacent to the complex. (Figure 6).

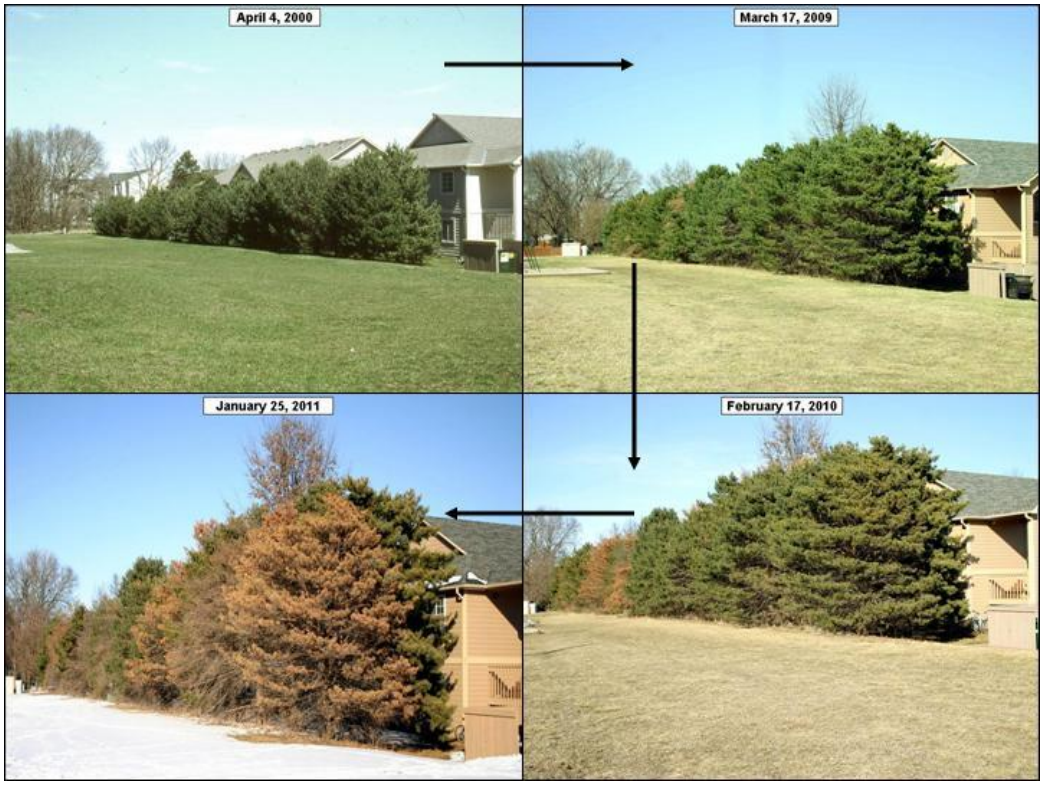

Figure 6

Fortuitously prior to the removal of the tree line, I was poking and pulling around the base of Tree A (Figure 7). The bark simply pulled away (B) because the subcortical tissues were completely destroyed by the feeding of pine sawyer beetle larvae. Holes in C and C-enlarged provide a picture of the situation. This area is but one side of a small portion of the trunk. Multiplying this by the total trunk area substantiates the massive numbers of beetles produced in a single tree, and thus the value of timely removal and burning of infected trees.

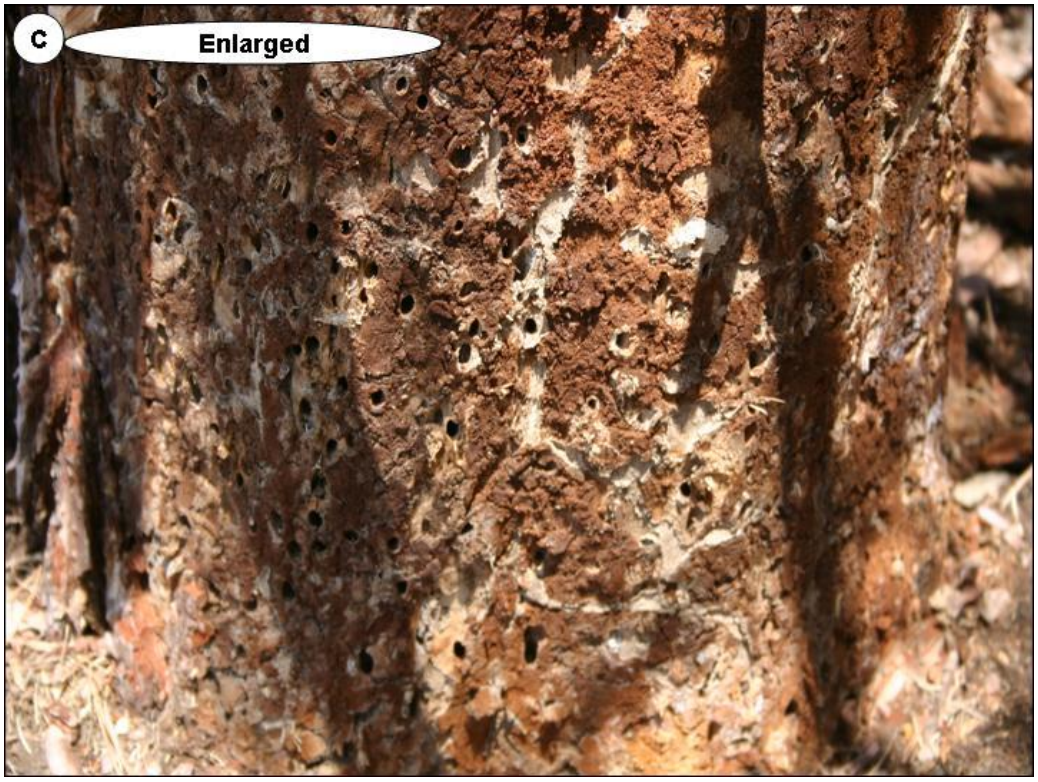

Figure 7

When cutting diseased/dead trees, the cut should be made as close to the ground as possible. And then, upon further inspection, a remaining stump may be left "as is" if there are no further signs of borer/beetle activity (Figure 8A).

