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COOPERATIVE EXTENSION SERVICE

KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • WEED SCIENCE

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TOBACCO

CURRENT BLUE MOLD STATUS
By William Nesmith

Blue mold is now well-established in Kentucky and building, plus it is strategically located where spores could quickly threaten the entire region if certain weather patterns should develop. The areas under either a blue mold watch or warning continue to expand, with the state/region under a blue mold watch, except counties located in Mammoth Cave, Pennyrile, and Purchase areas of south-western Kentucky. Several counties are under blue mold warnings because the disease has been confirmed in them. Consult the Kentucky Blue Mold Warning System website for frequent updates on blue mold status and control recommendations, http://www.uky.edu/Agriculture/kpn/kyblue/kyblue.htm

The spore load is not high, yet, except near the outbreaks, but that could change in short order with cool and wet weather, closing canopy, and improved plant growth. Growers on a scout-and-spray program need to be checking fields well, at least twice a week.

Outbreaks have been mainly reported along two routes: One, an east-west line running from near Owensboro in the west to Grayson in the east, and the other along a north-south line running from near Campbellsville in the south to Maysville, Ky and Georgetown, Ohio in the north. In addition, the disease is active in the burley production region of western North Carolina and eastern Tennessee. Weather events have been such that viable spores have probably moved in all directions from these sources. Consequently, all the region is under a blue mold advisory with most areas under a watch and active counties under a warning. Moreover, there is increasing reluctance to incorporate timely controls, increasing the disease potential for those trying to control blue mold.

Tests indicated that both mefenoxam-resistant and mefenoxam-sensitive strains are operating this year in our region, but the resistant strains should quickly dominate as grower take the sensitive strains out with Ridomil Gold and Ultra Flourish. For example, we are now finding blue mold in mefenoxam-treated fields in the Bluegrass region of Kentucky, where initially we found no blue mold in mefenoxam-treated fields in the region. I suspect we had both strains initially, but the resistant strain was such a small proportion that we could not

detect it initially.

CORN

VIRUS COMPLEX SHOWING UP
by Paul Vincelli

Symptoms of the corn virus complex were very apparent in fields in many areas of the state last week. Two viruses are known to overwinter in johnsongrass rhizomes: maize dwarf mosaic virus (MDMV) and maize chlorotic dwarf virus (MCDV). MDMV is spread by certain aphids, and MCDV is spread by leafhoppers.

In field corn, these two viruses usually occur together an commonly are most severe within a short distance (10-20 feet) of clumps of rhizome johnsongrass. Symptoms can be more widely dispersed in sweet corn. Plants infected with MDMV mosaic patterns of random streaks of light green and dark green areas; as weather gets hot, the mosaic fades to a general yellowing in the whorl. Symptoms of infection by MCDV are as follows: stunting of corn plants, especially internode shortening; yellowing of leaves in the whorl; reddening of leaf margins and tips; and a subtle clearing of the tertiary (finest) veins in leaf blades (this is best visible by holding an infected leaf and a healthy leaf side-by-side up to the sky). Suspect cases should be tested by laboratory techniques for confirmation.

The risk of yield loss from the virus complex depends on the amount and location of rhizome johnsongrass. Fields that are heavily infested (20%+ of the field with rhizome johnsongrass) often have high disease pressure. Conversely, fields that have been cleaned of rhizomes through the use of herbicides often have low risk. However, recognize that the virus complex can occur in a field that is free of rhizome johnsongrass, since the border can also be a source of inoculum. Small plantings with rhizome-infested borders generally have a greater risk than larger plantings. Also, a long, skinny field with rhizome-infested borders has a greater risk than a square field.

Later planted fields are at higher risk, because the crop is at a comparatively earlier stage when plants become infected. Another factor that may influence the risk of the disease is delaying application of postemergence herbicides for johnsongrass control. Producers may delay herbicide applications for numerous reasons, including delays from weather, having too much acreage to cover quickly or a desire to wait for as much weed seedling emergence as possible before application. No matter what the reason, it seems likely that postponing herbicide applications that kill the rhizome johnsongrass provides more opportunity for insect vectors to disseminate the viruses to uninfected plants.

