CURRENT BLUE MOLD STATUS REPORT

by William C. Nesmith

Blue mold is now present in burley tobacco. The first activity for the 2002 season in the Burley Belt of the Tennessee and Ohio River Valley System was confirmed on June 6 in local transplants growing in Washington County, Tennessee - eastern Tennessee. Lesion development at the site indicated the disease had cycled at least once within this site, meaning this outbreak was 7 to 14 days old, and that secondary spread probably had already occurred. The weather last week in east Tennessee was highly conducive to secondary build up and spread of blue mold. Moreover, this source of infected transplants was still present late last week and likely will be transplanted to the field. Therefore, it should be assumed that blue mold is now established in the Burley Belt for this season and spreading.

The inoculum source for the east Tennessee outbreak is unknown, but the transplants have no out-of-state connection, based on the agent's report. Therefore, it is presumed that this outbreak originated from airborne spores that arrived from the southeast in mid to late May. If this be the case, we anticipate that the level of initial activity in the region would have been very low and widely scattered, and confined to the tristate region of east Tennessee, southeastern Kentucky, and western Virginia. Scouting activity should increase in that region, all transplants should receive weekly sprays, and spray programs within the field are warranted within 25 to 30 miles of this source of inoculum.

There are four centers of blue mold activity that could threaten Kentucky burley fields: east Tennessee, North Carolina-Virginia flue cured, northern Florida-southern Georgia, and southern Pennsylvania. At this time, any of those centers could result in the movement of inoculum into the center of burley production, but unless much more inoculum is produced from these centers, the initial outbreaks would involve low levels of disease. The east Tennessee source represents the greatest potential threat, currently.

Regular fungicide spray schedules should be maintained in all transplant production and transplant-holding systems - See issue 943 of Kentucky Pest News (March 18, 2002) for more specifics on chemical options. Until we learn more of this situation in east Tennessee or stronger blue mold activity develops in any of these centers, our region will remain under a blue mold advisory, which it has been since early April, rather than upgrading to a watch/warning. Well applied, fungicide sprays in the field are warranted at this time in areas within 25-30 miles of centers of blue mold activity. It is very important that any centers of activity be found, promptly reported, and brought under immediate control, however. Therefore, crops should be scouted twice weekly for evidence of blue mold, especially in eastern portions of the burley belt. If sprays are needed, see issue 948 of Kentucky Pest News (April 22, 2002).
for the foliar fungicide options labeled in Kentucky for use in the field.

DON'T FORGET BLACK SHANK CONTROLS
By William Nesmith

Much of the tobacco crop has been set and agent reports indicate that a much larger percentage this year is in well-rotated fields. This is very good news for the control of black shank and other root diseases. However, we have had considerable flooding, both last fall and this spring, which may have moved around a lot of black shank, including contamination of rotated fields. This past week, I made a field visit to a field that had been rotated three years to row crops, but a major epidemic of black shank was developing. This field had been flooded last fall.

Don't forget the value of post-transplanting application of mefenoxam (Ridomil Gold and Ultra Flourish) in the control of black shank, where these treatments are warranted - either in newly contaminated fields or those with a history of black shank without rotation. See the April 15, 2002 issue of Kentucky Pest News for details of this treatment for black shank control.

WINGED APHIDS APPEARING IN TOBACCO FIELDS
By Lee Townsend

Tobacco aphid infestations begin when winged adults fly into fields and begin to deposit live young on the upper leaves of the plants. Colonies of these aphids will begin to develop as these colonizing aphids mature (in about 7 days) and begin to produce their own offspring. Check the bud area of plants for developing colonies. An insecticide application is recommended when 20% or more of the plants have clusters of aphids. See ENT-15 for recommended insecticides.

CORN

HIGH SWCB TRAP CATCHES IN ILLINOIS
by Ric Bessin

The past week, Kevin Steffey (Center for Economic Entomology, IL Natural History Survey) reported exceedingly high pheromone trap catches of southwestern corn borer in some southern Illinois counties. Two of the counties had weekly totals exceeding 1,000 moths per trap, which is extraordinary for the first generation. In the past four years in Kentucky, high numbers of first generation moths were observed in 1998, but then only to levels of 230 moths per trap.

What have we seen in Kentucky this year? We continue to observe only low levels of moth activity from the traps in Princeton. This seems to agree with the spring survey of overwintering survival. The first generation moth activity should continue to the end of the month, but the peak generally occurs near mid June. As much of the corn has been planted late in the western portion of the state, there is more risk to late season generations than the first generation southwestern corn borer. Even though we are reporting low first generation levels, there may be areas in the state with higher first generation levels. By the late season, southwestern corn borer levels have the ability to rebound and cause serious harvest losses in late planted fields.

Producers are advised to monitor fields carefully this summer. Fields with high SWCB infestations in the late summer need to be identified and harvested as early as practical.

