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TOBACCO

CURRENT BLUE MOLD STATUS
By William Nesmith

Blue Mold Warning for the following Kentucky Extension Areas: Bluegrass, Ft. Harrod, Licking River, and Northeast Kentucky. A warning means the disease is active and expected conditions should favor continued and increasing activity in the warning area.

Blue Mold Watch for the following Kentucky Extension Areas: Lake Cumberland, Lincoln Trail, Mammoth Cave, Louisville, Northern Kentucky, Quicksand, and Wilderness Trail. A watch also has been issued for Southern Ohio, Southeastern Indiana, and western West Virginia.. A watch means that conditions are favorable for the disease to develop and a source of viable spores is believed to be impacting the area under the watch.

Blue mold has become established over much of eastern and northern Kentucky, and extending into southern Ohio. The activity is mainly at low levels, but some strong activity is also present. Foliar lesions and blighting range from small fleck-like spots to large lesions the size of a quarter or larger. Some fields have damage with as much as 20-40% leaf surface spotted/blighted. Systemic infections of the leaf veins and stems have also occurred. The pathogen has been spread via airborne spores and transplant borne means, some spread over a month ago, and both means continue to operate currently. I suspect blue mold can be found in about all counties east of Interstate Highway 65, based on survey data and the few samples submitted to the lab.

The disease is now positioned such that a damaging epidemics of foliar blue mold could develop immediately in crops with closed or closing canopies. Rapid growth has made plants very susceptible to infections and to being seriously damaged when infections occur. The cool weather recently experienced should result in large lesions, heavy sporulation, and systemic development. Temperatures are expected to be higher over the next few days, but not high enough to check the disease in the eastern and northern regions of Kentucky.

Blue mold is present in fields, traditional plant beds, float beds, and greenhouses, and it is moving in locally-grown transplants. The most active and damaging cases are associated with sites of fast-growing tobacco in river/creek bottoms or sinks where cooler and wetter conditions occur at night. The strong association with shade from the west side of the fields/site observed last week is disappearing, probably because of the cooler temperatures and more closed canopy. A few cases of serious damage

to ridge fields is now being reported. Also, a few very damaging cases of systemic blue mold have involved the recent setting of infected transplants. The affected crops are just sitting there while healthy crops are growing rapidly.

In west central Kentucky, several cases involved very low levels of systemic blue mold in crops set in early to mid May. Based on the symptoms currently present, infections occurred before transplanting or soon afterwards. Since some of these fields of systemic blue mold involved tobacco now approaching the topping stage, infections probably occurred 45-60 days ago. Look for plants that are lighter in color to yellow, stunted, or breaking (with the breaks near but usually above the soil line). The systemic infection cannot be seen until the lower stem is cut at a leaf position. Such plants may also have soreshin or other diseases moving into the stem and roots, and several other diseases can cause similar effects. The evidence of old infections supports the hypothesis that blue mold became established in west central Kentucky in early May, probably as we had advised in our reports of early May and later. The cooler temperatures and recent rains in south central Kentucky may support a significant increase in new blue mold activity, but resulting from new cycles of the disease developing from this old activity. These outbreaks probably also contributed inoculum to central and north-central Kentucky.