Use hybrids selected for tolerance to the corn virus complex for fields with significant risk of the disease. Most seed companies have at least some hybrids with moderate to good tolerance to the disease. In addition, control rhizome johnsongrass to reduce the source of overwintering inoculum.

FALL ARMYWORM
by Ric Bessin

A few fall armyworm larvae were found in corn whorls during training sessions last week in Fayette county. Fall armyworm can be one of the more difficult insect pests to control in field corn. Late planted fields and later maturing hybrids are more likely to become infested.

Fall armyworm causes serious leaf feeding damage, as well as direct injury to the ear. While fall armyworms can damage corn plants in nearly all stages of development, they will concentrate on later plantings that have not yet silked. Like European corn borer, fall armyworm can only be effectively controlled while the larvae are small. So early detection and proper timing of an insecticide application are critical.

Fall armyworms vary from light tan to black withthree light yellow stripes down the back. There is a wider, dark stripe and a wavy yellow-red blotched stripe on each side. Four dark spots, arranged in a square, can be seen on the top of the eighth abdominal segment.

Fall armyworms resemble both the armyworm and the corn earworm, but the fall armyworm has a white inverted "Y" mark on the front of the dark head. The corn earworm has a orange-brown head, while the armyworm has a brown head with dark honeycombed markings.

Larger fall armyworm larvae consume a lot of leaf tissue, resulting in a ragged appearance to the leaves similar to grasshopper damage. Larger

larvae are usually found deep in the whorl often below a "plug" of yellowish brown frass. Beneath this plug, larvae are protected somewhat from insecticide applications. Plants often recover from whorl damage without any reduction in yield. However, larvae will also move to the ear as plants begin to tassel and young ears become available. The ear may be partly or totally destroyed. Damage to the ear may be much more important than leaf damage.

For more IPM information, see ENTFACT 110, Fall Armyworm. See ENT-16, Insecticide Recommendations for Field Corn for control recommendations.

SOYBEANS

MORE SPIDER MITES ON SOYBEAN AND OTHER CROPS
by Doug Johnson

Since the last week's KPN, I have had two more reports of spider mites on soybeans from Daviess and Henderson Counties. Additionally, vegetable growers in Todd Co. have had problems.

As far as I can tell, these outbreaks are still associated with dry conditions. Although the region as a whole has near adequate rainfall, some spots are very dry. I can not say absolutely that dry areas are the only place where this pest will occur but it is certainly where one should look first.

The samples from Union and Daviess counties had the greyish cast to the leaves that is usually associated with relatively new damage. The Henderson Co. sample had the classic "bronze" appearance indicating that the damage occurred a little earlier. Producers, scouts and consultants need to be watching for unthrifty beans. Be especially observant if you see beans that appear to be drought stressed. Drought many not be the only problem with those plants.

Spider mites are very small. You may be able to see them with the naked eye but you will have to use a hand lens to see any features. They are more closely related to spiders than insects and have eight legs. The twospotted spider mite, which is what we most often see in KY soybeans, is greenish yellow to dull orange with two large irregular-shaped spots one on each side of the body. If you suspect spider mites shake some leaves over a piece of white paper. Look to see if you can see tiny spots moving on the paper. Generally, examination with at least a hand lens or preferably a microscope is needed to confirm the diagnosis.

In most cases, symptoms of spider mite damage will be noticed before the mites. Spider mites feed with long stylet-like mouthparts which they stick into individual cells to suck out the contents. Most other pests with piercing sucking mouthparts feed on the plant sap in the conducting tissue of the plant. These mites feed on the cell contents. As each cell is fed upon it dies, leaving a small white or yellow spot. This gives the leaves a stippled appearance. The result is a reduction of photosynthetic capacity. As damage increases, plants take on a yellowed then bronzed appearance. If high levels of pressure continue the plants will defoliate.

Making a control decision is often very difficult, especially in late season. The general rule of thumb is: if you expect to make a crop then treat the damaged areas of the plant as defoliation. At this time of year I think most producers still have reasonable expectation that enough rain will occur to make a crop. If so, use the defoliation tables in ENT-13 or IPM-3 to make a control decision. If the drought is relieved by a sustained rain (increased humidity) then mite populations will be reduced. If however, a heavy (drought relieving rain) is quickly followed by a clearing sky and low humidity the mite populations may stick around. The importance of rain fall in reducing mite populations is actually a secondary effect. When rain (mainly humidity) increases the activity of a fungal pathogen which infects and kills the mites, resulting in reduced mite populations. However, if the rainfall does not result in continued humid conditions the mites may remain around at high levels for some time.

Because this is such a rare pest it is not listed in ENT-13 (Insecticide Recommendations for Soybean). However, there are currently two insecticides labeled for use against spider mites in soybean. They are Lorsban® and various formulations of dimethoate. Lorsban 4E may be used at ½ to 1 pt. / Acre, and dimethoate 4 at 1pt. / Acre. Other formulations of dimethoate will have other rates of application. There may be a few products labeled for "Suppression" of spider mites, but suppression is not normally a viable option for this pest.

If control is required be prepared to make more than one application. This is not the typical soybean pest. Most of the insect pest of soybean are easily controlled with a single insecticide application. This is often not the case with spider mites. A single application may be enough especially if the drought conditions lift. However, be ready to make at least two applications and possible a third.

If damaged appears to be restricted to a portion of the field you may elect to control only that region. However, if this is the case be sure to look for the mites in the "Non-symptomatic" beans that surround those that are showing symptoms. As the beans are damaged they will become less desirable to the mites as a host, so the mites will move outward to the unaffected beans. You should always check to see how widely the mites are distributed, then treat another round or two to insure you have covered the entire infestation.

WHEAT

KARNAL BUNT REVISITED
by Don Hershman

You may recall the Karnal bunt scare in 1996 where numerous incidences of the fungal seed disease, karnal bunt, were found in the southeast United States. This was a very serious concern because numerous countries have zero tolerance for importing grain from countries known to harbor karnal bunt. This crisis was overcome by severe quarantine and sanitation actions, as well as trade negotiations through diplomacy. You may also recall that there was a significant "karnal bunt" scare in the mid-south during late 1996-early 1997. Alabama and Tennessee, in particular, were thought to have significant karnal bunt findings. The end result of that situation was an awareness that grain inspectors were not finding karnal bunt spores in the mid-south, but instead were finding spores of a grass bunt species that look very similar to spores of the karnal bunt fungus. Once those "false positive" findings were made public, all the talk about karnal bunt in relation to the mid-south "findings" faded quickly.

Since 1996, karnal bunt had not been found until this spring. The most recent report is that karnal bunt was found in a few counties in central and north central Texas. I hesitate to bring this finding to your attention because I do not want to create unwarranted concern. However, I thought it prudent that I should report this recent karnal bunt finding to you so you can take any precautions you deem necessary to protect your wheat operation.

Karnal bunt activity is favored by extended periods of cool, wet conditions following head emergence. All evidence suggests that these conditions were met this year in very early spring in parts of Texas. The source of fungal spores for this most recent karnal bunt find is thought to be Mexico where karnal bunt has been well established for years. But it is probably just as likely that some infectious spores originated from previously infested sites in the southwest United States. No one will ever know for sure.

What does this new karnal bunt finding mean to wheat farmers in Kentucky? From a practical standpoint, probably very little. First, our weather patterns following crop head emergence would rarely be conducive to spore production and infection by the karnal bunt fungus, if it existed here. Secondly, the karnal bunt fungus is not known to occur outside the parts of Arizona, and now Texas. A small area of New Mexico may also be involved because some karnal bunt-infected seed was planted there in 1996. But the important thing to note, is that there is no evidence to suggest that the karnal bunt fungus exists at any level near Kentucky.

Having said the above, there are numerous ways that infected grain could conceivably reach Kentucky. The most obvious means would be by the importation and planting of diseased seed. Most of this risk should be covered by the new quarantine and sanitation measures that are likely to be associated with the recent outbreak. In addition, I suspect that very little of the wheat seed we plant in Kentucky originates from areas affected by karnal bunt. In my opinion, the more likely means of bringing the karnal bunt fungus into Kentucky would be by truck or on used farm equipment, such as combines or soil tillage implements (i.e., the karnal bunt fungus survives in the soil). If you believe that any of these means of spread may apply to your operation, the key is sanitation. In the case of farm equipment or truck trailers, you should clean these thoroughly with pressurized water BEFORE bringing the equipment onto the farm.

It is my sincere hope that karnal bunt remains a non-issue for Kentucky wheat producers. However, the old saying that "an ounce of prevention is worth

a pound of cure" is really appropriate when it comes to karnal bunt.

VEGETABLES

BACTERIAL DISEASES IN COMMERCIAL VEGETABLES
by William Nesmith

Some growers have experienced significant problems with bacterial diseases this seasons in several commercial vegetable crops, while others have not. These include bacterial speck, spot, and canker in tomatoes; bacterial spot of peppers; and bacterial wilt in cucurbits. In most cases, these problems had little to do with good or bad luck, rather they were related to management decisions and risk-taking. I urge growers that have had problems to review their production program and to compare it with bacterial disease controls recommended for the crop in the Extension publication ID 36. Here are some of the control failures we have observed.

* Purchased seed or transplants infested with bacteria, sometimes knowing they were infected.
* Failure to use hot-water or chlorine bleach seed treatments.
* Waiting too long to start copper, or copper + EBDC sprays.
* Spraying the right materials, but with inadequate spray equipment to achieve good coverage.
* Waiting too long to start vector (cucumber beetle) sprays in cucurbits.
* In ability, or unwillingness, to spray during protracted wet periods.
* Inadequate crop rotations.
* Suckering and handling of wet plants.
* Reuse of bacterial contaminated stakes and trays.
* Selecting susceptible pepper varieties over resistant varieties, because the susceptible transplants cost less.

SHADE TREES & ORNAMENTALS

DAYLILY RUST, A POTENTIAL THREAT TO KENTUCKY
by John Hartman

Daylily rust was found for the first time in North America last year in Florida. Since then, it has been spread (mainly on infected nursery plant material) to several other states including Alabama, California, Georgia, Kansas, Louisiana, Minnesota, Mississippi, South Carolina, Tennessee and Texas. Although we have not yet found this disease in Kentucky, it is possible that it is already here and that it could become widespread.

Cause and symptoms. The causal agent, *Puccinia hemerocallidis*, is a rust fungus native to Asia. The disease is identified by bright yellow or orange colored-spots with raised pustules on the foliage of affected plants and by orange-colored spores which emerge from the pustules. As symptoms progress, leaves turn yellow and dry up. Early rust infection may resemble a different, fairly common Kentucky problem, daylily leaf streak, caused by the fungus *Aureobasidium microstictum*. The main difference between these two is that the rust fungus produces raised spots (pustules). Rust pustules will transfer orange powdery spores to a white facial tissue when it is rubbed over the infected leaves. This will not happen with any other daylily leaf disorder. The following web site (http://www.ncf.ca/~ah748/rust.html) shows good pictures of this and other daylily diseases and disorders.

Disease biology. This fungus has a short incubation period in infected leaves and spores can be spread very rapidly by air currents. Because of these characteristics, a USDA sponsored New Pest Advisory Group (NPAG) believes that the disease will become a serious pest of daylilies. The disease is easily spread in the nursery trade because viable spores may be carried long distances on plants and propagative material not showing symptoms. The perennial *Patrinia* is an alternate host of *P. hemerocallidis*. Six species of the perennial Patrinia are sold and grown across the U.S. as an ornamental; however, no rust-infected Patrinia plants have been detected so far. The spread of rust from daylily to daylily is not dependent on Patrinia, but the widespread presence of Patrinia could allow the fungus to complete its life cycle and allow for new strains of the fungus to develop.

Disease management. If daylily rust is suspected, immediately remove all infected foliage and burn or bury the clippings except to save a leaf or two to send to the County Extension Office; the agent will get them to our plant disease diagnostic laboratory. The results of those tests can then be forwarded to the U.S. Department of Agriculture in Beltsville, Md., for final confirmation, if necessary. Most County Extension Agents will recognize rust disease and would be able to tell the homeowner immediately whether daylily rust is present, or if it

is suspected. Following diseased foliage removal, sterilize tools with 70% alcohol, 10% bleach, or lysol to prevent spread. Wash hands, gloves, or clothes afterwards, if necessary, to prevent spread to the rest of the garden. New foliage can be protected as it emerges with fungicides such as propaconizole (Banner Maxx), azoxystrobin (Heritage), flutolonil (Contrast), or myclobutanil (Systhane, Eagle). Because this is a new disease, there is no specific label of daylily rust. Be sure that the label indicates that the fungicide product used can be used on daylilies or on ornamentals generally in the nursery or landscape. Resistant cultivars have not yet been identified. This particular rust is very aggressive on the daylily variety 'Pardon Me,' on which the rust kills the foliage. It has also been reported on 'Gertrude Condon,' 'Starstruck,' 'Stella D'Oro,' 'Joan Senior,' 'Colonel Scarborough,' 'Crystal Tide,' 'Imperial Guard,' 'Double Buttercup,' 'Attribution,' and very likely others.

Agents, homeowners and nurserymen are urged to be on the lookout for this potentially serious disease of daylily.

HOUSEHOLD

IS YOUR HOME ATTRACTING TERMITES? by Mike Potter

In a recent survey of 674 Kentucky households, 93 percent expressed concern over finding termites in their homes. The entomology department receives many calls from people wanting to know what can be done to protect their largest investment – or if a certain practice or condition is likely to cause termite problems. Homeowners can reduce the risk of termite attack by following these suggestions.

1. ***Eliminate wood contact with the ground.*** Many termite infestations result from structural wood being in direct contact with the soil. Earth-to-wood contact provides termites with easy access to food, moisture, and shelter, as well as direct, hidden entry into the structure. Wood siding, porch steps, latticework, door or window frames and similar wood items should be at least six inches above ground level. Eliminating wood-to-ground contact may require regrading or pulling soil or mulch back from the foundation, cutting the bottom off of siding, or supporting steps or posts on a concrete base. Posts or stairs embedded in concrete are also vulnerable to termites since they usually extend all the way through the concrete to the soil. Wood that has been pressure treated is not immune to termite attack; termites will enter pressure-treated wood through cut ends and cracks, and will also build tunnels over the surface.

2. ***Don't let moisture accumulate near the foundation.*** Termites are attracted to moisture and are more likely to "zero in" on a structure if the soil next to the foundation is consistently moist. Water should be diverted away from the foundation with properly functioning gutters, down spouts and splash blocks. Leaking faucets, water pipes and air conditioning units should be repaired, and the ground next to the foundation should be graded (sloped) so that surface water drains away from the building. Homes with poor drainage may need to have tiles or drains installed. Lawn sprinklers and irrigation systems should be adjusted to minimize puddling near the foundation.

3. ***Reduce humidity in crawl spaces.*** Most building codes call for 1 square foot of vent opening per 150 square feet of crawlspace area. For crawlspaces equipped with a polyethylene vapor barrier (see below), the total vent area often can be reduced to 1 square foot per 300 to 500 square feet of crawl space area. One vent should be within 3 feet of each exterior corner of the building. Shrubs, vines and other vegetation should not be allowed to grow over the vents since this will inhibit cross-ventilation. Moisture and humidity in crawl spaces can further be reduced by installing 4-6 ml polyethylene sheeting over about 75 percent of the soil surface.

4. ***Never store wood or paper against the foundation or inside the crawl space.*** Firewood, lumber, cardboard boxes, newspapers, and other cellulose materials attract termites and provide a convenient source of food. When stacked against the foundation they offer a hidden path of entry into the structure and allow termites to bypass any termiticide soil barrier that is present. Vines, ivy, and other dense plant material touching the house should also be avoided. Dead stumps and tree roots around and beneath the building should be removed, where practical, along with old form boards and grade stakes left in place after the building was constructed.

5. ***Use mulch sparingly, especially if you already have termites or other conducive conditions.*** Any cellulose-containing material, including mulch, can attract termites. Termites are especially attracted to mulch because of its moisture-retaining properties.

Where mulch is used, it should be applied sparingly (2-3 inches is usually adequate), and should never be allowed to contact wood siding or framing of doors or windows. Since the moisture associated with mulch is probably as much or more of a termite attractant than the wood itself, it makes little difference what type of mulch is used, e.g., cypress, pine bark, etc. Crushed stone or pea gravel improves drainage and has no nutritional value to termites, and therefore may be less attractive – though cosmetically unappealing to most homeowners. These materials will also reduce problems with pests such as millipedes, pillbugs, earwigs and crickets.

6. ***Consider treatment by a professional pest control firm***. Buildings have many natural openings through which termites can enter, most of which are hidden. While the measures outlined above will make a house less attractive to termites, the best way to prevent infestation is to treat the adjoining soil with a termiticide. There are two general categories of termite treatment, liquids and baits. The purpose of a liquid treatment is to make the ground around the foundation repellent and/or toxic to termites so that they will not infest the structure. While most of the liquid termiticide products are *repellent*, two newer materials, Premise® (imidacloprid) and Termidor® (fipronil), are *non-repellent* to termites foraging in the soil. Consequently, termites tunneling into the treated zone are killed. In Kentucky, Premise and Termidor are proving somewhat more reliable, in their ability to alleviate a termite problem in the initial attempt. Baits can also be installed to eliminate termites foraging in the vicinity of a structure (See Entfact-644, *Consumer Update: Termite Baits*, and ENT-65, *Termite Baits: A Guide for Homeowners*).

Preventively treating a home for termites is a reasonable investment, especially if the structure has no prior history of treatment. If the building was previously treated by a pest control firm, it's a good idea to maintain the service agreement by paying the annual renewal fee. Should termites re-infest the building (which can happen even if the initial treatment was performed correctly), the company will return and retreat the affected area at no additional charge.

Whether or not a person chooses to have their home treated, they should know the signs of termite infestation:

! pencil-wide mud foraging tubes on foundation walls, piers, sills, joists, etc.

! winged "swarmer" termites, or their shed wings, in window sills and along edges of floors.

! damaged wood hollowed out along the grain and lined with bits of mud or soil.

Detecting hidden infestations requires a trained eye. Most pest control firms perform termite inspections free of charge and will alert the homeowner to any conditions they uncover that are conducive to termite attack.

DIAGNOSTIC LAB HIGHLIGHTS

by Julie Beale and Paul Bachi

For the week ending June 29, we diagnosed tobacco samples with blue mold, (both mefenoxam sensitive and resistant strains), black root rot, black shank, Fusarium wilt, soreshin (Rhizoctonia), tobacco mosaic virus, tomato spotted wilt virus and tobacco ringspot virus.

Fruit and vegetable samples included black rot on grape; Stewart's wilt on sweet corn; black root rot on okra; anthracnose and bacterial wilt on cantaloupe; and Septoria leaf spot, early blight; Fusarium wilt, Fusarium root/stem rot, cucumber mosaic virus and tomato spotted wilt virus on tomato.

On ornamentals, we diagnosed black root rot of pansy and petunia; powdery mildew on sedum and rose; Rhizoctonia root and stem canker on Saint John's wort; summer patch on bluegrass; brown patch on fescue; jumping oak gall on white oak; and anthracnose on elm and sycamore.

INSECT TRAP COUNTS

UKREC, Princeton, KY, **June 22-29**, **2001**

True armyworm	38
Fall armyworm	5
Beet armyworm	0
Corn earworm	1
European corn borer	1
Southwestern corn borer	34

NOTE: Trade names are used to simplify the information presented in this newsletter. No endorsement by the Cooperative Extension

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