Figure 8

If there is evidence of ongoing borer activity (Figure 8b), stumps need to be ground down to destroy any active life stages.

One last note regarding longhorn beetles associated with pinewood nematode. In addition to *Monochamus carolinensis*, the Carolina pine sawyer, other species of longhorned beetles have been documented to carry pinewood nematodes: namely *Arhopalus rusticus*, *Asemum striatum* and *Astylopsis sexguttata* (Figure 9, A, B and C, respectively)(no common names for these 3 species). *Arhopalus rusticus* and *Asemum striatum* were recovered in the 2010 emergence study. *Astylopsis sexguttata* was just recently recovered from wood samples. Thus all 4 species occur in Kansas.

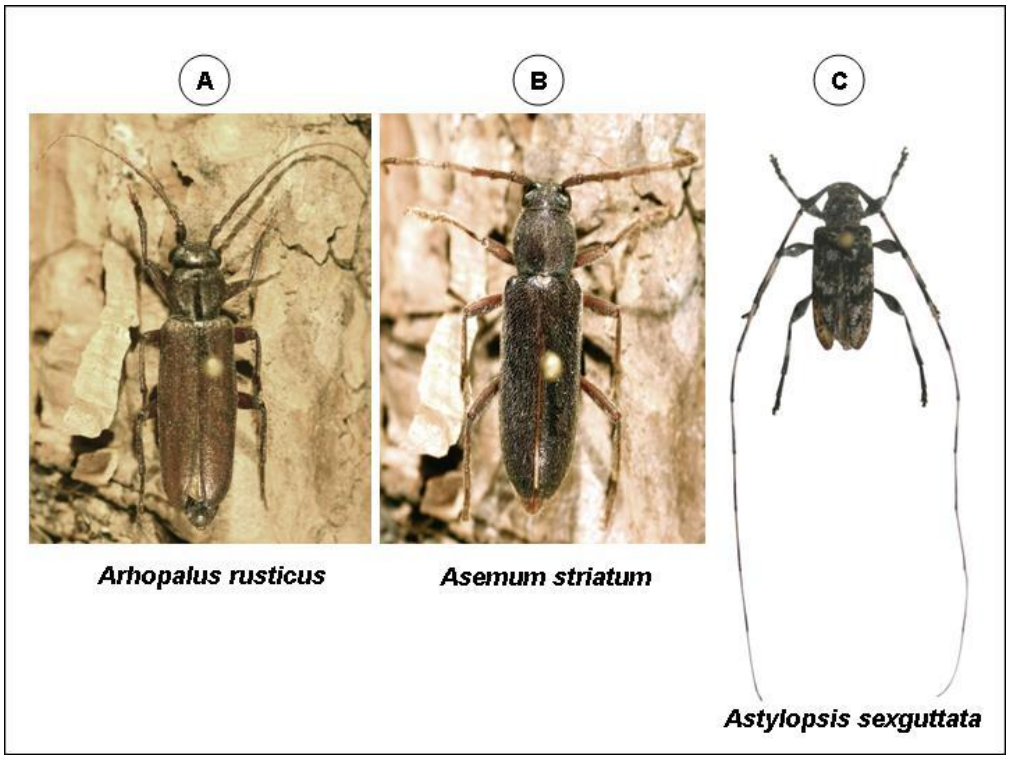

Figure 9

This being said does not diminish the fact that *Monochamus carolinensis*, the Carolina pine sawyer, is the vector-of-importance in Kansas. There are two reasons for this. They are by far the most abundant of the 4 species. Also, in the study in which the four species were scrutinized, the mean number of pinewood nematodes per pine sawyer beetle was 19,152. Mean numbers of pinewood nematode per *Arhopalus rusticus*, *Asemum striatum* and *Astylopsis sexguttata* were 298, 300 and 7, respectively.

Bob Bauernfeind

Report from the Kansas State University Insect Diagnostic Laboratory:

The following samples were submitted to the Insect Diagnostic Laboratory from March 16th to March 30th.

March 16 – Anderson County – Clover mites in greenhouse
March 16 – Thomas County – Drain flies in toilet tank
March 16 – Russell County – Carpet beetles in home
March 16 – Atchison County – Winged subterranean termites in home
March 16 – Lyon County – Elm bark beetle damage on elm trees
March 20 – Johnson County – Brown lacewing
March 21 – Harvey County – Clover mites in home
March 22 – Graham County – Winged subterranean termites in lawn
March 22 – Pratt County – Elm leaf beetles in home
March 22 – Johnson County – Bird cherry-oat aphids
March 23 – Reno County – Chinch bugs in home
March 26 – McPherson County – Unidentified wood borer damage in sugar maple
March 27 – Riley County – Springtails found in wheat field
March 29 – Sedgwick County – Ichneumonid wasp, *Ophion* sp. around home

If there are any questions regarding these samples or about the identification of any arthropod please contact the Insect Diagnostician at (785) 532-4739 or GotBugs@ksu.edu.

Holly Davis

Sincerely,

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