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

PURCHASE AREA of far western Kentucky: Aware of no reason or evidence to suspect blue mold.
PENNYRILE AREA of western Kentucky: Aware of no reason or evidence to suspect blue mold.
GREEN RIVER AREA of northwestern Kentucky: Aware of no reason or evidence to suspect blue mold.
MAMMOTH CAVE AREA of southwestern/south-central Kentucky: This area is under a Blue Mold Watch. Blue mold has been confirmed in the counties of: Allen, Barren, and Simpson. The disease has probably been active at very low levels in this area since early to mid May.
LAKE CUMBERLAND AREA of southern Kentucky: A Blue Mold Watch has been issued with confirmed activity in Pulaski and Wayne counties.
LINCOLN TRAIL AREA of central and west-central Kentucky: The eastern portion of this area is under a Blue Mold Watch. Blue mold has been confirmed in the counties of Larue, Nelson, and Washington counties, mainly in river bottoms.
LOUISVILLE AREA: Blue Mold Watch was posted because the disease is present on the southern approaches and east of this area, plus low levels of new activity have been confirmed in Shelby County. Winds associated with low pressure systems last week probably introduced viable spores into the area from areas to the south and east.
NORTHERN KENTUCKY AREA: A Blue Mold Watch was posted last week and the disease was recently confirmed in the counties of Grant, and Pendleton, but it is probably present in others. Lush tobacco in creek or river bottoms is much more likely to have blue mold than ridge-land sites.
FORT HARROD AREA of central Kentucky: It is under Blue Mold Warning with confirmed activity in the following counties: Anderson, Franklin, Garrard, Jessamine, Lincoln, Mercer and Woodford. The disease is active at very low levels in most communities, with isolated cases of light to moderate activity in shady creek or river bottoms. Some very strong cases have been found in old plant beds.
BLUEGRASS AREA of central Kentucky: This area is under a Blue Mold Warning with confirmed cases in all counties, including: Bourbon, Clark, Estill, Fayette, Harrison, Madison, Nicholas, Powell and Scott. The activity level is mostly low, but some cases of strong and damaging activity are occurring. The potential for damaging activity is high due to an abundance of vigorous tobacco situated in foggy pockets of sinks, creek, and river bottoms.
LICKING RIVER AREA of north central Kentucky: This area is under a Blue Mold Warning because prevailing winds should continue to send spores from the Bluegrass, Quicksand, and Wilderness Trail areas into this region, plus several sites of strong activity are present within. The disease has been confirmed in the following counties: Bath, Bracken, Fleming, Lewis, Mason, Menifee, Montgomery, Morgan, Robertson and Rowan. Disease potential is highly variable, but lush crops in low areas are highly vulnerable. Infected transplants are moving about this area and into others. This region's blue mold is also a threat to southern Ohio and western West Virginia.
NORTHEAST KENTUCKY AREA: This areas is under a Blue Mold Warning, because blue mold is present and prevailing winds will send blue mold spores directly into this area. Some areas have received significant and frequent rains. The disease has been confirmed in the counties of: Carter, Elliott, Greenup, and Magoffin, All reported activity is new, but it is increasing rapidly in cool, wet sites. The region could sustain serious damage quickly, because all other activity in the state and region are sending spores into this area, plus, cooler temperatures prevail favoring systemic blue mold, and the crop is young and highly susceptible to systemic infections.
QUICKSAND AREA of southeastern Kentucky: This area is under a Blue Mold Watch, but local agents may be putting individual counties under warnings. There is probably a lot more blue mold in the area than has been reported. The disease has been confirmed in most counties, including: Breathitt, Lee, Owsley, Perry and Wolfe. Growers in this region are unlikely to use preventive fungicides, so the region could generate significant spore load as at the disease builds. The host plant is not growing well in some crops with blue mold due to flooding of the root systems due to frequent and heavy rain.
WILDERNESS TRAIL AREA of southeastern

Kentucky: It is under a blue mold watch with warnings. The disease has been confirmed in the following counties: Clay, Jackson, Laurel, and Rockcastle. All cases have been found through survey, so the level of activity has not become sufficiently high to get the attention of growers and agents. This area is situated due north of strong activity in Tennessee and weather conditions have been favorable for infections. I suspect there may be a lot of blue mold in this region.

WESTERN WEST VIRGINIA: No activity has been reported from this region, but similar weather is occurring to that in eastern Kentucky, plus it is in the direct path to be receiving spores from the outbreaks in Kentucky. Consequently, I have issued a Blue Mold Watch.

SOUTHERN OHIO: This area has not reported blue mold but should be receiving spores from Kentucky. Thus, I have issued a Blue Mold Watch.

SOUTHERN EASTERN INDIANA: Spores should have blown into this area last week from central Kentucky. Thus I have posted a Blue Mold watch.

Eastern Tennessee, western North Carolina, and western Virginia also have active blue mold in burley tobacco. New activity has been reported in Canada, Pennsylvania, and the Connecticut Valley.

Control Efforts:

During a Watch or Warning, controls should be put in place. The following controls are needed in the Watch/Warning areas.

