Tobacco

Yellow bud and yellow leaf resulting from the cool, cloudy, wet weather

Many recognize and appreciate that cold injury can occur in transplants. But, we also need to appreciate that the cool weather conditions prevalent over Kentucky for the last month can trigger physiological injury (cold/chill injury) to plants growing in the field. Tobacco is native to subtropical areas that have warmer climates and it is sensitive to cold, wet conditions especially during periods of changing air temperatures when the soil is still cool. Under such growing conditions there can be significant disruption of the normal hormonal control associated with growth and development. When the leaf is urged to grow, but the cold roots cannot maintain their normal production of hormones (some of which is sent to the top), expect to see damage to the leaf development, bud development, and even floral development/timing.

What causes this conditions? We do not know for sure, but here is what we suspect is happening. The roots...
cannot make their normal amount of hormone to send to the top, which creates and imbalance in the critical hormones associated with plant growth and development. This may also mean that the top did not make enough of it’s hormones to send down the stalk to control suckers. We believe this is an indication of damage to juvenile cells in the same stage of development at the time of the cold-stress event. Probably there was also disruption of normal hormonal control of growth and development too, which could influence development of ground suckers and premature blooming.

Images of these symptoms can be found at the following website: [http://www.uky.edu/Ag/Tobacco/](http://www.uky.edu/Ag/Tobacco/)

**CORN**

**STINK BUG DAMAGE TO YOUNG CORN**
by Ric Bessin

Cool, wet weather has set the stage for increased stink bug injury in 2003. This weather pattern has slowed the development of corn, keeping it small and vulnerable to attack by stink bugs and growers around the Commonwealth have begun to report problems.

The brown stink bug is the most common species found attacking corn. They are 1/2-inch long, shield shaped insects with piercing-sucking mouthparts. They feed at the base of very young corn. While feeding they inject enzymes into the plants that affect development. These enzymes aid in digestion and sap removal. If they feed directly in the growing point, the growing point may be killed and the plant may tiller excessively.

There are a wide range of symptoms that occur with stink bug feeding. They include excessive tillering and leaves not able to emerge properly from the whorl, resulting in a plant that resembles a buggy whip. Damaged plants may develop misshapen ears in place of the tassel. Some herbicides can cause similar injury to developing corn and distinguishing between stink bug and herbicide damage can be difficult. To identify stink bug damage in the field, look for a row of oval holes with yellow borders across the unwrapped leaves of damaged plants. This row results from the single feeding puncture that penetrates the wrapped leaves. The holes will not have distinct margins such as those caused by corn borers, rather they look like the margins have been dissolved. A slimy, decaying area may be found in the stalk where the stink bug has fed.

Stink bug damage is most severe in no-tillage fields. In some cases, the damage can be found throughout the field, often with areas of more intense damage. Frequently these are near wooded areas. Stink bug damage can be found in conventional fields, but the incidence of damaged plants is low and usually frequently limited to the border rows.

Scouting is a effective way to manage stink bugs, but you need to scout for the insect, not the damage. The symptoms often appear long after the insect has done its damage. Spraying to control stink bugs after the damage appears is of minimal benefit. The two weeks following corn emergence are the critical times to be watching for stink bugs. Scout the field as you would for cutworms. In addition to looking for cut plants, the symptom of cutworm activity, look for stink bugs. Stink bugs tend to feed at the base of corn plants, usually an inch above the soil surface. Special attention should be given to no-till fields and where stink bug injury has been seen in past years.

**FORAGE CROPS**

**MORE ON SEEDLING DISEASES OF ALFALFA**
by Paul Vincelli

In a recent *Kentucky Pest News* article, I wrote about seedling diseases that could affect alfalfa during this wet spring weather. Several samples of stunted, yellow seedlings of alfalfa have since come into the diagnostic labs. Thus far, we have diagnosed Pythium root rot and Phytophthora root rot in these seedlings. Although we have not yet diagnosed it, Aphanomyces root rot is another likely culprit to see this spring.

Alfalfa seed is very commonly treated with metalaxyl or mefanoxam fungicides. These fungicides provide early season protection against Pythium and Phytophthora infection. Thus, one might be surprised to see these diseases in new seedings. Unfortunately, the protection these fungicides provide lasts only about 2-3 weeks. After that, the young plant can be infected by *Pythium* and *Phytophthora medicaginis* should weather conditions permit their activity in soil. These seed treatment fungicides simply cannot provide protection for as long as 4-6 weeks of wet weather after seeding, as we have had in many areas this year.

Alfalfa seedlings develop increasing resistance to Pythium infections as the plant increases in size. The same is true for at least some Phytophthora-resistant alfalfa varieties. Fred Gray and colleagues at the University of Wyoming showed that resistant varieties may still behave as susceptible varieties during the first few weeks after seeding, before resistance mechanisms are fully active. Thus, varieties which are marketed as resistant to Phytophthora may still become diseased, especially when seedlings are exposed to high disease pressure.
As far as Aphanomyces root rot is concerned, seed treatment with metalaxyl or mefanoxam are of little value, although resistant varieties do exhibit resistance even at the seedling stage. The one complication with this disease is that races of *Aphanomyces euteiches* exist in some Kentucky soils which are able to attack most currently available Aphanomyces-resistant varieties. Thus, it is possible that Aphanomyces root rot will show up this spring in some instances on varieties that are marketed as “resistant”. A very small number of alfalfa varieties currently are resistant to these new races, such as Race 2 of *A. euteiches*. Breeders are working to develop a greater selection of varieties with resistance to these new races.

**Bottom line:** Select alfalfa varieties with R or HR ratings to Aphanomyces root rot for spring seasons and Phytophthora root rot for all alfalfa seeding. Seed also should be treated with metalaxyl or mefanoxam fungicides. This set of recommendations provides good protection against several important seedling diseases. However, under unusually wet weather or in soils where new races are present, diseases may still occasionally prevent successful establishment of alfalfa on Kentucky farms.

**FRUIT CROPS**

**GRAPE ANTHRACNOSE OBSERVED AGAIN**

by John Hartman

Anthracnose disease is appearing in some Kentucky vineyards. There was an outbreak of this disease, caused by the fungus *Elsinoe ampelina*, last year and details of symptoms and management can be found in the July 29, 2002 “Kentucky Pest News”. Growers are observing lesions (small, circular reddish spots which enlarge and become sunken with gray centers) on shoots now and similar lesions will appear later on the fruit. Lesions can appear on leaves, leaf petioles, and tendrils as well. When numerous lesions coalesce, shoots become blighted.

Anthracnose is but one of several diseases appearing on grapes this spring. Rainy weather and lack of effective disease management activity are likely contributors to disease incidence and severity. One new grower was said to have complained “I sprayed twice already this spring and I am still seeing disease on my grapevines.” Experienced growers know that by this time, perhaps 6 or 7 applications of fungicides would have been made during the past two months since grapes began new growth. One grower I talked to said that because of all the rain, he has had to apply fungicides a dozen times due to having to reapply his sprays following rainy periods. He also reports having no diseases on his grapevines.

For anthracnose disease management, a key spray would have been the dormant application of lime sulfur two months ago. Other disease management actions include: pruning for sanitation, elimination of wild grapes nearby, growing less susceptible varieties, improving sunlight penetration and air movement in the canopy, and incorporating Tospin-M into the spring and summer spray schedule. For suggestions of fungicides to use and timing, commercial growers should consult U.K. Cooperative Extension bulletin ID-94, “Kentucky Commercial Small Fruit and Grape Spray Guide 2003”.

**GRAPE BERRY MOTH ACTIVE**

by Ric Bessin

Pheromone traps in the Lexington area have indicated that grape berry moths are now active. This insect lays eggs around the developing clusters shortly after the 'shatter' stage of berry development. These first generation larvae feed on the young berries which results in berry loss and loose clusters. There is a second generation that attacks the berries at the 'veraison' stage which results in rotten berries in the cluster and webbing.

Generally, we recommend two insecticide applications to control the first generation where it has been a problem in the past. The first application is made at the shatter stage, and the second 10 days later. With the second generation, a single application is made at the veraison stage.

For a list of recommended insecticides for grape berry moth control, see ID-94, the Midwest Commercial Small Fruit and Grape Spray Guide.

**WHEAT**

**FUSARIUM HEAD BLIGHT STATUS**

by Don Hershman

I believe the Fusarium head blight (FHB), or head scab, picture is now fairly clear for Kentucky. My observation is that this is the most severe scab year since the 1991 epidemic. HOWEVER, the overall level of FHB this year is nowhere near as consistent and severe as it was in 1991. So, please do not think I am saying we have a complete FHB disaster, since that is decidedly not the case!

