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TOBACCO

CURRENT BLUE MOLD STATUS
by William Nesmith

A BLUE MOLD ADVISORY REMAINS IN PLACE STATEWIDE, with WATCHES/WARNINGS for large areas of the Commonwealth. ADVISORIES HAVE ALSO BEEN ISSUED FOR SOUTHERN INDIANA, SOUTHERN OHIO AND WESTERN WEST VIRGINIA.

The sudden emergence of damaging levels of disease over a large area of the state/region is still unlikely at this time, because there is not adequate inoculum (spores), many plants are too stressed from other problems to serve as highly susceptible hosts, and leaf surface moisture is not adequate to support much new development.

However, conditions exist in some fields (mainly irrigated crops or areas receiving locally heavy thunderstorms) to support very strong activity, so each grower must assess the risk on a field-by-field basis. Protective fungicide sprays are needed in crops conducive to blue mold development in communities under watches or warnings. Much of the crop set prior to May 20 is too mature to sustain severe losses from blue mold. However, growers need to remain alert to crops set after that date, especially those growing well, with irrigation, and ground suckers.

In many areas of the state, most fields have very low levels of blue mold present, but inoculum could build rapidly for mid-to-late set crops should more conducive weather for disease development return to the area. Dry foliage at night has been the single most limiting factor the past week, reducing new infections and greatly reducing sporulation from the large lesions that were developing from infections of a week or so ago. However, some communities had nightly fogs, which means strong blue mold could continue in those areas.

The level of blue mold activity remains highly variable about the state, and from field to field among the communities with active cases. County Extension Offices will be the best source of information on the status of blue mold and the risk potential within communities.

Status reports by Extension Area or state/region are as follows.

PURCHASE AREA of far western Kentucky: Blue mold has not been reported from this area, but an advisory remains.
PENNYRILE AREA of western Kentucky: A watch exists for all counties, with a warning for Caldwell, Christian and Trigg counties, where it is active on some farms. The disease is also established nearby in Robertson and Montgomery counties of northern western Tennessee. High night temperatures have helped to limit development in the area.
GREEN RIVER AREA of northwestern Kentucky: A watch exists for the area, with a warning for Daviess County where the disease is active, especially on the eastern side of the county. This blue mold is also threatening portions of the Lincoln Trail Extension Area and southern Indiana. High night temperatures are helping to limit development.
MAMMOTH CAVE AREA of southwestern/south central Kentucky: Blue mold has not been reported from this area, but the advisory remains. Logan County is under a watch due to