Transplant Operations: DESTROY IMMEDIATELY ALL TRANSPLANTS NOT TO BE USED FOR TRANSPLANTING. Preventive fungicide sprays (Ferbam or Dithane) made at weekly intervals should be maintained in all transplant production systems to aid in the control of fungal diseases including blue mold. It is important to eliminate all transplants that are not needed. Overlapping of transplant production and field production is a key factor in blue mold development. Holding transplants is an excellent way to get things started, especially during seasons when the blue mold potential has been very low and the greatest threat comes from airborne inoculum arriving from flue-cured epidemics - just what we are seeing now.

Consider the following concerning transplants in the rest of Kentucky.

1. Keep all surplus plants sprayed weekly with fungicides - Ferbam or Dithane.
2. Any plants not sprayed within the past 7 days should be destroyed - killed.
3. Move the surplus transplants to the communities where they are needed, so that the overlap and risk are in the community with the need for plants rather than those without the need. However, never move transplants from a watch/warning area to other tobacco producing areas of the state or nation.

Fields: Foliar fungicide sprays made at this time can greatly reduce the potential for blue mold building up in the field. While the level of activity is low and the leaves in the lower portions of the plant can be easily reached, fungicide applications with Acrobat MZ will eliminate blue mold. The systemic aspect of this fungicide makes it especially valuable in blue mold control early in the epidemic. Preventive field applications of fungicides are especially needed at this time for sites set with highly susceptible varieties in foggy sites, especially those in rotated land (due to superior growth potential) and creek or river bottoms. Use Acrobat MZ at 2.5 lbs /100 gallons of water, adjusting the concentration and volume of fungicide to the stage of growth, according to the label. Repeat the applications at weekly intervals. Timely topping and sucker control should be practiced to aid in blue mold control.

FOLIAR CHEMICAL OPTIONS LABELED FOR TOBACCO DISEASES IN THE FIELD - 2000 SEASON
by William Nesmith

Few fungicides and bactericides are labeled for foliar use in tobacco fields in Kentucky. The following options are available for the 2000 season:

Tobacco field plantings

Streptomycin 17-21% @ 0.5 to 1.0 lbs/ 100 gallons of water is labeled for control of angular leaf spot and wildfire under a national label. Rarely is this material needed in the field, but if serious levels of angular leaf spot persist, then control can be achieved in most cases with streptomycin. If the disease is active at the time of the application, make the first spray at 1.0 lbs/ 100 gallons then shift to lower rates until control has been achieved. These sprays may be repeated at 5 to 7 day intervals. For best results, make these applications late in the day or at night. Streptomycin is also labeled for control of blue mold, but we have had limited success in the lab and field against current isolates of blue mold using Streptomycin.

Acrobat MZ @ 2.5 lbs/100 gallons/acre (volume adjusted for stage of growth) is labeled under a state label (24c). Application can be made on a 5-7 day spray schedule, once advisories have been issued, but applications should be discontinued when and if the threat of blue mold subsides. The label must be in the possession of the USER at the time of fungicide application. Sprays should be applied by ground-operated, high-pressure sprayers in a preventive manner only. Up to 8 applications can be made per crop, but the limit is 10 lbs/field/season, and with no more than 2.5 lbs/acre per application. No application should be made within 30 days of harvest. When being used in a weekly spray schedule, this fungicide will also provide significant control of frogeye leaf

spot, brown spot and ragged leaf spot, but it is not specifically labeled for these. It has not proven effective in the control of target spot in the field, however.

The state label authorizing use of Dithane DF in the field has expired, as of June 16, 2000. However, product still available with the old state label can be used. The old label allowed use at 1.5-2.0 lbs/100 gallons of water for weekly foliar sprays to control blue mold. To be effective, the fungicide mixture must be applied to achieve complete coverage of the plant's foliage. Sprays should be discontinued when the treat of blue mold no longer exists. No applications should be made within 30 days of harvest.

Acrobat MZ contains the active ingredient in Dithane plus a systemic compound, dimethomorph. In side by side studies with Acrobat MZ and Dithane DF using high pressure sprayers, Acrobat MZ is the superior product, highly superior when strong disease pressure is present and the disease is going systemic in the lower stem. In tests conducted with poor spray coverage, such as low pressure and poor nozzles, both chemicals perform poorly under strong disease pressure. When disease pressure is low and the canopy is open, Dithane DF and Acrobat MZ perform equally well, if the disease is not going systemic (confined to local lesions).

