UK COOPERATIVE EXTENSION SERVICE
University of Kentucky – College of Agriculture

LEXINGTON, KY 40546

KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • WEED SCIENCE
On line at: www.uky.edu/Agriculture/kpn/kpnhome.htm

Number 1023 **June 1, 2004**

TOBACCO

CURRENT BLUE MOLD STATUS
by William Nesmith

As of press time, noon June 1, no additional counties had reported blue mold activity. However, some additional activity was reported during the past week in both Taylor and Jessamine counties; some connected to out-plantings from the initial finds but others from unrelated farming activities.

Weather conditions during the past week were highly favorable for blue mold activity to build and spread, especially in transplants. Although prevailing winds should have moved inoculum mainly north and east from sources, the series of strong storm systems experienced during the past week could have moved inoculum in any direction.

Laboratory assays conducted with samples collected from Taylor, Green, and Jessamine counties indicate the current blue mold strain is resistant (insensitive) to mefenoxam, with equal sporulation occurring on treated and untreated leaves. This would support the hypothesis that the pathogen came from cultivated tobacco rather than the wild tobacco in Texas.
The latest Kentucky Blue Mold Status reports are posted at http://www.uky.edu/Agriculture/kpn/kyblue/kyblue.htm

Be sure to note the new fungicide options covered in another article in this issue of Kentucky Pest News.

NEW FUNGICIDE OPTION FOR BLUE MOLD CONTROL REQUIRES TANK MIXING ON THE FARM
by William Nesmith

BASF Corporation representatives informed us last week that they have stopped manufacturing Acrobat MZ (a prepackage mixture of dimethomorph and mancozeb). Regional growers have relied on this fungicide for several years. BASF's inventory of Acrobat MZ has been depleted. Some product remains in local stores and on farms, and these can still be sold and used as the Kentucky 24(c) is effective through December 31, 2005. However, another option is available, tank mixing Acrobat 50 WP (dimethomorph) and Dithane DF Rainshield (mancozeb).

Acrobat 50 WP has a national label for tobacco but because it contains only dimethomorph, the label prohibits application except in tank mixtures. Actigard 50 WP (a plant inducer) is not an appropriate mixing partner, because the methods of application between the two are very different. Also, Acrobat 50 WP cannot be tank mixed with metalaxyl or mefenoxam, even though they are labeled for blue mold control in the field, because of differences in application methods and label prohibitions. In Kentucky, the only current option for tank mixing is Dithane DF Rainshield, which is labeled under a 24(c) through December 31, 2004.

Because thorough coverage is critical to control and resistance management, use is allowed only with tractor-driven, air-blast, mist blower sprayers, and certain aerial equipment. *Use in hand-pump and other low-pressure sprayers is prohibited due to poor coverage. Use of Acrobat 50 WP alone is prohibited. Use in all transplant production systems and the transplant water are also prohibited.*

The rate of Acrobat 50 WP is 7 oz/100 gallons of water, using 20 gallons of this solution when the plants are small increasing the volume as the plants grow (see label). The label has good directions for the mixing rates at various stages of growth, but one will need to consult the label of the mixing partner to determine the actual amount of fungicides to have in the spray tank. For aerial applications, use 8 oz of product per acre, in at least 15 gallons of water per acre, regardless of the stage of the crop. Do not exceed 32 oz/acre total for the season.

The following able is provided as an aid to growers in making calculations for tank mixing Acrobat 50 WP and Dithane DF Rainshield.

Supplemental Table *(for Field Use Only)*
Tank Mix Rates for Acrobat 50WP + Dithane DF Rainshield

Application Timing, Rates and Spray Volumes To Control Blue Mold

Weeks of Growth After Transplant	Tank Mix Rate *(Ounces of Product)*		Spray Volume For Tractor-Driven Sprayer (Gallons/Acre)	Spray Volume for Backpack Mist Blowers (Gallons/Acre)
	Acrobat 50WP	Dithane DF*		
Recently transplanted to 3 weeks after transplanting	2	6	20	10
3-4 Weeks after transplanting *(Knee High)*	3	12	40	20
4-5 Weeks after transplanting *(Waist High)*	4	18	60	30
6-7 Weeks after transplanting *(Chest High)*	6	24	80	40
7 Weeks after transplanting and beyond *(Shoulder Height Up to Topping)*	7	30	100	50

*Dithane DF Rainshield

Read and follow labels for both products carefully. Note, with tank mixtures the PHI and REI fall to the product with the most restrictions, in this case the Dithane. So, Post Harvest Interval is 30 days and Rentry Interval is 24 hours.

