**CURRENT BLUE MOLD STATUS**

by William Nesmith

Blue mold continues to build slowly in the Appalachian region, and with very little activity reported to date from Kentucky. Thus, I am reducing the area under a watch in Kentucky to those areas very close to confirmed activity, but the statewide advisory remains. Check the Kentucky Blue Mold Warning System website for current updates, and especially check the advisory maps located at [http://www.uky.edu/Agriculture/kpn/kyblue/kyblu03/statemap.htm](http://www.uky.edu/Agriculture/kpn/kyblue/kyblu03/statemap.htm)

This shift in status increases the importance of frequent scouting and prompt reporting of any findings to the system. Moreover, immediate and thorough fungicide coverage with Acrobat MZ should be made on any field where the disease is found. Acrobat MZ is an excellent fungicide against blue mold and has great ability to check sporulation if applied early and well. Limiting sporulation is the key to controlling blue mold in the field.

On our eastern flank, confirmed activity has been reported from Green, Claiborne, Knox, and Jefferson counties of east Tennessee; Lee County in extreme western Virginia; and Perry and Estill counties of southeastern Kentucky. On the western flank, the only reported activity has been from Robertson County of middle Tennessee. Sporulation has been reported from both fronts, but there was little opportunity for long range spread last week due to sunny weather. However, movement of inoculum from these outbreaks into south central Kentucky was likely about 10 days ago, which should have resulted in the typical lesions by late last week, if that event did result in successful infections. However, agents are not reporting finding blue mold resulting from that event, nor do they find evidence that it became established much earlier or that it was carried in on transplants, except for the very limited activity found in Perry and Estill counties. Thus, we are reducing the area of a watch in order to minimize fungicide applications. Unless Kentucky’s tobacco industry is “asleep-at-the-wheel”, we are still awaiting significant establishment of blue mold in Kentucky.

One additional factor to keep in mind is that the tobacco plant has had difficulty growing under the stressful weather experienced this year, so it has not been a good host for blue mold. Keep in mind that the blue mold pathogen (being an obligate parasite) prefers a rapidly growing otherwise healthy host, so when its host is unthrifty, expect the pathogen’s development to be slowed, too. Moreover, we found evidence in the Perry County case that secondary invading organisms probably had damaged the blue mold infection/colonization sites making them poor or unacceptable hosts for the blue mold pathogen to grow and sporulate aggressively. If this is typical of current blue mold development, it helps explain why blue mold has developed much more slowly than anticipated in southern Kentucky.

As growing conditions improve, however, the tobacco plant will become a better host for blue mold. Therefore, a key question is whether inoculum is established in the field, even if conditions are not favorable for new, long range transport. I suspect inoculum did arrive earlier, but the pathogen was unable to established aggressive epidemics. It is probably established in some fields in a few plants. If that be the case, expect sporulation to begin as plant health improves and more typical activity to be established if the weather cycles between good tobacco growing conditions...
and moisture events, especially when nights remain cool and humid. Under such conditions, growers are most likely to detect blue mold under three conditions: As small hot spots in very early set crops during topping events; as hot spots in rapidly growing tobacco still being cultivated, or as scattered systemically infected plants suspected of having soreshin, spotted wilt, or black shank.

For those few growers still with transplants, you are advised to maintain aggressive fungicide programs in all transplant production and holding situations, and to avoid setting infected plants. Check carefully for systemic blue mold, which can be found by cutting into the stems of yellowing plants. This will be the last transplant advisory for the season.

Fields should be scouted at least twice weekly for blue mold, checking stunted plants carefully for systemic blue mold by cutting into the stems, especially near where leaves have dropped and near the soil line. Systemic blue mold can take on many appearances, but it usually includes discoloration of the vascular system (especially the phloem and cambial tissues) of stem, buds, leaves or roots - along with any of the following symptoms: general yellowing, stunting, plant distortion, narrowed leaves, mottled leaves, and darkened roots.

Should sporulating lesions of blue mold be found within a county, weekly fungicide spray programs with Acrobat MZ should be immediately put in place, followed by activation of the plant with Actigard 50W once the plants are 18 inches tall and able to tolerate the treatment. Additional sprays of Acrobat MZ may also be needed later in the season after the second application of Actigard if strong blue mold pressure is present, especially for late-maturing varieties.