the activity in neighboring counties of Kentucky and Tennessee. Blue mold has been confirmed in Macon County Tennessee.
LAKE CUMBERLAND AREA of southern Kentucky: An advisory remains for the area with a warning for Pulaski and Wayne counties, which have confirmed cases. Areas near the lake probably are experiencing adequate night moisture to favor development on cool nights.
LINCOLN TRAIL AREA of central Kentucky: It remains under an advisory, but most of the area does not have a threatening source of inoculum nearby. Single-site finds of systemic blue mold were diagnosed weeks ago in Hardin and Marion counties, but sporulation was not found. Plants are susceptible in lush crops, but much of the early crop is beyond the high-risk stage. The watch exists for Breckingridge County due to the activity in eastern Daviess County.
LOUISVILLE AREA is under a watch, with warnings for Henry, Trimble, Shelby and Spencer counties. Some strong centers of activity are occurring, but widespread development is unlikely due to poor plant growth. Early-set crops are beyond the stage for serious damage and most later crops are experiencing drought stress. Portions of this area have received more timely rains, and are at much greater risk than the dry areas. This blue mold is also a threat to southeastern Indiana and southeastern Ohio.
NORTHERN KENTUCKY AREA is under a watch with Boone, Kenton and Owen counties now under a warning due to confirmed cases. Lush tobacco in creek or river bottoms is much more likely to have blue mold than plants on ridgeland sites. This blue mold is also a threat to southeastern Indiana and southeastern Ohio.
FORT HARROD AREA of central Kentucky is under a watch with warnings for Franklin, Garrard, Jessamine, Lincoln, Mercer and Woodford counties where blue mold is active. Strong activity is occurring in some fields, especially with irrigation and morning fog. However, agents report mainly finding hot spots in fields.
BLUEGRASS AREA of central Kentucky is under a watch but counties with confirmed blue mold are under warnings. Active blue mold is being reported from Bourbon, Clark, Estill, Fayette, and Nicholas counties, but low levels of activity are probably present throughout, except for the very dry areas. Potential is highly variable in this region, because the rainfall has been highly variable from community to community. Shady bottom land is at the highest risk, especially where it was irrigated during the drier weather. Some agents report very strong hot spots in irrigated river bottoms, especially in rotated or fumigated sites. Crops rotated from sod often have significant blue mold, even if they have not been irrigated. It is not uncommon to find highly variable development within a field. For example, I visited a field in Clark County on July 18 that had active blue mold (large new lesions, but little sporulation) on every plant that did not have soreshin. If the plant was growing well, it had blue mold and ground suckers were covered with lesions and supporting light sporulation.
LICKING RIVER AREA of north central Kentucky is under a watch because prevailing winds should be sending spores from the Bluegrass, Quicksand, and Wilderness Trail areas into this region, plus several counties have warnings due to active blue mold. The disease has been confirmed in the following counties: Bath, Mason, Montgomery, and Menifee. Disease potential is highly variable in this area because of severe drought conditions. This blue mold is also a threat to southern Ohio and western West Virginia.
NORTHEAST KENTUCKY AREA is under a watch, because prevailing winds will send blue mold spores directly into this area. Drought conditions have greatly limited development, however. Magoffin County is the only county in the area with confirmed blue mold, and that activity was very limited. I suspect the disease is active at very low levels, however, throughout the area.
QUICKSAND AREA of southeastern Kentucky is under a warning, because it has low levels of disease well established over most of the area. The disease has been confirmed in most counties, including: Breathitt, Lee, Owsley, Perry and Wolfe. Dry conditions and poor plant growth are limiting disease on most farms rather than control programs. Blue mold is well established, but damaging levels are rare. It is well positioned to explode with cool and wet weather. The greatest threat is for this region to generate massive inoculum for other regions.
WILDERNESS TRAIL AREA of southeastern Kentucky is under a blue mold watch with warnings for several counties. The disease has been confirmed in the following counties: Clay, Jackson, Knox, and Laurel. Tennessee has confirmed activity nearby in the counties of Cocke,Hawkins, and Washington and it is active in western Virginia (Lee and Washington counties) and several counties of western North Carolina. Blue mold is probably much more widely established than has been reported, but damaging levels are rare except where excellent plant growth is occurring. County agents in this area need to carefully reassess the status and provide current status reports.
SOUTHERN OHIO: Blue mold watch remains due to the confirmed activity in several northern Kentucky counties (from Boone east to Mason).
SOUTHERN INDIANA: Blue mold watch remains due to confirmed blue mold near Owensboro, Kentucky.
SOUTHEASTERN INDIANA: Blue mold watch remains due to confirmed blue mold activity in several Kentucky counties south of the Ohio River (from Shelbyville northeast to Covington). The disease is active in the Ohio River and Kentucky River bottoms on the Kentucky side.
WESTERN WEST VIRGINIA: A blue mold advisory remains due to confirmed blue mold in much of eastern Kentucky. Prevailing winds will send spores into this area.

Foliar fungicide sprays, applied at 5-7 day intervals, are recommended for communities under a watch or warning and all irrigated crops in areas under advisory. Follow label directions as to spray volume, fungicide rate, numbers of applications, nozzle arrangements, and days-to-harvest intervals. Acrobat MZ will be the most effective fungicide. Even in areas under watches or warnings many fields will not warrant sprays, because the tobacco is not growing well enough to economically support the cost of a spray program. Crops with a yield potential under 2500 lbs / A are unlikely to benefit economically from a regular spray program with Acrobat MZ. Exceptions would be crops planted to low plant populations, less than 6000 plants / acre, where very lush growth is present.

SORESHIN CAUSING GREAT DAMAGE IN SOME CROPS AND CONFUSED WITH BLACK SHANK
by William Nesmith

Soreshin, caused by the fungus Rhizoctonia solani, normally does not cause major crop loss in Kentucky's tobacco fields. This year is different, however. Some crops are sustaining great damage, exceeding 50% of the plants dead, yellowed, or severely stunted. Greatest damage is occurring in regions of the state that have also sustained drought, especially in fields where black shank is also present. Frequently, a complex of soreshin and black shank are working together, complicating diagnostic efforts and resulting in considerable confusion about black shank controls. For the most part, black shank controls are not effective if soreshin is also present. Patterns of development within the fields and within communities strongly suggest that there is a connection to transplants in many cases, but the exact nature of the connection is not fully understood. In some fields, it appears infected seedlings were set.