Several have called about the status of Actigard and Quadris. Although efforts are underway to labeled them, neither fungicide has been labeled on tobacco as of July 1, 2000. The owners of these two fungicides are in the process of merging into one company, so the labeling status and outcome are probably tied up in administrative actions.

APPETITES STILL LARGE FOR TOBACCO APHIDS AND HORNWORMS
by Lee Townsend

Tobacco fields treated with Admire as a transplant water application or tray drench should still have very good tobacco aphid control. However, aphid numbers may building rapidly in fields that did not receive a preventive treatment. Untreated tobacco set May 22 in Fayette county has significant aphid numbers, their levels are high enough to affect expansion of bud leaves. Treatment applied now should be targeted to protect expanding leaves at the top of the plant. Don't expect too much control of aphids on mid-level leaves; they will be protected from the spray .

Tobacco and tomato hornworms are getting fat. Watch for feeding injury in the upper third of the plant.

CORN

CORN INSECT UPDATE
by Ric Bessin

With the onset of July and August, producers need to manage the midsummer pests of field corn. This includes the corn borer, fall armyworm, and Japanese beetle. Problems with these pests will be determined, in part, by planting date of the fields. Generally, later plantings have more problems with these pests.

Moths from the first generation European corn borer are now active and larvae from the second generation will become active soon. Typically, early planted fields have more problems with the first generation and later plantings with the second generation. Many producers who were in a late planting situation have used Bt corn to avoid these late season problems. While many producers do not have the equipment to treat tasseled corn, heavily infested fields should be identified for the earliest possible harvest. Southwestern corn borer is lagging behind European corn borer, and moth flight can be expected in the next few weeks.

Fall armyworm can be a serious problem with corn that is still in the whorl stage at this time. These are the late plantings. This insect can be difficult to control if the larvae are much larger than 1/2", so monitoring and early control are critical. Many producers that found themselves in a late planting situation used Bt corn to avoid problems with late season corn borers. However, some of the Bt corn types do not provide any fall armyworm control, others only provide moderate control. Late planted fields need to be monitored for this pest, even if they are Bt corn.

Japanese beetles are causing more problems in the western part of the state. If corn silking coincides with peak beetle activity, silk clipping by the beetles has the potential of interfering with pollination. However, more commonly the silk clipping occurs after pollination and little damage is done by the beetles. Additionally, problems with the beetles are much more severe on the outside rows of the field with few beetles feeding on interior plants. Before treating for Japanese beetles, producers need to evaluate whether or not pollination has already occurred and if the entire field needs to be treated or only the field margin needs treatment.

SOYBEAN

SOYBEAN CYST NEMATODE INFESTATIONS OFTEN HIDDEN
by Don Hershman

Most grain producers are well aware of the concept that disease organisms induce diseases in plants, and that each disease is associated with the expression of one or more symptoms. In fact, it is almost always the symptoms which alert the producer that all is not "right" in any given crop. In soybeans, most disease

organisms produce more or less distinctive symptoms that make field diagnosis rather easy. This is especially true for diseases cause by fungi. In contrast, symptoms resulting from infection by viruses are the least distinctive and definitive field identification is usually not possible.

As familiar as producers are with the disease - symptom connection, the concept that a disease organism may severely damage a plant, without visible symptoms being produced, is foreign to most of them. Admittedly, this situation is rather rare. Most of the time when a crop is going to have significantly reduced yields, you will know it by the poor overall appearance of the crop. However, this is not usually the case when Soybean Cyst Nematode (SCN) is involved. The bottom line is that although SCN infections can produce specific and severe symptoms, most of the time, especially in a vigorously-growing crop, symptom expression is minimal, even when yields are reduced by 30 or more percent. This is a fairly unique situation, as far as diseases are concerned, and it is one reason why producers are often unaware of the fact that their crops are being severely damaged by SCN.