Application guidelines for the fungicides labeled for blue mold control in the field in Kentucky can be found in Kentucky Pest News, issue number 983, April 28, 2003 or at web address - http://www.uky.edu/Agriculture/kpn/kpn_03/pi030428.htm

POOR ROOT SYSTEM ON TOBACCO by William Nesmith

Much of Kentucky has experienced a much drier weather pattern during the past two weeks compared to the two months of cool wet weather sustained earlier. Moreover, the crop stages within many communities ranges from near topping to yet-to-be-set. Crop development is highly variable, with much of this crop having poor root systems while some crops located on well drained soils have excellent roots. Consequently, there is an abundance of above ground symptoms showing up that are related to root health. As you deal with above ground symptoms of this crop, be sure to examine the root health, too. A number of nutrient disorders and physiological conditions are also occurring requiring careful management of fertilizers and topping. Below are three conditions that could become particular troublesome if heavy rains develop during the near future.

**DROWNING:** Tobacco is very susceptible to low oxygen levels in the root zone. Thus, poor root development occurred early, especially on heavier soils and in bottom land. Consequently, in these wet-fields, the plant has most of its functional roots near the soil surface and has been expanding that portion of the root system during the drier weather. Thus, rapid growth has occurred in some fields.

However, some weather models are calling for heavy rains, which could again saturate the root zone. Now that temperatures are higher and rapid growth has occurred, we could see plants “flop” or “scald” if the soils are again saturated. Why? Where soils remain saturated for several hours at the higher temperatures now occurring, the oxygen level will be depleted quickly. As a result, respiration levels of deeper roots are slowed markedly which will impair the root system’s ability to work. Water uptake and movement are an energy requiring process, so expect to see water uptake and movement problems. How quickly, or if, damage occurs to the above ground portions of the plant will depend in a large part on how dependant the plant is on the shallow roots and how quickly the high evaporation events return (sunny or windy periods).

**WATER SOAKING/POTASSIUM DEFICIENCY/ANGULAR LEAF:** In some communities considerable water could be driven into the tender leaves through the open stomata during driving rains occurring during daylight hours, making the plant highly susceptible to angular leaf spot. This is especially important during periods when the plant is being pushed with nitrogen but with border-line or low potassium uptake, which is highly likely considering the poor root systems and the fertilization methods of many growers. Leaves high in nitrogen and low in potassium, are ideal hosts for angular leaf spots. Where the angular leaf spot bacterium is present, during wind driven rain events on high nitrogen, low potassium leaves, serious outbreaks of angular leaf spot can develop within 48-96 hours after the event. Expect symptoms to develop as leaf spotting, flecking, or severe burn - being worse towards the tips and margins of leaves. Because of the previous wet weather this spring, bacterial populations on the leaf are higher than normal, with the pathogen active as both typical lesions and within lesions associated with other spotting activities on the leaf. Streptomycin sprays (0.5 to 1.0 lbs/100 gallons applied for full coverage) could be very beneficial if applied preventively, but rescue treatments have little value.
Where bacteria are absent and rain is driven into the leaf, a white sheen develops on the leaf where the cuticle and epidermis are pulled away from the leaf. This causes no real damage to the leaf, but can generate much concern for a few days.

**BLACK SHANK** has been slow to develop this year, because the initial-inoculum population was reduced by the colder than normal winter. But, agents from southern and western counties are now reporting activity. Periodically heavy rains developing between dry-weather events, could allow black shank to become a major problem later in the season, especially with the wounded and poor root system present. Remember, the black shank pathogen can complete its life cycle within 48-72 hours, so it has great ability to build high numbers by seasons end. Thus, very damaging levels of black shank could strike quickly. Cultivation and layby applications of Ultra Flourish at 2 qts/A or Ridomil Gold at 1 pt/A should be very helpful in years like this in reducing late season losses if applied in a preventive fashion.

**FIRST BROOD OF TOBACCO HORNWORMS FEEDING**
by Lee Townsend

Some tobacco hornworms can be found in virtually all fields now. This is especially important because there are a lot of small plants that can be completely devoured by these caterpillars. Hornworms do the bulk of their feeding from the time they are 1-1/2" long until they are full grown (about 4”). If control is necessary, treat when most are 1" to 2" long. The effective life of most of the insecticides used at this time is 3 to 7 days. If hornworms happen to be present, then control should be good. However, moth flight lasts for many days and hornworms that escape the treatment can be very damaging. Continue to examine fields at weekly intervals between topping and harvest. Treat when there are 5 or more healthy hornworms per 50 plants. See ENT-15, Insecticide Recommendations for Tobacco.