Major epidemics of soreshin like that being observed in central Kentucky this year were reported in 1934 and 1955 from western Kentucky.

SYMPTOMS: The following symptoms are being seen in fields of tobacco that are experiencing great damage from soreshin. Diseased plants first appear lighter green in color and are usually stunted compared to near neighbors. Over a period of several days to weeks these plants turn bright yellow, followed by wilting / drooping in the heat of the day, then they usually die. Most of the roots will be alive on yellowed plants, but stem cankers below the soil line should be evident, often associated with one side of the stem. Stem cankers are usually brown, or not as dark as with black shank. On clay sites the canker often extends into the lower leaves. Splitting the stem should reveal a decayed pith, sometimes with disking but usually not.

Soreshin should not be diagnosed without a microscope and incubation of samples, because the symptoms are too easily confused with those of black shank. Indeed, a complex of the two diseases may be operating. The fungus Rhizoctonia is easily detected with a microscope, especially following incubation. In our Plant Disease Diagnostic Laboratories, all specimens with such symptoms are incubated to determine if the black shank pathogen is also present.

PREDISPOSING FACTORS: Rhizoctonia is present in all soils and competes with Pythium and Fusarium for sites to colonize. Moisture level in the soil environment is significantly involved in which disease develops. Rhizoctonia does best with intermediate levels of soil moisture, while Pythium requires constant moisture and Fusarium favors drier soils. Rhizoctonia also prefers soils that have poor internal drainage, such as heavy clays, because these provide sufficient moisture for the fungus (without favoring Pythium) and stress the host plant due to low oxygen-high CO2 in the root zone.

Soreshin is known to be favored by conditions that stress the plant, causing reduced vigor. Often when infected seedlings are set, a few plants die and others are stunted, but most escape serious problems because the plants 'outgrow' the pathogen. This is why crops in the regions of the state that have received timely rains are not experiencing major problems with soreshin. The patterns of distribution are often as follows: Crops at about the layby stage show considerable irregular growth, highly variable plant heights within the row and between adjacent rows, especially in the wetter areas of the field (low areas, clay knolls, clay slopes, and the edge of field where the plow-furrow has served as a ditch and dam). Symptoms developed most rapidly following the very hot and humid weather of late June, especially in fields under moisture stress just prior to experiencing some moisture followed by very hot weather.

In areas of the field where standing or running water occurred, black shank is frequently involved too; Fusarium basal stem rot was often involved with the complex early while plants were smaller and it is still active in the drier margins of the sore shin-hot spots.

CONTROLS: No practical control measures are known for this disease in the field. There are currently no chemicals registered for management of this disease in transplant production. It is important that the disease(s) be correctly diagnosed, because many people are calling this "the new black shank", resulting in many complaints about failures in the black shank control programs.

SOYBEANS

BEGIN WATCHING FOR GRASSHOPPERS IN SOYBEANS
by Doug Johnson

This is the time of year that grasshoppers begin to make themselves known. Right now most of us are in good shape. That is, we have good growing conditions with plenty of soil moisture. Grasshoppers are most often a problem under dry conditions and it is the late July through August time period that KY can go through a mini-drought.

Dry conditions are associated with grasshopper problems for three reasons. 1. Grasshoppers are normally kept under control by a naturally occurring disease. This disease requires high humidity and or rain fall to work effectively. In the absence of adequate moisture, more hoppers escape the disease and live longer. 2. Dry conditions cause the normal hosts of grasshoppers, e.g. waterways, roadsides, pastures etc to become less desirable food sources and thus the hoppers begin to move to alterate sites (usually our crops). Field crops are generally planted much less densely than grass surrounds and there for will remain greener a bit longer thus attracting the moving hoppers. 3. Though soybeans will tolerate dry conditions for a good long while, when under drought stress they will not put on additional foliage and their progress through the growth stages is slowed. This allows the same amount of grasshopper feeding to do more damage than it normally would.

Certainly the best control for grasshoppers is a good growing

season. However, producers have little control over that! So if the growing season grows more dry, keep your eyes out scouting for grasshoppers. Remember—it is the little ones that cause most of the problems. If you do require a chemical control, recommended products can be found in ENT- 13.