"How can the above situation occur ?" is a question I often hear. Here is the explanation: SCN male and female juveniles penetrate plant roots and, after mating, the males leave the root and females migrate to feeding sites within the root. The penetration and movement of SCN juveniles into and within roots, respectively, as well as feeding activities and development of female cyst nematodes disrupt water and nutrient uptake by the plant. This disruption affects the growth and development of plants, both above ground and below ground. But as long as nutrient and water supplies are not limiting, plants will respond primarily by producing fewer seed. Basically, the biochemical and physiological process that relate to and result in crop yield determination are affected. If you had a side-by-side comparison available with a healthy crop you and a time-lapsed movie, you would see how this happens. Affected plants will grow slower, canopy closure will be delayed (resulting in weed competition and increased soil water loss), plant root and shoot systems will be reduced (i.e., stunted), net food productivity by plant foliage will be reduced, flower numbers will be reduced and pod abortion will be increased compared to healthy plants. All of these "symptoms" result in lower crop yields, but few of these symptoms would be detected during a casual or even comprehensive field examination.

The main point is to not assume that your soybean fields are as productive as they can be just because the plants look healthy. Unless you know for a fact that a field is not infested by SCN, we recommend you begin to test for SCN on your farm. For a variety of different reasons, the fall is a good time to sample fields and assess where you stand in regards to farm-wide SCN infestation. Place a priority on fields that will be in soybean next season. If you decide to take samples from poor looking or poor yielding soybean crops this season, be advised that those efforts will only confirm the presence or absence of SCN in a field. However, a sample taken in the fall will allow you to develop an effective, comprehensive, and long term SCN management program. For more information about sampling fields for SCN analysis, contact your local county Extension office.

FORAGE CROPS

RESULTS FROM ADAIR COUNTY SCLEROTINIA TRIAL IN ALFALFA

by Paul Vincelli, Extension Plant Pathologist
Jimmy Henning, Extension Forage Agronomist
David Herbst, Extension Agriculture Agent, Adair County

Sclerotinia crown and stem rot of alfalfa is a significant limiting factor for successful late-summer seeding of alfalfa throughout the state. While alfalfa fields are successfully fall-seeded in many instances, dramatic outbreaks occur frequently enough that some producers avoid fall-seeding entirely. Factors that increase risk of this disease include: known history of the disease; no-till seeding; and late seeding (particularly after Labor Day).

This disease has been a frustrating one to work on. Essentially everything we at UK have tested in our research program has failed to provide any increment of disease control, except the use of experimental, unlabeled fungicides. Thus, any research data showing some promise for giving even partial control of this disease gets our attention. Any incremental improvement against this disease would be welcome. After all, such practices as early seeding do just that–give plants more time to develop some degree of partial resistance.

Several currently available alfalfa varieties – Interceptor, DK141, Cimarron VR, WL 332 SR -- are reported to have partial resistance to Sclerotinia crown and stem rot (SCSR). Let us stress the term PARTIAL resistance. No claims are made that these varieties will prevent the disease, nor that they will hold up under severe disease pressure. However, as stated above, we are interested in any possible increase in resistance against this difficult-to-control disease. Varieties with partial resistance have performed well in tests in certain other states but typically have performed very poorly in UK tests. Our interpretation of the research is that disease pressure is particularly high in Kentucky.

Adair County Test
In 1996, an experiment was initiated under commercial conditions in Adair County to evaluate three varieties: Cimarron VR and WL 332 (both reported to have partial resistance to SCSR) and

Fortress (a susceptible but otherwise high-yielding variety). The field was in no-till corn in 1995 and a red clover/orchardgrass pasture prior to that. Roundup at 1 qt/A was applied as a burndown. Replicated plots were seeded no-till on 23 Sep 96 at 18 lb seed/A; plots were separated by orchardgrass strips. A uniform, vigorous stand was established in autumn, 1996.

On 6 May 97, with about 8-10" of height on surviving alfalfa, percent ground cover was estimated visually at various locations in each plot. The presence of sclerotia on dead plants confirmed the cause of the stand loss. The plots were revisited twice in April, 2000, and additional data on stand health were collected.

Results

Weather was favorable for Sclerotinia activity for much of the autumn and winter following seeding. Based on stand survival, disease pressure was moderately severe to severe throughout the field, resulting in very poor ground cover in all three varieties (Table 1). Varieties tested did not differ significantly in % ground cover during the first spring following a moderately severe outbreak of SCSR. Variability in response was extreme, probably a reflection of variation in disease pressure in the field.

Since that initial assessment, substantial recovery and plant compensation occurred in the plots, and acceptable stands developed in some plots. