PLANT DISEASE AND INSECT ADVISORY

Entomology and Plant Pathology
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Wheat Disease Update

Bob Hunger, Extension Wheat Pathologist

Wheat Soilborne Mosaic Virus (WSBMV) & Wheat Spindle Streak Mosaic Virus (WSSMV): WSBMV and WSSMV symptoms are continuing to be clearly expressed in the WSBM/WSSM nursery I have here at Stillwater. However, most of the wheat varieties planted in Oklahoma are resistant to one or both of these viruses, and we only rarely ever hear of any problems with these diseases.

Wheat foliar diseases: Powdery mildew continues to be the most prevalent foliar disease observed on wheat around Stillwater and across the state. Yesterday (March 14th) Brian Olson and I traveled from Stillwater to Altus and stopped to exam wheat variety-demonstrations at or near El Reno, Minco, Apache, and Altus. At these locations, moderate to heavy powdery mildew was observed on the lower leaves of susceptible varieties at all locations. Remember, this is not unexpected in Oklahoma for this time of year. As jointing occurs and the wheat grows, the canopy will "open up" and the better air circulation combined with warmer and drier weather usually slows or stops the spread of powdery mildew. With some of the extremely susceptible varieties (see: http://www.wit.okstate.edu/varietyinfo/index.html for ratings of varieties to powdery mildew), spread of powdery mildew to the upper leaves can continue to occur but only rarely are the flag and flag-1 leaves infected and yield losses from powdery mildew usually are not significant.

Brian and I also saw some leaf rust pustules on lower leaves, which should continue to increase during the coming weeks. How severe leaf rust becomes will depend on several things including the inoculum present in fields in Oklahoma (which currently is low), inoculum that blows in from Texas that currently also sounds to be low but may soon increase (see report below), and the weather during the coming weeks. **To date, no stripe rust has been observed in Oklahoma.**

Here are some wheat disease updates I've received this past week:

TEXAS – 12 Mar 2007 (Rex Herrington; Texas A&M, College Station) :
After six weeks of very dry conditions in the southern half of Texas, which has slowed all rust development, an upper level low has brought widespread rains to a good portion of the state. The area from College Station to Uvalde saw less than 0.25" of rain from late January to March 10.

Rain is forecast to continue through Wednesday. March 11 & 12 rainfall amounts so far include: Uvalde - 1.5", San Antonio - 1.5", Brady - 0.02", College Station - 1.2", Hearne (30 miles north of College Station)

- 7.2", Waco - 2.5", and Hillsboro - 1.3". Other areas in the Central Texas, Blacklands reported up to 3.5".

KANSAS - 13 Mar 2007 – Dr. Erick De Wolf, Extension Wheat Pathologist, Kansas State University):

The wheat is greening up in Kansas and I was visiting some research plots on the K-State Plant Pathology Farm with Bill Bockus this afternoon. While we were crawling around looking for various diseases, we discovered trace amounts of leaf rust. The leaf rust appears to have overwintered near Manhattan KS, but is still limited to the lower leaves. I mentioned the find to Bob Bowden, and we concluded that the next few weeks will be critical for further disease development. If the leaves where the rust overwintered die before the rust spreads it will be hard to find the disease in a few weeks. Time will tell if this find is important or not. We will let you know if we see any more rust activity.

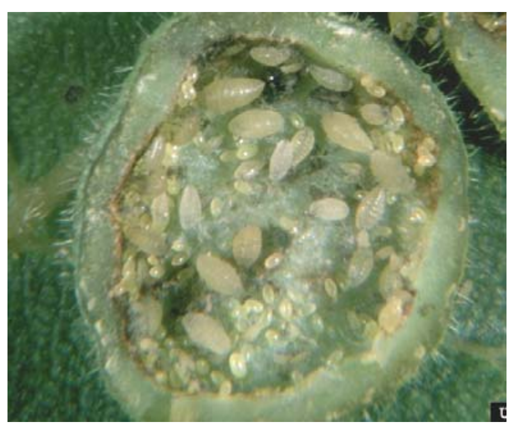
Early Considerations for Pecan Production – Horticultural oils and pecan pests

Phil Mulder, Extension Entomologist

By the time you receive this newsletter most of the pecans will have initiated budbreak (generally by April 1 of each year in Oklahoma). Some of our growers in southern Oklahoma have brought up two other important considerations that need mentioning in this newsletter. First, is horticultural oil a good choice for phylloxera control and if so, when should I make such an application? The second concern they often voice is about scale insects.