WHEAT

GET BINS READY FOR WHEAT HARVEST
by Doug Johnson, Extension Entomologist and Sam McNeill, Extension Agricultural Engineer

Storing wheat through the summer months in the south is a very difficult task. Yet the ability to hold this crop until demand raises prices or to meet contract delivery is certainly plus for many grain farmers. As difficult as this task may be, performing a few simple (note necessarily easy) procedures to get the bins ready to receive the wheat can make a major impact on the storability of the crop.

To aid in your efforts we have provided below a “Check list” of those chores that are most likely to provide direct contribution to the storage of high quality wheat. Though many of the tasks may seem simple minded, they are recognized over and over by wheat storage professionals as fundamental, and sound management techniques.

Take a look at this list and consider adding it to your management system.

UK-IPM Pre-Harvest Checklist for Controlling Insects in Stored Wheat (June 2002)

Sam McNeill, Extension Agricultural Engineer and Doug Johnson, Extension Entomologist
University of Kentucky

**Before Harvest**

- Clean all equipment used to handle grain (Examples: combines, carts, trucks, receiving pits/hoppers) thoroughly to remove old grain, trash, and debris that might contaminate the new crop. Use pressurized air/water.

- Remove all “old” grain from inside storage bins. Use a shovel, broom and vacuum. **Every Kernel counts!**

- Check for holes and cracks in bin roofs and walls. Seal them to prevent leaks and entry of insects and rodents. (Look closely around ladders, roof vents and other openings)

- Treat the interior floor and bin walls with an approved insecticide.

- Remove spilled grain around pits/hoppers, and storage bins.

- Mow, spray or remove weeds/grass/vegetation around storage bins.

- Treat the outside base of bins and the surrounding area with an approved insecticide.

- Fumigate the space beneath the perforated bin flooring.

- **Warning!!!** Fumigation is complicated and dangerous. If possible hire a commercial fumigator. Restricted use pesticide certification is required for purchasing the fumigants. Specialized training from a commercial applicator is strongly recommended. Specialized equipment, including gas masks, self-contained breathing apparatus, and fumigant gas detection equipment is required for safe, effective and economical applications. Obtain and read the product label and manufactures instructions.

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**Insecticides and Fumigants Recommended for Wheat**


- **Empty bins** - applied to walls and floor: Tempo® **DO NOT APPLY TO GRAIN!**

- **Under Floor Fumigants** - Chloro-pic® (Can not currently be shipped you will only find it if your local dealer has some on hand.) Methyl-Bromide, Phostoxin/ Fumtoxin.

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**FORAGES**

**BREEDING PROGRESS AGAINST SCLEROTINIA CROWN AND STEM ROT by Paul Vincelli**

Sclerotinia crown and stem rot has been a frustrating disease to work with for many years. It continues to be one of the principal limitations to the successful use of late-summer seeding of alfalfa on many farms in Kentucky. Yet it has proven very difficult to identify effective and economical control practices for this disease.

It became apparent during the past decade that the only reasonable solution that would be useful for Kentucky producers was to develop alfalfa varieties with adequate resistance to withstand the high disease pressure conditions experienced here in the Commonwealth. Mind you, our data suggest that the disease pressure from Sclerotinia trifoliorum is higher here than just about anywhere else in the country. UK research has shown that alfalfa varieties that exhibited adequate resistance for, say, central Ohio can suffer major stand loss under high disease pressure in Kentucky. Because of this high disease pressure, it was apparent that selection for resistance needed to occur under Kentucky conditions. Thus, we began a project to provide commercial alfalfa breeders with opportunities to select for resistance in a high disease pressure site here in Kentucky.

Each year, we at UK create a high disease-pressure site by inoculating red clover in the spring. The subsequent summer, 7-ft wide strips are rototilled, and in mid-September, promising breeding lines provided by the breeders are planted. One set of plots of each entry is treated repeatedly with an experimental fungicide in order to control Sclerotinia and therefore assess stand establishment in the absence of the disease; another set is left untreated. During autumn and early winter, the plots are exposed to natural inoculum of Sclerotinia that develops from the sclerotia (fungal survival bodies) produced on the previous red clover crop. Each plot is flanked on each side by inoculated red clover, so that each plot gets exposed to high but realistic levels of spore inoculum. The result is a natural Sclerotinia epidemic typical of a high disease pressure in Kentucky. In addition to our collecting data on the performance of each entry, the key outcome of the test is hold a “plant dig”, where participating alfalfa breeders are invited to dig surviving plants from their plots, for use in their continuing breeding program against
Sclerotinia.