Website with labels:

Acrobat 50 WP, select tobacco label at: http://www.cdms.net/manuf/1prod.asp?pd=4817&lc=1
Dithane DF Rainshield, select Ky 24c at: http://www.cdms.net/manuf/1prod.asp?pd=4800&lc=1

CORN

SOUTHWESTERN CORN BORER ACTIVE
by Ric Bessin

Southwestern corn borer larvae are active in some fields, particularly in early-planted corn. While any European corn borer larvae have passed the 'treatable' stage, Southwestern corn borer lags several weeks behind in development and the young larvae are beginning to attack corn. Unfortunately, this means that at the time we can stop monitoring for ECB, we need to begin monitoring for SWCB. As the summer progresses, when we stop monitoring for first generation SWCB, we will need to begin monitoring for second-generation ECB.

The early-planted corn is more attractive to the first generation of SWCB. With second and third generation ECB and SWCB, it will be the later plantings which are more attractive. Growers should monitor their field for SWCB and use a threshold of 35% infested plants with live larvae in the whorl as the threshold for treatment.

FORAGE CROPS

ERGOT RISK IN TALL FESCUE
by Paul Vincelli

Recent humid, rainy weather with moderate temperatures during the period of flowering of tall fescue may have been favorable for infection of the flowers by the ergot fungus *Claviceps purpurea*. *C. purpurea* is related to the fungal endophyte of tall fescue, and both are capable of producing potent toxic alkaloids that affect animal health (and human health, if eaten). This is not a trivial issue; I once was subpoenaed to give a deposition in a case in Kentucky with economic losses of over $2 million, in which ergot was implicated as the cause.

The ergot fungus infects only the flower parts of certain grasses, and replaces the seed with "ergots". Ergots are survival bodies of the fungus that are easily recognized with the naked eye. They look like dark brown to black, curved cigars measuring 1/8 inch to 3/8 inch. They are longer than grass seed, so they stick out beyond the glumes. If you cut them open, you'll see that they have a gray to whitish interior. These ergots will be evident as the seedheads approach maturity.

Management
Preventing livestock from consuming a significant dose of ergot sclerotia is the only reasonable course of action.

• *Pasture*
If seedheads form, inspect them for ergots. If they are found, mow before turning livestock out into the pasture. Mow the seedheads along the fencerow, as well.

• *Hay*
If the seedheads are dry before harvesting, the ergot sclerotia will often fall to the ground during cutting/tedding/baling. However, if the seedheads were still somewhat green when cut, the sclerotia can remain attached to the seedhead, and will end up in the bale. In harvested hay, ergot sclerotia constitute a very small fraction of the total forage in the bale. Because of this, the risk from feeding these bales is low. However, repeated feeding of infested hay into a feedbunk can lead to accumulation of the ergot sclerotia at the bottom of the bunk. Livestock may then consume a high dose of sclerotia when they feed on this residue.

• *Seed Production*
Where tall fescue is being grown for seed, avoid feeding screenings that may be contaminated with ergot sclerotia. Seed-cleaning operations concentrate the sclerotia and can pose a great hazard if fed to livestock.

WHEAT

FUSARIUM HEAD BLIGHT UPDATE
by Don Hershman

It is not clear at this time how extensive FHB is in Kentucky. However, initial reports suggest that serious disease conditions exist in many fields throughout the state. What I have heard from others, and my personal observation, is that 40-70% FHB incidence is common. A relatively small percentage of fields I have seen have low double digit or single digit incidences. On the other end of the spectrum, fields with 80%+ incidence are all too common. Not all areas of the state are equally impacted. The greatest damage due to FHB appears to exist in the southern Purchase Area, portions of the Green River and Pennyrile Areas, most of the Mammoth Cave Area, and the area extending east of Elizabethtown to Lexington.

We will not know full yield and quality impact of FHB until harvest. My impression at this time is that the overall impact will exceed that of last year, but will not be as serious as 1991. Prior to FHB developing, the state wheat yield potential was very high, which may help reduce some of the yield impact.

It appears that Folicur was not extensively used, or it was applied too late to be of value. In the southern counties, the lack of use appears to be related to the late date (April 15) when the section 18 was officially approved by EPA. By the time product was available and growers were made aware of the emergency label, many fields were already in bloom. This situation was made more acute by the accelerated rate of crop development this spring. Rain and other logistical considerations also resulted in fields not getting sprayed or being sprayed too late to be effective.