Presently, there is a considerable variability in the incidence and severity of FHB between fields, state-wide. I suspect every field in the state has some FHB, but there is a wide range in how much disease is present. Based on variety ratings I and others have made in Calloway, Logan, Union, Warren Counties this spring, variety has definitely played a major role in determining the extent of FHB development. The impact of variety on FHB has its root in when crops flower in relation to the
environmental conditions that exist while the crop is flowering. FHB is typically a problem when wet (especially warm, wet) conditions set in during at least part of a crop’s flowering period. Flowering date and length are mostly the result of crop genetics, but are also affected by planting date, other crop husbandry practices, and pre-flowering field conditions. Certainly, some of the variety differences in FHB are due to the fact that some varieties possess resistance to spread of FHB in the head once infection takes place. However, this would not explain the differences we are seeing in FHB incidence between fields. By incidence, I mean the percentage of heads in a field that have any FHB. Typically we think of head severity as being the percent surface area of any given head with FHB symptoms. The term field severity is the overall, average severity of all heads in a field with FHB symptoms. This number includes many “zero’s” for the heads in a field that do not have any FHB symptoms. Measuring field severity is one way to estimate the upper level of yield loss in a field related to FHB.

By way of an example showing the impact of variety on FHB, disease ratings we made in plots from a no-till variety test in Logan County had a range in FHB incidence from 1% to 40%; 35 of 54 varieties (65%) had FHB incidences of 10% or less; 12 (22%) had incidences of 11-20%; 4 (7%) had incidences of 21-30%; and 3 (6%) had incidences of 31-40%. This clearly shows that variety played a very significant role in FHB development this test. Similar results were seen at the other variety test locations I mentioned earlier. On a larger scale, large FHB differences within an area probably depend upon the mix of wheat varieties, the range of planting dates and other crop husbandry practices, and weather patterns that existed both prior to and during crop flowering. Some farms in a county, and fields within farms, appear to have more or less FHB depending on various combinations of the above factors.

One thing we do not yet know is the impact that DON (also called vomitoxin) will have on marketing the present wheat crop. DON is a fungal toxin produced as a bi-product of infection by the Fusaria fungi that cause FHB. Excess DON in grain can seriously impact crop marketing because many grain purchasing facilities do not accept grain with DON levels above 4.0 parts per million. There are even lower allowable levels of DON in grain purchased by some facilities for specific uses. There is no doubt in my mind that some farms will experience significant DON problems this year, but I do not believe it will be a uniform problem. Having said that, I am reminded that DON levels can be fairly high in grain harvested from a crop that showed few FHB symptoms. Apparently late infection can result in elevated DON levels, but infection occurs too late in crop development for FHB symptoms to be expressed. Even healthy appearing, plump kernels can be contaminated with DON. The only way to be certain of the DON status of a crop is to have grain tested specifically for DON. This can be done at many grain marketing facilities or the tests can be conducted by a range of private or public grain testing laboratories. There will be a great deal of DON testing being done this year.

**SHADE TREES & ORNAMENTALS**

**DOGWOOD ANTHRACNOSE PRESENT IN SOME LANDSCAPES**

by John Hartman

Dogwood anthracnose, caused by the fungus *Discula destructiva*, is appearing with greater frequency this spring in many Kentucky flowering dogwoods (*Cornus florida*). Cool, wet spring weather may be contributing to the greater disease levels observed this year. Dogwood anthracnose causes leaf spots, leaf blight, and lower branch dieback and is most commonly observed in forested regions where native understory dogwood trees are threatened. This spring, anthracnose is also present in landscape trees, especially those growing in shaded locations. Although anthracnose diseases are common this year on other landscape trees and also on some fruit crops, they are not all caused by the same fungus. Each host plant has its own anthracnose fungus, so, for example, don’t assume that anthracnose of sycamore or strawberry is a threat to nearby dogwoods.

Kentucky growers and gardeners should know how to grow and maintain healthy dogwoods. Good growing practices are important in preventing loss of dogwoods from anthracnose. Consider the following:

- Do not transplant dogwood trees from the wild. Purchase healthy trees from a reputable nursery.
- Anthracnose is favored by a moist environment. Select a planting site with a sunny eastern exposure to promote rapid foliage drying early in the day.
- Prune out and destroy dead wood and leaves as they occur, and prune trunk sprouts in the fall.
- Protect trees from drought by watering at least once a week during dry periods. Do not use overhead sprinklers for watering; wet foliage favors infection.
- Maintain a 2-4 inch layer of mulch over the root zone of the tree (but not against the trunk) to help maintain soil moisture and to protect trees from lawnmower injury.
- Diagnose and treat insect and disease problems appropriately.
- Plant disease resistant dogwoods such as *C. florida* ‘Appalachian Spring’ or oriental dogwoods (*Cornus kousa*) for high risk sites such as those with heavy shade and nearby diseased trees.
WHAT ARE THOSE TINY, RED THINGS?
by Mike Potter

Several calls have been received about tiny red, mite-like “specs” crawling over pavement, patios, foundations and other outdoor surfaces. Oftentimes the critters make their way indoors and wander over floors, walls, counter tops, computer monitors, etc. When crushed they leave a reddish stain, further elevating their status as pests.

Technically speaking, these are mites in the family Trombidiidae – a large group of outdoor, free-living mites that prey on insect eggs and other tiny soil arthropods. They breed outdoors in moist, organic, vegetative environments such as often occur around the foundations of buildings. The mites cannot breed indoors, nor will they bite pets or humans. They are often mistaken for clover mites which have similar outdoor origins and habits. (Clover mites tend to be reddish, orange or olive-brown in color and when viewed under magnification, the front pair of legs extend much farther forward than the others). Some people also mistake the mites for chiggers.

Control: Most clients will not tolerate the mites once they have made their way indoors. Tremendous numbers often appear on foundations, patios, and other adjoining surfaces. Given their abundance and very small size, it’s virtually impossible to prevent their entry by caulking and sealing alone.

The most efficient and immediate solution is an outdoor perimeter application of insecticide around the base of the foundation in a 2 to 6-foot-wide band along the ground, and 2-3 feet up the foundation wall. Also spray along the base of exterior doors, beneath the bottommost edge of siding, along the crack where brick veneer meets foundation wall, and around window and door frames. Several different homeowner products are effective when applied with a pump up or hose end sprayer, including Sevin, Ortho HomeDefense, Spectracide Triazicide, and Bayer Advanced Lawn & Garden Multi-Insect Killer Concentrate. Professional pest control firms also perform such “barrier” treatments around building exteriors.

Mites occurring indoors are best removed with a vacuum to minimize red smears and stains. Indoor insecticide applications are not needed nor recommended. The occurrence of this mite around structures is a temporary event. For clients who opt to do nothing, the problem usually corrects itself in a matter of days or a few weeks.

FOUR COMMON KENTUCKY MOSQUITOES
by Lee Townsend

Kentucky is home to more than 50 species of mosquitoes. Some can be found in almost every county while others require very specific breeding sites and are rare. A few have painful bites and are a significant nuisance, while others carry or vector diseases that can attack humans or animals. The sudden appearance and rapid spread of West Nile virus across the US has made us much more aware of the mosquitoes around us. Here are profiles of four important Kentucky species.

• The house mosquito (Culex pipiens) This light brown mosquito is common and important throughout Kentucky, causing problems in both urban and rural areas. Females lay batches or rafts of eggs on the surface of most any stagnant water that remains in place for several days. Examples include storm sewer catch basins, clean and polluted ground pools, ditches and wheel ruts, animal waste lagoons, clogged gutters and neglected birdbaths. The life cycle from egg to adult can be completed in 8 to 12 days, depending upon temperature, and there are several generations each year. House mosquitoes generally don’t travel long distances and often stay within 1,000 yards of their breeding site.

  Adult females, which may live a month or more, prefer to feed on birds but will bite mammals and humans. They feed at night and commonly enter structures in search of a blood meal. Consequently, screened doors and windows are important means of reducing exposure. House mosquitoes rest in and around shelters or tall vegetation during the day. This species is a very important vector of West Nile virus and also can carry dog heartworm.

• The Asian tiger mosquito (Orchlerotatus albopictus) an accidental introduction into the US, was first found in central Kentucky in 1987; now it occurs over most of the state. The larvae need only very small accumulations of water (as little as 1/4 inch deep) in artificial or natural containers. Discarded tires are a common breeding site but crushed aluminum drink cans are suitable, too.

  This mosquito has several generations each year and feeds on humans, mammals, and birds. It is an aggressive day biter that is most active in early morning and late afternoon. Usually, it moves only 100 to 300 yards from its breeding site. This species is associated with the transmission dog heartworm and has tested positive for West Nile virus in the field.
• The tan saltmarsh mosquito (Orchlerotatus sollicitans) is a medium-sized golden brown mosquito. A floodwater species, its eggs are laid in moist soil in low areas that are prone to flooding. Breeding sites include brackish water in potholes, depressions, disposal sites for dredged materials, mine tailings or old mining sites, or wastewater from food processing operations. This species has been a significant and chronic pest in western Kentucky.

Adult females are most active in the spring and fall but can be found throughout the year. They are strong fliers that feed primarily on mammals and to a lesser extent on birds. These mosquitoes easily can move 5 to 10 miles from a breeding site, up to 40 miles with help from winds. Migration and feeding flights are made during early evening and the adults are attracted to lights. They rest on vegetation in relatively open areas during the day and will attack people or animals that move through there during the day. This saltmarsh mosquito is a vector of dog heartworm. It has tested positive for West Nile virus in the field.

• The inland floodwater mosquito (Orchlerotatus vexans) is one of the most widespread pest mosquitoes in the world. A floodwater species, 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 migrate 10 miles or more during that time. The species is a vector of dog heartworm in some areas of the US and has tested positive for West Nile virus in the field.

Just a quick look at these four species shows some major differences. The first two basically are container breeders that tend to remain near their breeding sites while the two floodwater species develop in low areas and can fly very long distances. These differences make mosquito management a challenge. However, individuals can do a lot to minimize breeding of the container species, which are important potential disease carriers.

**HOW DO MOSQUITOES FIND US? WHERE DO REPELLENTS FIT IN?**

*by Lee Townsend*

Vision, warmth, and odor are clues that female mosquitoes use to find a blood meal. The importance of each of these factors, and many others, vary with mosquito species but here are some basics: Vision can play a large role in long distance recognition and attraction. For example, day-feeding mosquitoes tend to respond to movement, especially of people in dark clothing. Differences in body temperature may be the reason that some mosquitoes feed in relatively specific sites such as the ankles or head. Odors come into play as the mosquito gets very close. This is a very complex area with skin bacteria joining into the mix. More than 300 compounds are released by the human body; there are about 100 in human breath alone. The release of carbon dioxide (CO₂)from the lungs and skin along with lactic acid and other components of sweat also play important roles. However, host odors apparently are more attractive than CO₂ and sweat. This may account for the great differences in mosquito interest in some people over others. On top of that, floral fragrances from soaps, lotions, and shampoos may cause mosquitoes to look your way. Some other general trends are- men are more likely to get bitten than women, larger people tend to attract more mosquitoes than smaller people, and we seem to lose some of our appeal to mosquitoes as we get older.

Repellents seem to short-circuit the host odor recognition process of mosquitoes, they can respond to stimuli like vision and warmth to get close but can’t follow odor in for the actual meal. We don’t understand how repellents work, in fact some mosquito species react differently to the same repellent. We do know that effective repellents create a protective “vapor barrier” next to our skin. However, they lose effectiveness as they evaporate, are washed off by perspiration or rain, are carried away by breezes, or are rubbed off by clothing. In fact there is about a 50% reduction in protection time with each approximately 15 degree increase in temperature. Re-application is necessary to keep the protective barrier in place.


**DIAGNOSTIC LAB HIGHLIGHTS**

*by Julie Beale and Paul Bachi*

The Diagnostic Lab received field crop samples during the past week including zinc deficiency on corn; Lepto leaf spot, Pythium and Phytophthora root rots, and white mold (Sclerotinia sclerotiorum) on alfalfa; Pythium root rot, blackleg, target spot and transplant shock on tobacco.

Fruit and vegetable samples included anthracnose and crown gall on grape; anthracnose on strawberry; fireblight, frogeye leaf spot, cedar-apple rust and hail injury on apple; leaf curl on peach; black knot on plum; Septoria leaf spot and Pythium root rot on tomato; and blackleg on potato.

On ornamentals and turf we have seen leaf streak on daylily; Sclerotinia stem rot on columbine; Cercospora
leaf spot on rudbeckia; rust on holly hock; dollar spot and Pythium root rot on bentgrass; red thread on bluegrass; Phomopsis gall on forsythia; black spot and rosette on rose; scab on crabapple; anthracnose on maple; Verticillium wilt on viburnum; and Dothistroma needle blight and Sphaeropsis tip blight on pine.

INSECT TRAP COUNTS

UKREC, Princeton KY

May 23-30
Black Cutworm .................................. 2
True Armyworm ................................ 30
European corn borer .............................. 2
Southwestern corn borer ......................... 26
Corn earworm .................................. 22

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.