Below is a table with data from the test seeded in September, 2001. From these results, it is clear that breeders have developed materials with significant levels of resistance to the Sclerotinia crown and stem rot, as compared to a susceptible variety like 5454. This is the second test in which we have observed significantly better stand from the commercial variety Cimarron SR (marketed by Great Plains Research), as compared to the susceptible check, under high disease pressure in Kentucky. Note, of course, that the level of stand survival in the absence of the experimental fungicide is still less than desirable. However, this is clear evidence of breeding progress, which in fairness was achieved before we started our Sclerotinia disease nurseries and plant digs at UK. Furthermore, if Cimarron VR shows significant stand improvement under high disease pressure, as it has done here, then I would expect it to perform better—and probably adequately—under lower disease pressure, as some farms experience. We also saw significant improvement in stand with WL 338, although in a previous UK test with even higher disease pressure, that variety was no better than the susceptible check. The breeding line 50t176 (being developed by FFR, the breeders for Southern States Cooperative) performed very well, providing a 79% stand through a rather severe epidemic. This is a level of stand survival that would probably be commercially acceptable. This entry is not yet a commercial cultivar, but compared to the performance of this breeder’s most resistant material in UK tests conducted about 6-7 years ago, this is exciting evidence of breeding progress towards Sclerotinia resistance.

I want to note that, in all entries, the growth that occurred after spring greenup was moderately to severely diseased from Sclerotinia. Although we did not take first-cutting yields, these observations suggest that the first cutting yields of these entries would have all been reduced substantially by the disease. However, as our data show, crown survival of these entries during the epidemic was good to excellent, which is the key to long-term productivity after a Sclerotinia outbreak.

These results were exciting news for us in the Plant Pathology Department at UK, since they provide evidence of breeding progress in the recent past, as well as hope for continued breeding progress in the near future. Hopefully, it will not be very more years before Kentucky alfalfa producers will be able to choose alfalfa varieties for late-summer seeding that will withstand even the highest Sclerotinia pressure without stand loss.

Thanks to Robert Spitaleri in the UK Dept. of Agronomy, and to Ed Dixon of the UK Dept. of Plant Pathology, for their substantial contributions to making this ongoing work happen.

Table 1. Stand survival of alfalfa entries following an epidemic of Sclerotinia crown and stem rot.\textsuperscript{a}

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Percent row fill with alfalfa on 24 May 2002\textsuperscript{b}</th>
</tr>
</thead>
<tbody>
<tr>
<td>40t174</td>
<td>64 cd</td>
</tr>
<tr>
<td>50t176</td>
<td>79 c</td>
</tr>
<tr>
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<td>SR2</td>
<td>46 ef</td>
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<tr>
<td>SR3</td>
<td>56 de</td>
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<tr>
<td>SR4</td>
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<tr>
<td>Cimarron</td>
<td>51 def</td>
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<tr>
<td>5454</td>
<td>13 g</td>
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<tr>
<td>MSR2</td>
<td>45 ef</td>
</tr>
</tbody>
</table>

\textsuperscript{a}Plots seeded 18 Sep 2001.  
\textsuperscript{b}First cutting made on 11 May 2002.  Means followed by the same letter are not significantly different, Waller-Duncan tests, k=100.  
\textsuperscript{c}5454 is the susceptible check, MSR2 is the check representing partial resistance.

\textbf{FRUIT UNDERSTANDING SPRAY RATES FOR FRUIT TREES by Ric Bessin}

I continue to get questions about which pesticide spray rates to choose in our tree fruit spray guide, the per 100 gallons rate or the per acre rate. The per acre rates are generally 2.5 to 4 times higher than the per 100 gallon rates. The answer is that the two types of rates are interchangeable. The per acre rate represents the maximum amount of material that growers are permitted to spray per acre with a single application. The per 100 gallon rate represents the concentration used with a dilute spray. A dilute application is the minimum gallonage needed for complete coverage and
cause the trees to drip after application. This dilute gallonage varies depending on the types of tree structure. When apples were grown on standard rootstocks, 400 gallons were needed for a dilute application. With dwarfing rootstocks and high density plantings, dilute gallonage may drop to as low as 120 to 150 gallons per acre. With these reduced gallonages to obtain complete coverage, many growers find it easier to work with the per 100 gallon rates.

Once you understand the gallonage needed for a dilute application, then it straightforward to determine the amount of pesticide required. For example, if the orchard needs 150 gallons for a dilute application and complete coverage, then the grower needs to multiply the rate per 100 gallons by 1.5. This is considerably less than the per acre rate. This is the amount of pesticide that is applied per acre.

To add to the complexity of this, many growers concentrate their sprays and do not apply their pesticide sprays to runoff. They may only use 50 to 80 gallons of spray per acre. They use the correct amount of pesticide as if they are applying a dilute spray, but just use less water.