Please keep in mind that management of these two organisms can be considered separately or together, depending on how you choose to manage the problem. Either problem is not something that should be managed prophylactically each year. If you had trees with phylloxera galls last spring and summer, the time to treat those this year is after budbreak, when there is 1-2 inches of new growth. On the other hand, if you have trees that have scale insects infesting the bark of branches, then the timing for treatment is before budbreak. Now the question that arises is how can you control both species at the same time? First, keep in mind that these problems will not cause tree death or decline in just one season. Their presence in one season; however, may trigger a treatment decision for the next year.

The phylloxera that attack pecan consists of three species, two of which feed on leaves. The third species, *Phylloxera devastatrix* causes galls to form on the woody portion of current season's growth. This includes stems, leaf petioles and developing nuts. In May of each year, these galls split open, releasing winged adults. Heavy infestations of the latter species can cause premature leaf drop (when petioles are infested), prevent nuts from maturing (when immature nuts are infested), or can limit production and stress trees (when stems are infested). These aphid-like organisms do not create the galls on pecan; however, their presence and feeding causing the tree to react by forming a gall around the "stem mothers" that settle on the new growth and begin feeding in April.



Scale insects are extremely common on several different ornamental plants; however, the most commonly encountered species on pecan is the obscure scale, *Melanaspis obscura*. It attacks many plants related to pecans, including hickory and walnut. This insect is quite reclusive and

never really draws much attention till its numbers approach damaging levels. Unfortunately, by that time they have created several layers of overlapping waxy scales that can withstand insecticide application. This is why dormant season oil treatment is the best approach for controlling this pest.

If control for both or these insects is desired with a single application, then several factors should be considered. The timing for the best control is not in synchrony and standard air-blast sprayers will not adequately control scale insects (particularly heavy infestations of obscure scale). If the desire is to use a dormant season application to control both pests then use a high-powered spray gun, directing heavy amounts of dormant oil at the terminal ends of tree limbs and also onto the main stems and trunk of the tree. Dormant season sprays do not have residual activity and the primary mode of action associated with these applications deals with suffocation or entrapment. Oils can also penetrate insect eggs and young and interfere with metabolic processes (respiration). While these oils may be relatively effective against scale insects, their effectiveness against phylloxera is rather limited because of the timing of the treatment and the amount of liquid it requires to be effective.

Postponing application of dormant oils till after budbreak, when phylloxera is more prevalent, is a BIG MISTAKE! Pecan is considered an oil sensitive crop, therefore ONLY DORMANT SEASON application is recommended. In addition, excellent agitation is a must when applying horticultural oils. Once again, because pecan is an oil sensitive crop and because oils will have a strong tendency to settle out in the tank, it is imperative that constant agitation be provided when using these materials.

Time to Order Pecan Nut Casebearer Traps

Provided below is a listing of those locations where pecan nut casebearer traps and pheromone may be ordered. These traps should be placed in the orchard by May 1 for southern Oklahoma and no later than May 15 for northern parts of the state. While we are continuing to work on the utility of these traps, we have not yet developed thresholds using capture numbers. These serve as another tool to help you anticipate the arrival of damaging larval populations and should be used in conjunction with the casebearer model to help you determine when the most likely time for first significant nut entry will occur. Neither of these tools should replace scouting for larval damage and/or eggs at the end of May to first of June. (http://agweather.mesonet.ou.edu/models/pecannut/default.html)

Pecan Nut Casebearer Pheromone and Trap Sources:

Advanced Pheromone Technologies, Inc.
P.O. Box 417
Marylhurst, OR 97036-0417
Ph: 315-299-2598
toll free: 877-244-9610
fax: 971-327-8407
email: infoatapt@comcast.net

Gempler's
P.O. Box 270
100 Countryside Drive
Belleville, WI 53508
Order by Phone: 1-800-382-8473
Order by Fax: 1-800-551-1128