WHEAT

RESULTS OF 1998-99 WHEAT FOLIAR FUNGICIDE TEST
by Don Hershman

Research Objective:
A study was established to evaluate the effectiveness of various labeled foliar fungicide treatments in the management of foliar and head diseases of wheat.

Methods:
The experiment was established at the Research and Education Center in Princeton,
Caldwell County, Kentucky. The test location was in corn during 1998. The soft red winter wheat variety, Clark, was seeded, no-till, on October 14, 1998 at a rate of 40 seed / ft^2. Fungicide treatments were applied when plots heads were 3 / 4 to fully emerged (Feeke's stages 10.4 -10.5) on April 30. At the time of application, about 25% of the F-2 leaves had active speckled leaf blotch (*Septoria tritici*). Fungicides were applied a with CO_2-pressurized backpack sprayer delivering 20 gpa at 40 psi. Fungicides were delivered via a spray boom fitted with flat-fan nozzles. Treatments were replicated four times and were arranged following a randomized complete block design. Plots were 4-ft -wide x 15-ft-long. No insecticides or herbicides were applied to plots. Nitrogen fertility was a split application of 35 lbs actual N per acre applied on February 19, 1999, followed by 70 lbs actual N applied on March 19. Entire plots were harvested on June 15 using a Hege small plot combine. Seed yields were calculated based on a moisture of 13.5% and 60 lbs / bu test weight. Foliar disease ratings were made just prior to the soft dough stage of grain development on May 24, 1999. Ratings were based on a visual estimation of the average percent leaf surface area diseased on ten randomly-selected primary tillers per plot.

Results:
Overall, disease conditions in the test were light throughout most of the season. By late season, modest levels of speckled leaf blotch and leaf rust existed in plots. Glume blotch, caused by *Stagonospora nodorum*, was evident in plots, but levels were extremely low. As a result, glume blotch ratings were not made. All fungicides applied significantly reduced leaf rust on flag and F-1 leaves compared to the control plots. Fungicides also significantly reduced speckled leaf blotch on the F-1 compared to the control. A reduction in the level of speckled leaf blotch was not evident on the flag leaves, but levels were very low even in check plots. There were no significant yield or test weight differences among treatments.

Conclusion:
Under light disease pressure, foliar fungicides may reduce late-season disease development, but yields may not be improved when compared with non-treated wheat. Based on yield alone, all of the treatments resulted in a net economic loss when compared with the non-treated control. A reality is that fungicides will always have to be made well before the time yield damage is sustained by the crop. One of the risks when applying fungicides is that disease may not progress as predicted based on early-season scouting. As a result, a fungicide may be applied when, in fact, one was not needed. This limitation will probably always exist and it must be put in the category of the cost and risk of doing business. Hind-sight is always 20 / 20.

	Disease Ratings						
Treatment and rate per acre	% SLB*		% LR**		Yield	Tst. Wt	Net[1]
	F	F-1	F	F-1	(bu / A)	(lbs / bu)	Return / A
Non-treated	1.6	30.7	2.7	4.2	77.4	56.8	$154.80
Tilt 4E, 4.0 fl oz	0.0	3.9	0.0	0.2	80.3	56.9	145.71
Quadris 2.08SC, 6.2 fl oz + crop oil, 1.0% v / v	0.5	12.8	0.5	0.1	75.7	56.9	131.14
Quadris 2.08SC, 10.8 fl oz + crop oil, 1.0% v / v	0.0	5.6	0.0	0.0	79.8	57.4	128.60
LSD P=0.05	NS	8.6	1.1	2.0	NS	NS	

*Speckled leaf blotch / **Leaf rust
[1]Based on the following chemical costs + $4.25 for application and $2 / bu return on grain: Tilt: $2.66 fl / oz; Quadris: $2.34 / fl oz; Crop oil: $1.50 / A

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VEGETABLES

TOMATO DISEASES APPEARING IN THE HOME VEGETABLE GARDEN
by John Hartman

As tomato plants in home vegetable gardens mature during the season, new diseases appear. Some of these diseases have been introduced to the plants earlier in the season only to become more active as they age. Others only appear on the ripening fruit, which are developing now. Increasing density of plant foliage also provides conditions favorable for infection by plant pathogenic fungi. The following are some tomato diseases emerging now with symptoms to aid in their identification. For home garden disease management suggestions, consult U.K. Cooperative Extension publication ID 128 *Home Vegetable Gardening.*

Early Blight is causing leaves to become spotted, turn yellow, then wither and die. The somewhat circular, brown leaf spots seem to consist of concentric circles giving them a target-shaped appearance. This disease begins on the lowest leaves because the oldest leaves are often slightly nitrogen-deficient and these leaves are more susceptible to disease. In addition, because the lower foliage is most shaded, it is most moist, thus providing the conditions needed for disease development.