**CORN**

**LATE CORN MORE PRONE TO INSECT ATTACK**
by Ric Bessin

Another unusual year as usual! Across the state we have substantial amounts of corn in all stages of development from yet to emerge from the ground to shedding pollen. Much of the corn planted in April and early May looks good where the stands are uniform, but some of these fields have been treated for first generation European corn borer. In general, insect problems with corn that was planted during the recommended window is what we would expect in a normal year. But late planted corn will be much more vulnerable to attack by late-season European and southwestern corn borer and fall armyworm. Many growers faced with planting corn in late May and June switched to Bt hybrids to reduce insect losses and improve standability for late harvest.

**European Corn Borer**

Corn borer numbers are variable across the state and even within counties. Some areas have shown very low low count numbers while other traps as little as ten miles away have recorded high first-generation moth flight numbers. Second generation is expected to be heavy in some areas. Early planted corn is more attractive for egg laying and a few fields have been treated. The second generation is poised to begin flight in the next week in the western portion of the state. Generally, after corn has shed pollen, it becomes less attractive for egg laying, so as we move into mid and late July, late planted fields will become preferred for egg laying. We can expect to see late season ECB larvae to be concentrated in the late planted corn. This will likely lead to more harvest losses with the late-harvested corn. Heavily infested fields should be harvested as early as practical, even if the grain needs to be dried.

**Southwestern Corn Borer**

While the overwintering survival of southwestern corn borer was low, this pest has the potential to rebound in numbers by August. Currently, the first-generation larvae are active in the western half of the state. As with ECB, they exploit early planted corn. Moth flight by southwestern is about three weeks behind that of ECB. This means that when the ECB are completing their attack on corn, southwestern larvae are just beginning to feed. Research at the Princeton Research Station has shown that first generation causes little yield loss, but second and third generation can cause severe yield loss to late planted corn. Late planted corn is late harvested corn. Southwestern corn borer begins to girdle stalks at the base in early September and most of the damage is complete by the end of that month. Corn that is not harvested until late September or October is much more prone to harvest losses caused by this pest. As with ECB, identify fields with southwestern problems and harvest them as early as practical.

**Fall Armyworm**

Fall armyworm is one of the corn pests that does not overwinter in Kentucky. It re-invades each summer from overwintering sites in the south. In most years, this insect does not occur early enough in sufficient numbers to cause much concern. However, corn planted very late (read that as June or July) can be destroyed by this pest, particularly as you move farther west in the state. To obtain uniform, heavy, natural infestations of fall armyworm for research purposes I plant corn late. Unlike with the corn borers, corn stages as young as the two leaf are highly attractive for egg laying. This pest prefers to lay eggs on corn on the vegetative growth stages. Attack by fall armyworm results in tattered leaves and clipped whorls. As the larvae get larger, they create and feed below a frass plug in the whorl. This plug limits penetration of insecticide sprays and helps to protect the larvae. For this reason, early identification of
FAW infested fields and their early treatment is important. Pay particular attention to late planted fields that are still in the vegetative growth stages.

While all of the Bt hybrids on the market provide excellent control of ECB and SWCB, fall armyworm control is another matter. YieldGard provides suppression of fall armyworm, but if pressure is severe enough, these hybrids can be heavily damaged. Herculex, while not as widely planted, does provide higher levels of fall armyworm control. Late-planted Bt corn still needs to be monitored for FAW activity.

Adjust Economic Thresholds
I strongly recommend the use of scouting to identify individual fields at risk and economic thresholds to assist with making treatment decisions. When using economic thresholds, realize that yield potential of individual fields is one important factor when estimating the economic threshold. When other factors are constant, fields with high yield potential will have lower economic thresholds that fields with low yield potential. This means that low yielding fields can tolerate more damage than high yield potential fields. Corn planted after May 15 will have reduced yield potential fields planted in April and early May. Corn planted in June may only 50 to 70 percent of the yield potential of earlier planted fields. Economic thresholds will need to be adjusted accordingly in these fields.

**SHADE TREES & ORNAMENTALS**

**FUNGICIDES FOR USE ON ORNAMENTALS - COMMON NAMES AND TRADE NAMES**
by John Hartman

Landscape managers, nurserymen, greenhouse growers, Christmas tree growers, and County Extension Agents occasionally encounter situations where fungicides may be needed for disease management in ornamentals. Fungicide users and plant disease management advisors such as County Extension Agents must pay close attention to the crops for which fungicides are labeled. Most of these fungicides are labeled only for specific ornamentals and hardly any of them are labeled for food or field crops. Too often, we see examples of a fungicide being used on ornamentals in the landscape also used illegally on fruits, vegetables or herbs in the garden. Growers of greenhouse ornamentals with vegetable and herb bedding plants in the same house need to be attentive to the label. Different formulations of the same fungicide may have different plants listed on the label, so pay close attention to avoid liability issues. This list of fungicide products is adapted from a list prepared by Ann Gould, Extension Plant Pathologist at Rutgers University and published in their Plant and Pest Advisory newsletter.

**Antibiotics**
- streptomycin sulfate - Agri-mycin 17.

**Aromatic hydrocarbons**
- etridiazole - Terrazole 35W (nursery and greenhouse only); Truban 30WP, 25EC, 5G.
- quintozene (PCNB) - Defend; Engage 10 G, 75W; Revere WSP, 10 G; Terraclor 75% WP; Terraclor 400; Turfcide 10G, 40G.

**Benzamides**
- flutolanil - Contrast 70 WSP.

**Benzimidazoles**
- thiabendazole - Arbotect 20 S, Mertect 340-F.
- thiophanate-methyl - Cavalier 2G, 4F, 50WSP; Flowable, Cleary’s 3336F, WP, G, GC; Domain; Fungo Flo; Fungo 50 WSB; OHP 1998 4.5F; Systec 1998 4.5F; Tonsin M 70WP, WSB.

**Biological control products**
- Agrobacterium radiobacter, strain 84 - Galltrol-A.
- Ampelomyces quisqualis - AQ 10.
- Gliocladium virens - SoilGard 12G.
- Streptomycyes griseovoides K61 - Mycostop (not for use on landscapes).
- Trichoderma harzianum KRL-AG2 - Rootshield (not for use on landscapes), TopShield, (not for use on landscapes), T-22 Drench (not for use on landscapes).

**Carboximides**
- captan - Captan 50W; Captan 50 Wettable Powder; Captain 80-WP; Captec 4L.
- demethylation (Sterol) Inhibitors.
- fenarimol - Rubigan AS, EC.
- myclobutanil - Eagle WSP (not for greenhouse or nursery use); KGRO; Immunox; Nova 40W (conifer nursery use only); Systhane.
- piperalin - Pipron 2LC (enclosed structures only).
- propiconazole - Alamo (tree injection); Banner Maxx.
- triadimefon - Bayleton 50 T&0 (non-commercial use only); Bayleton 50 DF, 50WSB; Strike 50WDG; Systemic Fungicide 50WSB (non-commercial use only).
- triflumizole - Terraguard 50W (enclosed structures only).
- triforine - Funginex, RosePride Orthenex Insect & Disease Control (outdoor use only) RosePride Funginex Rose & Shrub Disease Control (outdoor use only).

**Dicarboximides**
- iprodione - Chipco 26019; Sextant 2F, 18 Plus.
- vinclozolin - Curalan DF; Ormalin FL; Vorlan DF; Touche 4F, EG (professional use only).

**Dithiocarbamates and ethylenebis dithiocarbamates**
- ferbam - Ferbam Granuflo.
- mancozeb - 4 Flowable Mancozeb, Dithane WF (professional use only); Dithane WF Rainshield (professional use only); Dithane T 10 Rainshield NT (professional use only); Equus 720 (conifers only); Fore FloXL; Fore Rainshield NT (professional use only); Fore WSP; Junction; Mancozeb DG; Maneb.
plus Zinc F4; Manzate 80WP; Penncozeb 75DF (Christmas trees only); Penncozeb 80WP (Christmas trees only); Pentathlon; Pentathlon DF; Protect T/O. mane - Maneb 75DF (commercial use only); Maneb 80WP (commercial use only)
propamocarb hydrochloride - Banol; Banol G; LescoPar. ziram - Ziram 76DF; Ziram Granuflo.

Horticultural oil sprays
neem oil - Triact 90 EC, 70.
paraffinic oil - JMS Stylet-Oil; SunSpray Ultra-Fine Spray Oil; Ultra-Fine Oil.

Hydroxyanilides
fenhexamid - Decree 50WDG (not for use on landscapes).

Inorganics
copper ammonium complex - Copper-Count-N.
copper hydroxide - Champ; Champion wettable powder; Kocide 101m 2000; Nu-Cop 50W, 50DF, 3L.
copper, metallic - Copper-Count-N (professional use only).
copper oxychloride - C-O-C-S WDG; Microperse COC.
copper salts of fatty and rosin acids - Camelot.
copper sulfate - Basicop 50WP; Cuprofix Disperss; Phyton 27.
hydrogen dioxide - ZeroTol.
lime-sulfur - Dormant Disease Control (outdoors only).

phosphonates
fosetyl-Al - Aliette T&O; Chipco Aliette WDG; Prodigy.
Strobilurins (Q1 fungicides)
aoxystrobin - Heritage 50W; Quadris 2.1F (Christmas trees).
kresoxim-methyl - Cygnus 50WDG (commercial use only).
trifloxystrobin - Compass 50WDG.

Soil Fumigants
dichloropropene - Telone C-17; Telone II.
fenamiphos - Nemacur 10% T&O (special use label required).
metam-sodium - Vapam 3.3 EC (soil fumigant).

Combination products
Chlorothalonil + fenarimol - TwoSome $F (not for commercial use).
mancozeb + copper hydroxide - Junction DF (professional use).
mancozeb + myclobutanil - Manhandle.
thiophanate-methyl + chlorothalonil - ConSyst WDG; Spectro 90WDG.
thiophanate-methyl + etridiazole - Banrot 40W, 8G.
thiophanate-methyl + flutolanil SysStar 28 WDG.
thiophanate-methyl + iprodione - Benefit.
thiophanate-methyl + mancozeb - Zyban WSB.
thiophanate-methyl + metalaxyl - Cleary’s DrenchPak.

1 No endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned. Read the label before applying any pesticide.

DUSKY BIRCH SAWFLIES ABUNDANT
by Lee Townsend

Dusky birch sawflies have been actively feeding on birch and samples of this insect have arrived from several counties. The caterpillar-like larvae have shiny black heads and yellowgreen bodies with rows of distinctive black spots. They line up along the edges of leaves and can rear up and appear to strike if disturbed.

While sawfly larvae resemble caterpillars, the adult stage is a type of wasp, not a butterfly or moth. This is an important difference because sawflies are not susceptible to Bt insecticides, which often are a first choice for caterpillar control. A close look will show that sawfly caterpillars have fleshy legs all along the body while caterpillars have them on only a few segments. The sawfly name comes from a blade-like egg laying device on the end of the female’s abdomen. This is used to place eggs inside leaves.

There can be two generations of this insect so watch for a return visit in a few weeks. Sevin is one of the insecticides that can be use for control.

DIAGNOSTIC LAB HIGHLIGHTS
by Julie Beale and Paul Bachi

During the past week we received field crop samples of zinc deficiency and stinkbug injury on corn; Lepto leaf spot and Pythium root rot on alfalfa; brown spot on soybean; barley yellow dwarf virus on oat; blue mold, black shank, soreshin, Pythium root rot, black root rot, frogeye leaf spot,
tomato spotted wilt virus, alfalfa mosaic virus, lightning injury, manganese toxicity and flooding damage on tobacco.

On fruits and vegetables, we saw black rot and Phomopsis blight on grape; downy mildew on blackberry; cedar-apple rust and plum curculio injury on apple; Coccomyces leaf spot on cherry; brown rot on peach; black knot on plum; holcus spot on sweet corn; bacterial wilt on cantaloupe; and anthracnose on cucumber.

On ornamentals and turf, we saw downy mildew on coreopsis; Phyllosticta leaf spot on hydrangea and pear; rosette disease on rose; powdery mildew on dogwood; Septoria leaf spot on planetree; Phytophthora root rot on chestnut; cedar-quince rust on serviceberry; leaf hopper and Cristulariella leaf spot on maple; jumping oak gall on white oak; dollar spot on bentgrass; and brown patch on bluegrass and ryegrass.

INSECT TRAP COUNTS

UKREC, Princeton KY
June 20 - 27

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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.