Great Lakes IPM Inc.
10220 Church Road
Vestaburg, MI 48891-9746
Ph: 989-268-5693 or 989-268-5911
Toll Free: 1-800-235-0285
Fax: 989-268-5693
E-mail: glipm@nethawk.com

ISCA Technologies / Monitor Technologies
P.O. Box 5266
Riverside, California 92517
United States of America
Tel: 951-686-5008
Fax: 815-346-1722
email: info@iscatech.com
Web: www.iscatech.com

Oliver Pecan Co. Inc.
1402 W. Wallace, San Saba, TX 76877
800-657-9291
E-mail: soliver@centex.net

Pape Pecan House
P.O. Box 1281
101 S. Hwy 123 Bypass
Seguin, TX 78155
Ph: 830-379-7442

Southern Nut 'n Tree Equipment, Inc and Pecan Producers, Inc.
324 SH 16 South
Goldthwaite, TX 76844
1-800-527-1825
Fax: 325-938-5490
E-mail: sales@pecans.com

Trece, Inc.
P.O. Box 129
Adair, OK 74330
Ph: 918-785-3061
Fax:: 918-785-3063
Email: custserv@trece.com
Order Center: 866-785-1313

Alfalfa Insect Application Timing is upon us

Phil Mulder, OSU Extension Entomologist

With the advent of alfalfa weevil control quickly upon us, I thought it might be appropriate to share results of last year's insecticide efficacy trial. Populations in our trials this year just reached threshold levels this week and our tests have been sprayed. I have heard from several locations around the state and the same is true in many other locations. In addition, populations are not extremely high, which our egg sampling indicated would be the case. Growers should at least scout fields now to make treatment decisions soon. Fall-planted alfalfa may not experience significant numbers of weevils in the first year of growth; however, aphids could be a problem. So far, low aphid populations have been the norm for most of Oklahoma and favorable growing conditions with adequate rainfall will help this continue.

Results of evaluations on insecticide performance for control of alfalfa weevil larvae and aphids in 2006

Phil Mulder, OSU Extension Entomologist
S.K. Seuhs, Extension Assistant

Thirteen chemical insecticides were evaluated for efficacy in controlling alfalfa insects infesting the first crop of a Fourth year stand of “OK 49” alfalfa at the Agronomy Research Station, Stillwater, OK. Pretreatment samples (February 21), indicated low numbers of larvae with a mean population of 1.0 larvae/25stems; however, an extremely high number of spotted alfalfa aphids (SAA), were observed. One week prior to stubble application 0.125 lb. A.I./acre of Lorsban 4E was applied to decrease aphid population and maintain stand. A stubble treatment of Warrior was applied to one of the plots on 28 February. Threshold was reached and insecticides were applied to the remaining plots on 31 March using a tractor sprayer calibrated to deliver 20 gpa at 23 psi through four, flooding nozzles when traveling at 3 mph. Treatments were arranged in a RCB design using plots 3.9 x 9.1 m in size, replicated 4 times. Sampling was conducted 3,7,15, and 28 Days after treatment (DAT) (stubble) and continued 3,7,14, 21, and 28 DAT from the first threshold application, by pulling 25 stems per plot and placing them in standard Berlese funnels to extract insects for counting. Dry matter yields were estimated for first harvest on 11 May by removing forage from a 1 x 5 m area in each plot using a flail-type harvester. Subsamples were dried for determination of moisture content and yields were calculated on a dry weight/acre basis.

Weather conditions for the first three days after threshold treatment increased the activity of insects, especially SAA, with .26 inches of rainfall and a mean daily high temperature of 77.00 F. During the remainder of the trial, through 28 Apr, a total of 3.37 inches of rainfall occurred and the mean daily high temperature was 81.3o F. During the period between the end of sampling and plot harvest (two weeks), an additional 4.63 inches of rainfall occurred.
Results of sampling after stubble treatment are provided in Table 1. Numbers of alfalfa weevil (AW) larvae and aphids decreased 15 days after application (stubble) from a combination of residual chemical and climatic conditions, with the latter likely having greater impact on aphid populations than on weevil numbers (Table 1).