It will be some time before we have a complete picture of how Folicur performed where it was sprayed in a timely fashion. In the meantime, I have summarized, but not statistically analyzed, data from a study I conducted at the UKREC in Princeton this year. Normally I would not report data which has not been statistically analyzed, but the results seem to reflect how Folicur has been performing in grower fields and in other field studies. So, I thought I would go out on a limb and report preliminary findings at this time.

The following are treatment means for six replications for the variety "Sisson" treated (backpack CO^2 sprayer) with various labeled fungicides at early bloom on 3 May, 2004.

		Fusarium Head Blight**			
Fungicide*	Rate/A	% Incidence	% Severity	% Index	% Control (index)
Non-treated	--	76.4	22.7	17.4	--
Headline	6 fl oz	77.2	21.8	16.8	3.4
Quilt	14 fl oz	69.9	18.7	13.1	24.7
Tilt	4 fl oz	67.9	16.9	11.8	32.2
Folicur	4 fl oz	60.4	17.7	10.8	37.9

* all treatments included 0.125% v/v induce.
**Fusarium Head Blight (FHB) ratings terms are defined as: % Incidence = proportion of heads with symptoms; % Severity = surface area diseased for heads showing symptoms; index is incidence x severity/100; index is a rough estimate of the upper end of yield loss that might occur based on FHB incidence and severity; and, % control (index) is the % change in disease control due to treatment as measured against the control (control index value - treatment index value)/control index value.

The above data reasonably reflect the FHB results using Folicur in numerous winter wheat trials conducted since 1998. As expected, Folicur impacted FHB incidence or more than severity . Thus, if visual differences are apparent where Folicur has been applied compared with non-treated wheat, this difference is probably due to your eye picking up fewer heads with symptoms. Unless you actually make individual head ratings, it is very hard to tell which aspect of FHB symptom expression is being affected most - incidence or severity.

Most fields in the state are past the point where FHB symptoms can be easily seen. If you have not checked for symptoms before now, you can still get some idea of the extent of FHB by arbitrarily checking heads for the extent of shriveled grain and pinkish discoloration. If you find that shriveled grain is common, you may wish to adjust your combine so that most of the light weight grain blows out the back of the unit during harvest.

FRUIT CROPS

APPLE FOLIAR DISEASES ARE PREVALENT
by John Hartman

With rainy periods fairly common in many parts of Kentucky these past two months, conditions were conducive for development of several foliar diseases of commercial and backyard apple trees this spring. Growers who were able to apply fungicides in a timely way are having good success in disease management, but unsprayed trees or those which failed to receive critical sprays are showing numerous symptoms now.

Apple scab. Ascospores of the fungus *Venturia inaequalis* initiate primary apple scab infections when the leaves are wet for a sufficient length of time. Symptoms consisting of olive-green velvety fungal growth appear on the leaves a week or so after infection. These symptoms being seen now are the fungal thallus and conidia responsible for continued cycles of secondary infection whenever it is wet throughout the season.. The parts of the leaf associated with the fungus develop into dark brown necrotic lesions. Eventually infected leaves turn yellow and drop from the tree, leaving the tree prematurely defoliated.

Weather data were collected and apple scab disease forecasting programs were run at the U.K. West Kentucky Research and Education Center in Princeton, and in Lexington at the U.K. Horticultural Research Farm this spring. Based on these data, severe apple scab infections likely occurred in most Kentucky orchards on unprotected susceptible trees during the periods of March 29 - April 1; April 12-14 and 21-25; April 29 - May 3; May 10-11, 12-17, 17-20 and the week of May 26-30. Three of these 8 or more infection periods lasted 85 or more intermittent hours at temperatures where 15 or 20 hours would have sufficed to favor severe infections.

Cedar-apple rust. Small orange spots have been appearing for the past two weeks on apple leaves infected with cedar-apple rust disease caused by the fungus *Gymnosporangium juniperi-virginianae*. There is no secondary cycle of infection from these spots, but the spots will develop and enlarge until they produce spores that will cycle back to infect nearby cedar trees this summer. Cedar-apple rust needs leaf wetness for infection, but for a much shorter time than that needed for scab. Thus, it appears that there were dozens of periods for infection this spring.