Blossom-end rot is causing tomato fruits to have a brown or black decay on the fruit opposite the stem end. Although caused by calcium deficiency, the disease is made worse by fluctuating soil moisture supplies. These fluctuations can be overcome by mulching and timely irrigation. Be sure that tomato-growing soils are properly limed each season. This problem is often limited to the first fruit cluster.

Tomato wilt diseases. There are several tomato wilt diseases appearing now. Affected plants may show yellowing and decline and internal stem tissues may have a brown or dark stain. The stain would appear in xylem tissues just under the "bark" of the tomato stem. This indicates a dysfunctional vascular system, and the causes are quite varied.

- Most commonly, tomato wilt is caused by fungi such as Fusarium or Verticillium inside the stem. However, if "VF" varieties are planted in the garden, other causes need to be investigated. Other causes of wilt include root infections by root knot nematodes, bacterial wilt, or walnut wilt.
- Root knot nematodes produce small eighth-inch to quarter-inch swellings on the roots which can be seen if plants are carefully lifted from the soil. Root-knot resistant varieties are also available.
- Bacterial wilt is less common in home gardens, but might be recognized by a brown decay of the center of the stem, the pith. A related disease, bacterial canker can be recognized by "burning" of the leaf margins and stem cankers.
- Walnut wilt is caused by exposure of the tomato root system to juglone, a toxin given off mainly by roots of black walnut trees. As the tomato plants are wilting, there will be a light brown stain in the vascular tissues. Many home gardeners are unaware that walnut roots are not compatible with tomato growing, and most don't realize just how far those roots can extend out from the tree. Keep tomatoes away from walnuts at least a distance equal to the height of the tree.

CONTROLLING CORN EARWORM IN SWEET CORN
by Ric Bessin

Corn earworm is one of those pests that is with us every year. Some years we have very high levels, others years it is low. Pheromone trap counts over the last several weeks in Lexington and Princeton have indicated low to moderate moth activity in those two areas. But even low to moderate numbers can result in serious tip damage to sweet corn when not managed properly.

Corn earworm is the most serious sweet corn pest because it feeds directly on the market product. Once worms have become established within the ear, control is impossible. Earworms are variable in color, but they have a brown head without markings and numerous microscopic spines covering their body. A preventive program, especially on late season corn, is necessary to ensure that damaged ears are at a minimum.

Female moths search out fresh, green silks on which to lay single eggs. Following hatch, the small larvae begin to feed on the silk. Corn earworms generally complete their development in 14 to 16 days. Full grown worms leave the ear and pupate in the soil. The new adult will be active in another 10 to 14 days.

A preventive program against corn earworms may begin when 10% of the ears are silked. Repeated sprays at three to five day intervals until 90% of the silks have wilted should give a high percentage or worm-free ears during early and mid-season. Control is more difficult late in the season. Even shortening spray intervals may produce only 90% clean ears. Spray solution should be driven deep into the silks. The use of drop nozzles to direct the spray at the middle third of the plant provides the best coverage and control. Corn hybrids having a long, tight-fitting shuck appear to suffer less damage than those with loose shucks.

The following table lists the insecticides registered for control of corn earworm in corn (PHI).

Pyrethroids	Carbamates	Organophosphates	Other
Asana (1) Ambush (1) Baythroid (0) Pounce (1) Warrior (1)	Lannate (0) Larvin (0) Sevin (0)	Diazinon (7)	Bt sprays (0) Endosulfan (1) SpinTor (1)

LAWN AND TURF

UPDATE ON POSSIBLE CAUSES OF "EXPLOSIVE" DOLLAR SPOT
by Paul Vincelli

In late May, I reported about a case of dollar spot on creeping bentgrass with "explosive" growth of aerial mycelium, much like what one sees in an outbreak of Pythium cottony blight. We have completed our tests with isolates of *Sclerotinia homoeocarpa* (the cause of dollar spot) collected from that golf course, and the results are of general interest to the turf industry in Kentucky.

Recent Research Results

Our results indicate that isolates of *S. homoeocarpa* with reduced sensitivity to DMI fungicides were present at this site in Woodford County. The DMI fungicides include Banner MAXX, Bayleton, Eagle, Rubigan, and Sentinel. I reached this conclusion by growing isolates in culture on potato dextrose agar amended or not amended with triadimefon, the active ingredient in Bayleton. As controls, we compared the sensitivity of the test isolates to a set of isolates collected from a creeping bentgrass sward at the UK Turf Center that had never been exposed to DMI fungicides. The results are presented in Table 1. This is the third golf course in central Kentucky where we have confirmed reduced sensitivity to DMI fungicides in *S. homoeocarpa*.

In addition to the reduced DMI sensitivity we detected, one can see that the growth rates of the Woodford County isolates in culture clearly are no greater than those of the control isolates (Table 1). Thus, the "explosive" growth of aerial mycelium we observed in late May was not due to a greater inherent growth rate in these Woodford County isolates.

We also tested the aggressiveness of the isolates by inoculating perennial ryegrass plants. Although the outbreak was observed on creeping bentgrass, perennial ryegrass is also a susceptible host to dollar spot and is much easier to work with under our laboratory conditions. Furthermore, I know of no research suggesting that we should expect a substantial "host by isolate" interaction among isolates of dollar spot. Thus, I expect that this test provides a reasonable assessment of the level of aggressiveness of these isolates on cool-season grasses in general.

We found that the Woodford County isolates were equal in aggressiveness to one of the control isolates and somewhat more aggressive than the other (Table 2). My overall interpretation of these results is that we did not find differences in aggressiveness in the Woodford County isolates that would account for the explosive outbreak observed at that golf course.

So what might be the cause of the "explosive" disease activity observed?

There are quite a few research reports showing enhanced dollar spot levels from applications of Heritage fungicide, ranging from 10-15% increases to much higher levels. For the record, enhancement of non-target diseases has been observed with other fungicides, such as enhanced dollar spot by Prostar, so this phenomenon is certainly not unique to Heritage. We also know that Heritage fungicide will significantly enhance mycelial activity of *S. homoeocarpa* on creeping bentgrass under field conditions. In a test published in the journal, *Fungicide and Nematicide Tests*, I reported dramatic enhancement of mycelial activity of *S. homoeocarpa* under weather conditions that caused a decline in activity in all other treatments.

The superintendent at the Woodford County golf course had been using Heritage prior to the dollar spot outbreak, so it makes sense that Heritage was involved. What is unique about the Woodford County outbreak, however, is the sheer volume of *S. homoeocarpa* mycelium that both the superintendent and I observed after overnight dew periods. It looked just like a Pythium outbreak. I had never seen anything like it before. This is conjecture, but given our research to date, I think it is reasonable to conclude that Heritage fungicide was a principal factor involved in this "explosive" dollar spot outbreak in Central Kentucky.

My assessment of the research with Heritage is that it is the best product available for brown patch and anthracnose. It also is the product of choice for periods of high disease pressure from gray leaf spot. But users of Heritage need to be aware of this issue of enhanced dollar spot. Anything that enhances dollar spot increases the risk of resistance to fungicides used to control this disease, particularly the DMI fungicides (listed above) and the dicarboximide fungicides like Chipco 26GT, Curalan, etc.

Thus, when using Heritage during weather conditions that are conducive to dollar spot: 1. Apply control measures for dollar spot, and, 2. Practice sound fungicide-resistance management practices. These include such strategies as not relying heavily on one mode of action for dollar spot control (such as the DMI's or dicarboximide); and using appropriate cultural practices for dollar spot control, such as removing morning leaf wetness and maintaining adequate nitrogen rates.

Table 1. Reduced Sensitivity of *Sclerotinia homoeocarpa* to Triadimefon at a Woodford County Golf Course

Isolate[a]	0.1 ppm triadimdfon	Radial growth (cm / day)[b]	Reduction on radial growth (%)
UK 1	no	114 b	–
UK 1	yes	24 f	79
UK 2	no	122 a	–
UK 2	yes	25 f	80
WC 1	no	114 b	–
WC 1	yes	75 d	34
WC 2	no	101 c	–
WC 2	yes	60 e	41

[a] "UK" isolates collected from UK Turf Center, "WC" isolates from a golf course in Woodford County.
[b] Means followed by the same letter are not significantly different (Waller-Duncan test, k = 100, p = 0.05).

Table 2. Aggressiveness of Isolates of *Sclerotinia homoeocarpa* on

Perennial ryegrass.

Isolate[a]	% of tillers infected
UK 1	29 b
UK 2	32 ab
WC 1	39 a
WC 2	39 a
Uninoculated	2 c

[a] "UKisolates collected from UK Turf Center, "WC" isolates from a golf course in Woodford County.
[b] Means followed by the same letter are not significantly different (Waller-Duncan test, k = 100, p = 0.05).

PREVENTIVE SPRAYS SHOULD BEGIN SOON FOR GRAY LEAF SPOT
by Paul Vincelli

I have been in communication with a variety of turfgrass pathologists east of the Rocky Mountains, and to my knowledge, ryegrass-infecting strains of *Pyricularia grisea*, the cause of gray leaf spot, have not been detected anywhere as of last week, the week beginning Monday, July 12. However, in Kentucky, we are approaching the time when the risk of rapid disease activity (=logarithmic disease increase) is possible. Given the recent history of this disease, we do not expect logarithmic disease increase until the first week of August or later in Kentucky. However, disease activity starts at low levels prior to this, and I expect to begin to detect the disease during the last ten days of July in our area.

Thus, preventive spray programs are advisable on high-maintenance perennial ryegrass in Kentucky. Last week I gave a brief overview of fungicidal control, but this week I'll fill in some details.

A recommended program would begin with a 1-2 sprays of Daconil Ultrex starting this week, especially given the forecasted period of hot, humid weather that is expected over the next few days. Such weather would be very favorable for gray leaf spot development. Daconil Ultrex is a relatively low-cost "Tier II" product that gives good control during low to moderate disease pressure, which is all we are likely to see in the early phase of this disease. Other Tier II products include other well-formulated chlorothalonil products, Banner MAXX, and Sentinel.

One or two sprays of a Tier I product is advisable under the period when logarithmic disease increase is possible. Thus, an application of Heritage or Cleary's 3336 sometime around the first week of August is wise. Use of Tier I products through the first or second week of September is probably advisable, especially if we continue to have a warm to hot summer. Use them wisely relative to the risk of fungicide resistance: overuse of Tier I products is bound to lead to fungicide resistance by *Pyricularia grisea*, a fungus which is very variable genetically and highly adaptable to new control tactics. Don't overuse either one of these products, and tank-mixing with a chlorothalonil would also be wise, although that admittedly adds even more cost to an already costly spray program.

One or more follow-up sprays with a Tier II product for any residual disease activity is recommended, depending on weather conditions and the level of disease pressure preceding that time.

When overseeding, seedlings sometimes need to be protected from the disease during hot weather in late September, since seedlings are very susceptible to the disease.

HOUSEHOLD

ELIMINATING WASP AND HORNET NESTS
By Mike Potter

Wasp stings are a serious health threat to humans and animals. Hundreds (perhaps thousands) of people in the United States die each year from allergic reactions to the venom of these insects. Paper wasps, hornets and yellowjackets are more dangerous and unpredictable than honey bees. Workers foraging away from the nest are seldom aggressive, but nests should be eliminated with great care and in a specific manner. "Folk" remedies, such as dousing nests with gasoline or a garden hose, seldom work and can result in multiple stings.

Paper Wasps - Paper wasps (as well as hornets and yellowjackets) construct nests of a paper-like material containing finely chewed wood fragments and salivary secretions of the wasps. Paper wasps typically build their umbrella-shaped nests under eaves and ledges. These brownish wasps are not as aggressive as yellowjackets or hornets, and can be eliminated rather easily with a wasp and hornet spray sold at most retail stores. One advantage of these formulations is that they can be sprayed as far as 20 feet.

Although it is best to treat all wasps at night, paper wasps can be eliminated during the daytime *provided you do not stand directly below the nest during treatment.* Most wasp sprays cause insects to drop instantly. Standing directly under a nest increases the risk of being stung. After treatment, wait a day to ensure that the colony is destroyed, then scrape or knock down the nest.

Hornets - Hornets are far more difficult and dangerous to control than paper wasps. The nests resemble a large, gray, bloated football, which typically is attached to a tree, bush or side of a building. Hornet nests may contain thousands of wasps which are extremely aggressive when disturbed. The nests are often located out of reach and removal is best accomplished by a professional pest control firm.

Treat hornet nests at night when most insects are within the nest and the colony is less active. A full wasp suit, sealed at the wrists, ankles and collar, is recommended. Apply an aerosol-type wasp and hornet spray, or dust formulation (Sevin,

Ficam, Drione, DeltaDust) directly into the nest opening. Hornet nests generally have a single opening, usually toward the bottom, where the wasps enter and exit. *It is crucial that the paper envelope of the nest not be broken during treatment or the irritated wasps will scatter in all directions, causing even greater problems.* Following treatment, wait at least 2-3 days before removing the nest to ensure that all of the wasps are killed. If hornets continue to be seen, the application may need to be repeated.

If the nest is located away from frequently used areas, another option is to wait and do nothing. In Kentucky, wasp, hornet, yellowjacket, and bumble bee colonies die naturally after the weather turns cold, and the paper carton disintegrates over the winter months.

Yellowjackets - Yellowjackets are probably the most dangerous stinging insects in the United States. They tend to be unpredictable and usually will sting if the nest is disturbed.

Yellowjacket nests are often located underground in old rodent burrows or beneath rocks or landscape timbers. Yellowjackets also build nests in walls, attics, crawlspaces, and behind the siding of buildings. If the nest can be located, it often can be eliminated by applying an aerosol-type wasp and hornet spray into the nest opening. Insecticide dust formulations containing Sevin (sold in lawn and garden shops), DeltaDust, Ficam or Drione, are especially effective but require a handduster to dispense several puffs of the dust into the nest opening. In lieu of a commercial duster, a workable alternative is to use a dry, empty liquid detergent bottle filled with a few inches of dust. A few pebbles or marbles added to the bottom prevents the dust from caking, and the bottle should be shaken before dispensing. (Remember to dispose of the bottle after use or store it away from children and pets.)

Dusts tend to be more effective than aerosols when the nest itself is located some distance from the entrance hole – as often occurs when yellowjackets construct nests behind house siding or deep within abandoned animal burrows. Insecticide dust blown into the opening penetrates further than sprays, and is also carried throughout the nest on the bodies of the workers.

Treatment should be performed at night, when most of the yellowjackets are in the nest and less active. Pinpoint the nest opening during the daytime, so you will remember where to direct your treatment after dark. Approach the nest slowly and do not shine the beam of your flashlight directly into the nest entrance as this may startle the wasps; instead, cast the beam to the side to illuminate the nest indirectly. If possible, place the light on the ground rather than in your hand. Yellowjackets are extremely aggressive when the nest is disturbed. As with hornets, it's often prudent to refer homeowners to a professional, particularly when access to the nest is difficult.

Wasp, hornet and yellowjacket stings can be life-threatening to persons who are allergic to the venom. People who develop hives, dizziness, difficulty breathing or swallowing, wheezing, or similar symptoms of allergic reaction should seek medical attention immediately. Itching, pain, and localized swelling can be reduced with antihistamines and an ice pack.

DIAGNOSTIC LAB - HIGHLIGHTS

by Julie Beale

Last week's diagnoses of field crops included nutritional problems (Mn toxicity and K deficiency), compaction and rootworm damage on corn; gray leaf spot on millet; Fusarium and Rhizoctonia root rots on soybean; and Rhizoctonia stem canker and common leaf spot on alfalfa. On tobacco we are still seeing many lower stem diseases--soreshin, black shank and Fusarium basal stem rot--often in a complex (see Dr. Nesmith's article in this issue of KPN). Also on tobacco were blue mold, brown spot, frogeye leaf spot, target spot, stinkbug injury, soil compaction and nutritional problems.

On fruits we have seen black root (Rhizoctonia) and Mycosphaerella leaf spot on strawberry; brown rot and scab on peach; Sphaerulina leaf spot on raspberry; and Coccomyces leaf spot on cherry. On vegetables we have seen bacterial wilt on melon and bacterial crown rot on rhubarb.

On ornamentals we have seen southern blight on hosta; charcoal rot and Rhizoctonia stem rot on veronica; brown patch and summer patch on turfgrass; and powdery mildew on dogwood.

INSECT TRAP COUNTS

UKREC, Princeton, KY, July 9-16

European corn borer	28
Corn earworm	3
True armyworm	15
Southwestern corn borer	552

Tennessee - July 9 Southwestern corn borer

Crockett County	62
Shelby County	51
Weakley County	8

Lee Townsend, Extension Entomologist