The population density of AW was near the economic threshold at the time of treatment and remained steady at 1.0 larva/stem at 3 DAT in the untreated alfalfa. During the first week after treatment, all insecticides decreased AW larval densities below the levels recovered in untreated alfalfa (Table 2). Average percent control for AW was calculated from infestations recovered 3 to 21 DAT. Throughout the test period, most insecticides significantly reduced AW populations below levels recovered in untreated alfalfa (Table 2). Three DAT, specific insecticides began to perform better than others and this performance remained consistent throughout the trial. Average percent control of AW larvae from 3 DAT to 21 DAT ranged from a low of 33.4 % for Boron (.25 lb. AI/acre) to a high of 88.8 % for Baythroid XL at (0.0219 lb. AI/acre). Baythroid 2E+ Lorsban 4E (0.0156+0.25 AI/acre) only provided 36.5 % control throughout the entire test, while all other formulations provided 60 % control or better. However, for the first three of the four sample dates calculated, 3DAT through 14DAT the Baythroid/Lorsban formulation provided 89.3 % control (Table 2).

Due to unseasonably warm weather conditions and lack of plant growth, SAA numbers were of increased concern during this test. Population densities for SAA reached a high of 27 Aphids/25 stems at 14 DAT in the untreated plots, while numbers reached as high as 56.8 in other treatments (Table 3). In fact, nine of the thirteen treatments had numbers above the untreated alfalfa at 14 DAT. Average percent control for SAA ranged from a low of 6.72% for Boron (0.25 lb. AI/Acre) to a high of 67.9% with Proaxis (0.0125 lb. AI/Acre). From 3DAT to 28DAT, average percent control of all aphids sampled ranged from a low of 3.4% with Boron (0.25 lb.AI/Acre) to a high of 65.6% with Proaxis (0.0125lb./AI/acre). Within the first two sample dates (3DAT to 7DAT) all treatments had an average of 75% or greater control of SAA with the exception of Boron (0.25lb./AI/acre), Furadan (1.0lb./AI/acre), and Baythroid XL at (0.0156lb./AI/acre) (Table 3).

Yield of alfalfa at first harvest ranged from a high 3102.0 lb./acre in the alfalfa treated with Mustang-Max (0.025 lb. AI/acre) to a low of 2398.1 lb./acre in the Boron (0.25 lb. AI/Acre), treatment. No significant differences were found in harvest yields (Table 2).

Table 1.

Mean Number Insects/25 stems

Treatment/ Formulation	Rate/ Lbs a.i./A	AW larvae				Total Aphids			
		3DAT*	7DAT*	15DAT*	28DAT*	3DAT*	7DAT*	15DAT*	28DAT*
Warrior 1 EC Stubble	0.03	3.25	1.75	4.0	0.0	95.25	69.75	14.25	16.0
Untreated		15.0	19.25	46.5	44.75	126.75	93.25	59.75	45.75

* Means within columns, followed by the same letter are not significantly different (ANOVA LSD; P=0.05).

DAT= Days after treatment. Stubble application date was 31 days prior to threshold treatment (3-31-06).

Table 2.