Frogeye leaf spot. Symptoms of frogeye leaf spot are plainly evident on apple leaves throughout Kentucky now. In many plantings in eastern Kentucky, frogeye leaf spot will be more prevalent than other diseases such as scab or rust which are also visible now. The symptoms appearing now on leaves are small (1/8 - 1/4 inch) distinct circular, brown spots. The center portion of the spot may become tan colored, while the outer edge remains dark brown, giving it a frogeye appearance. Signs of disease in the form of tiny black pycnidia (fungal fruiting bodies) of the causal fungus may develop in the center of the spot. Pycnidia can be examined with the aid of a hand lens and will appear as tiny black "pimples" when viewed through the magnifier. These pycnidia contain thousands of spores that are the source of continued infections. As leaf spots become more numerous and coalesce, leaves yellow and fall. Frogeye leaf spot is caused by the fungus *Botryosphaeria obtusa*, a fungus which also causes black rot of apple fruits and a canker of the twigs and branches. Often a cone-shaped area of affected leaves will appear just beneath such a canker. Frogeye leaf spot infections are also favored by wet weather.

Powdery mildew. Powdery mildew, caused by the fungus *Podosphaera leucotricha*, is being observed frequently in apples this season. This disease can seriously reduce the vigor and productivity of apple trees. The mildew fungus may deform, stunt, or kill twigs, leaves, blossoms and fruit. Infected fruits may become severely russeted. Gray to white felt-like patches occur on the leaves and on new twigs. Leaves are narrow, crinkled, and folded lengthwise, and they become thickened. Disease pressure from powdery mildew is usually greater in growing seasons following relatively mild winters which we have been experiencing for the past several years.

Fire blight. Fire blight disease is being observed sporadically this spring. This bacterial disease, caused by *Erwinia amylovora*, has the potential to be very destructive. During apple bloom, when primary infections occur, weather was generally not favorable for infection. Our weather instruments and disease predictive programs at the U.K. research farms indicated that one or possibly only two times during bloom were favorable for infections this year. However, more recent severe weather events such as high winds or hail could have provided the entry the bacteria needed to infect the still-succulent shoots.

Since weather conditions statewide have varied a great deal from one location to the other, growers may have faced more or less disease pressure than we monitored at the U.K. research farms. Thus, growers will need to manage apple diseases based on what is occurring in their orchard. Guidelines on apple disease management can be found in the U.K. Cooperative Extension publication *2004 Commercial Tree Fruit Spray Guide* (ID-92) and in the *Midwest Tree Fruit Handbook*, available at county extension offices statewide.

SAN JOSE SCALE CRAWLERS ACTIVE
by Ric Bessin

San Jose scale crawlers are now active on apples, pears, and peaches. The crawler stage is when the scale is most vulnerable to sprays and can be controlled relatively easily. San Jose scale is one of the key pests of these orchard crops.

San Jose scale is one of the few insects that can reduce the health of the orchard. While feeding the scale injects enzymes into the tree that are toxic. The wood beneath the bark near the feeding sites turns a scarlet color due to these toxins. Large numbers of scales can encrust limbs causing limb dieback and eventual death of the tree. Peach trees are particularly susceptible to scale injury.

The primary insecticide for control of scale is an insect growth regulator that is applied at the pre-bloom stage or during the crawler period, which is occurring now. During the next few days, the scale crawlers will settle on leaves, fruit, and bark to begin feeding. Once settled, that will not move again. They begin to produce a tough, protective cap which protects them from predators and insecticides. This is why timing is critical to achieve good control.

SHADE TREES & ORNAMENTALS

GALLS SHOWING UP ON LEAVES NOW
by Lee Townsend

Galls are irregular plant growths that are stimulated by the reaction between plant hormones and powerful growth regulating chemicals that can be produced by some insects or mites. Galls may occur on leaves, bark, flowers, buds, acorns, or roots. Leaf and twig galls are most noticeable. The inhabitant gains its nutrients from the inner gall tissue. Galls also provide some protection from natural enemies and insecticide sprays. Important details of the life cycles of many gall-makers are not known so specific recommendations to time control measures most effectively are not available. Gall makers must attack at a particular time in the year to be successful. Otherwise,

they may not be able to stimulate the plant to produce the tissue that forms the gall.

Generally, initiation of leaf galls occurs around "bud break" or as new leaves begin to unfold in the spring. Oaks are susceptible to many gall makers. The woolly fold gall, caused by a small fly, is a striking example. A fuzzy white pubescence appears on the leaf and is associated with a pouch that contains the maggots larval stage of the fly. Galled leaves are deformed but overall tree health is not affected adversely. Information on several common shade tree galls is available in Entfacts 403, 404, and 408.

PESTS OF HUMANS

RAINS FORM POOLS FOR COMMON FLOODWATER MOSQUITOES
by Lee Townsend

Floodwater mosquitoes develop in pools that form in low areas following rains. Parades of thunderstorms across the Commonwealth have left thousands of temporary pools in ditch banks, wheel ruts, and other low spots. This water will stimulate mosquito eggs previously laid on vegetation in areas that are prone to seasonal flooding to hatch. The mosquito then will quickly move through their life cycle. Several of our important nuisance and vector mosquitoes breed in these situations and are likely to increase in numbers dramatically in the next few weeks. Some mosquito species can move several miles, causing problems far from their breeding site. Here are a few short profiles-

Black salt marsh mosquito Orchlerotatus taeniorhynchus, a dark mosquito with a painful bite attacks birds, mammals, and humans. Eggs are laid on the ground in low areas that flood seasonally. The larvae can be found in salt marsh or brackish waters. Females generally feed in the evening but not after dark. They generally remain within 2 to 5 miles of their breeding site but winds may move them 30 miles or more.

Flood water mosquito Orchlerotatus trivittatus is a persistent, aggressive mosquito that gives a very painful and irritating bite. The larvae can be found in most any collection of freshwater from open pools to temporary rain pools. They appear first in late spring and continue to breed during the summer. When temperatures are in the 80's to 90's with warm nights, development from egg to adult can take as little as 5 days. Adults bite mainly in evening, resting in shaded grasses and other vegetation during the day. They are not considered to be important disease vectors.

Inland floodwater mosquito Aedes vexans is one of the most widespread pest mosquitoes in the world. It can breed in most any ground pool following flooding of the eggs. It is a significant and chronic pest in western Kentucky. There are several generations each year. Adults rest on vegetation and shaded grass during the day and become vicious biters at dusk and after dark. They can live for several weeks and may migrate10 miles or more during that time. The vexans mosquito is a potential vector of St Louis encephalitis. It is a vector of dog heartworm in some areas of the US and has tested positive for West Nile virus in the field.

Dark ricefield mosquito Psorophora columbiae, a large dark mosquito with white or yellow markings, is a serious nuisance to humans and livestock. The eggs are laid on moist soil and the larvae develop rapidly in temporary freshwater pools such as grassy roadside ditches.

Draining temporary pools and clearing drainage channels are means of eliminating breeding areas. Pools with active wrigglers can be treated with products containing Bacillus thuringiensis israelensis, a strain of Bt that controls mosquito larvae,

DIAGNOSTIC LAB-HIGHLIGHTS
by Julie Beale and Paul Bachi

Diagnostic samples during the past week included zinc deficiency and stinkbug injury on corn; Lepto leaf spot on alfalfa; black shank, blue mold, target spot, frogeye leaf spot, anthracnose, angular leaf spot, blackleg, Pythium root rot, potash deficiency and fertilizer burn on tobacco.

On fruit and vegetable samples, we saw black rot on grape; tobacco ringspot virus on blackberry; Mycosphaerella leaf spot, red stele (Phytophthora), anthracnose crown rot and Pythium root rot on strawberry; leaf curl and scab on peach; cedar-apple rust, fireblight, and frogeye leaf spot on apple; white rot (Sclerotium) on garlic; Pythium root rot on pepper; and bacterial canker, early blight, Septoria leaf spot, and growth regulator injury on tomato.

On ornamentals and turf, we saw leaf streak on daylily; Botrytis blight on rose; witch hazel aphid on birch; crown rust on buckthorn; anthracnose and Phyllosticta leaf spot on maple; fireblight on serviceberry; Rhizosphaera needlecast on spruce; and Phyllosticta leaf blight on witch hazel.

INSECT TRAP COUNTS

UKREC, Princeton, KY May 21-28, 2004

True Armyworm	2
Corn Earworm	33
European corn borer	0
Southwestern corn borer	23

Cam Kenimer reports the following trap counts for Fulton County:
May 19-26

True Armyworm	23
Southwestern corn borer	64
European corn borer	2

To view previous trap counts for Fulton County, Kentucky go to - http://ces.ca.uky.edu/fulton/anr/ and click on "Insect Trap Counts".

For information on trap counts in southern Illinois visit the Hines Report at - http://www.ipm.uiuc.edu/pubs/hines_report/index.html. The Hines Report is posted weekly by Ron Hines, Senior Research Specialist, at the University of Illinois Dixon Springs Agricultural Center

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.