**SHADE TREES & ORNAMENTALS**

**CAN WATER BE USED TO PROLONG THE LIFE OF TREES INFECTED WITH BACTERIAL LEAF SCORCH?**

by John Hartman

Kentucky summer weather can sometimes be hot and accentuated by periods of drought lasting a week or two or several weeks or months. When dry periods occur, conscientious gardeners water the landscape including the root system of the trees growing there. This activity may be helpful in reducing the effects of a major disease of landscape trees in Kentucky.

Bacterial leaf scorch of landscape trees results from partial blockage of the water-conducting xylem tissues in infected trees by the pathogen, *Xylella fastidiosa*. Researchers working with bacterial leaf scorch sometimes suggest that leaf scorch symptoms caused by *X. fastidiosa* become severe only after some other stress is placed on the tree. It is thought that symptom development in mid- to late summer in urban trees is associated with seasonal moisture and heat stresses enhanced by the urban environment. Although some studies have suggested that drought stress favors symptom development in bacterial leaf scorch, no one has done the controlled experiments necessary to demonstrate the effect of moisture stress on leaf scorch disease.

A recent study done by A. McElrone, J. Sherald, and I. Forseth of the University of Maryland and the National Parks Service may shed some light on this topic. Dr. Sherald of the National Park Service is an authority on this disease, having studied bacterial leaf scorch for many years on the mall and elsewhere at the nation’s capital in Washington D.C. Their report on “Effects of Water Stress on Symptomatology and Growth of *Parthenocissus quinquefolia* Infected by *Xylella fastidiosa*” was recently published in the journal *Plant Disease*.

The 2-year greenhouse study tested the hypothesis that bacterial leaf scorch symptoms are more severe during periods of drought stress. Each year, *P. quinquefolia* (five-leaf ivy, or Virginia creeper) inoculated with *X. fastidiosa* expressed typical bacterial leaf scorch symptoms with the outer scorched portion of the leaf separated from the green tissue by a narrow yellow band, similar to what we observe when oak leaves express bacterial leaf scorch disease symptoms. In both years, symptoms progressed further along the stem and were more severe at corresponding leaf positions in infected plants growing with low soil moisture compared to infected plants with high soil moisture levels. Total leaf area, shoot length, and number of nodes on the longest shoot per plant were all reduced due to drought and *X. fastidiosa* infection.

Many readers may wonder whether or not experiments on Virginia creeper would be applicable to oaks. I believe that the water conducting systems of these woody plants are similar enough that, in principle, these results would also apply to landscape trees. This research was done with a strain of *X. fastidiosa* that causes Pierce’s disease of grapes, but, again, the pathogenicity of the two strains is similar. Some readers are aware that Pierce’s disease was recently identified in our laboratories for the first time in Kentucky last fall. Indeed, when I observed electron micrographs of the Pierce’s disease strain partially occluding grape xylem, I thought that I was looking at diseased oak xylem. The appearance of the bacteria and the pattern of bacterial clumping in the xylem looked the same.

This study is the first to verify the hypothesis that bacterial leaf scorch symptoms are enhanced during drought stress. The researchers suggest that maintaining plant vigor with regular watering can be used to sustain plants infected by *X. fastidiosa* particularly during periods of water stress. Based on this research Kentucky tree owners and landscape managers may be able to prolong the lives of their scorch-infected trees by applying supplemental...
watering during the hot, dry parts of the growing season.

**DIAGNOSTIC LAB HIGHLIGHTS**

by Julie Beale and Paul Bachi

Agronomic samples diagnosed this past week included cold injury and chemical injury on corn; spring black stem on alfalfa; frost injury, transplant shock, chemical injury, Pythium and Rhizoctonia root rots, and target spot on tobacco.

Fruit and vegetable samples included Mycosphaerella leaf spot on strawberry; black rot on grape; cedar-apple rust and fire blight on apple; bacterial leaf spot on peach; Alternaria blight on ginseng; and bacterial speck and bacterial spot on tomato and peppers.

Ornamental samples included frost injury and Alternaria leaf spot on impatiens; Botrytis blight on vinca; bacterial leaf spot on ivy; necrotic ringspot on bluegrass; dollar spot and brown patch on bentgrass; crown gall on euonymus; scab on crabapple; Entomosporium leaf spot on photinia; Verticillium wilt on maple and redbud; black spot, powdery mildew and rosette disease on rose; fireblight on serviceberry; Cytospora canker on willow; and anthracnose on walnut.

**INSECT TRAP COUNTS**

UKREC, Princeton, KY - May 31-June 7

<table>
<thead>
<tr>
<th>Insect</th>
<th>Count</th>
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<tr>
<td>European corn borer</td>
<td>1</td>
</tr>
<tr>
<td>Southwestern corn borer</td>
<td>20</td>
</tr>
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</table>

NOTE: Trade names are used to simplify the information presented in this newsletter. No endorsement by the Cooperative Extension Service is intended, nor is criticism implied of similar products that are not named.