Mean Number Larvae / 25 Stems								
Treatment/ Formulation	Rate/ lbs a.i./A	3DAT*	7DAT*	14DAT*	21DAT*	28DAT*	Average ** % Control	Yield * Lbs/A
Warrior 1CS Stubble	0.03	3.8 b	0.8 c	0.3 c	0.5 b	0.5 b	86.8	2582.9 a
Warrior 1CS Threshold	0.03	3.5 b	1.8 c	1.0 c	1.5 ab	1.8 ab	68.3	2908.6 a
Baythroid XL	0.0156	2.8 b	2.5 c	0.5 c	1.8 ab	0.5 b	66.2	2949.7 a
Baythroid XL	0.0219	1.3 b	0.5 c	0.5 c	0.5 b	1.0 b	88.8	2506.7 a
Baythroid 2E + Lorsban 4E	0.0156+ 0.25	1.5 b	1.8 c	0.8 c	4.0 a	1.5 ab	36.5	2875.0 a
Mustang-Max 0.8EC	0.025	2.5 b	2.3 c	0.5 c	1.5 ab	0.3 b	70.8	3102.0 a
Furadan 4F	1.0	1.8 b	1.8 c	2.5 abc	0.3 b	0.8 b	79.3	3026.9 a
Mustang-Max + Lorsban	0.025+ 0.125	3.0 b	0.3 c	1.0 c	1.5 ab	3.3 a	71.1	2575.1 a
Lorsban 4E	1.0	1.3 b	1.3 c	1.8 bc	2.0 ab	1.0 b	60.4	2797.6 a
Proaxis 0.5EC	0.0125	3.3 b	1.0 c	0.5 c	0.8 ab	1.3 b	81.6	2659.3 a
Proaxis+ Lorsban	0.0125+ 0.375	3.5 b	0.8 c	0.0 c	0.8 ab	0.3 b	84.1	2820.3 a
Boron 1.1EC	0.25	21.3 a	8.8 b	4.3 ab	0.8 ab	0.5 b	33.4	2398.1 a
Baythroid XL+ Trimax Pro 4.4EC	0.0156 + 0.25	2.0 b	1.8 c	0.8 c	1.3 ab	0.8 b	73.3	2651.5 a
Untreated		24.8 a	16.0 a	5.3 a	1.8 ab	0.5 b		2691.9 a

* Means within columns, followed by the same letter are not significantly different (ANOVA LSD; P=0.05).

** Average % control calculated from 3DAT to 21DAT. (threshold).

DAT= Days after treatment. First sample date was 3 days after threshold treatment (4-03-06). Pre-treatment sampled (3-31-06)(Threshold).

Table 3.

Mean Total Aphids/25 stems							
Treatment/ Formulation	Rate/ Lbs a.i./A						Average ** % Control
		3DAT*	7DAT*	14DAT*	21DAT*	28DAT*	
Warrior 1CS Stubble	0.03	1.3 c	1.8 cd	41.3 abcd	35.8 a	8.0 abc	25.1
1CS Warrior Threshold	0.03	1.8 c	0.5 d	17.8 e	31.0 ab	2.0 c	60.9
Baythroid XL	0.0156	4.5 b	6.0 cd	53.5 ab	21.8 ab	7.5 abc	13.0
Baythroid XL	0.0219	3.3 b	2.3 cd	41.8 abc	29.3 ab	13.8 a	14.4
Baythroid 2E+ Lorsban 4E	0.0156+ 0.25	2.5 b	5.3 cd	34.5 bcde	21.3 ab	6.0 bc	39.9
Mustang-Max 0.8EC	0.025	2.8 b	2.3 cd	44.5 abc	33.5 a	4.5 bc	29.5
Furadan 4F	1.0	3.0 b	7.8 bc	27.5 cde	12.8 b	3.3 bc	51.0
Mustang-Max+ Lorsban	0.025+ 0.125	2.8 b	2.0 cd	58.5 a	31.5 ab	6.0 bc	21.7
Lorsban 4E	1.0	1.0 c	3.0 cd	30.0 cde	19.5 ab	8.3 abc	40.9
Proaxis	0.0125	2.5 b	1.5 cd	18.8 e	12.8 b	3.5 bc	65.6
Proaxis+ Lorsban	0.0125+ 0.375	.5 c	0.5 d	20.5 de	24.5 ab	5.0 bc	56.4
Boron 1.1EC	0.25	10.3 ab	17.5 a	35.8 bcde	34.0 a	5.8 bc	3.4
Baythroid XL+ Trimax Pro 4.4EC	0.0156+ 0.25	1.5 c	0.8 cd	37.5 bcde	24.8 ab	4.8 bc	43.4
Untreated		18.3 a	14.5 ab	28.5 cde	29.0 ab	9.5 ab	

* Means within columns, followed by the same letter are not significantly different (ANOVA LSD; P=0.05).

** Average % control calculated from 3DAT to 28DAT. (threshold).

DAT= Days after treatment. First sample date was 3 days after threshold treatment (4-03-06).
Pre-treatment sampled (3-31-06)(Threshold).

Dr. Richard Grantham
Director, Plant Disease and Insect Diagnostic Laboratory

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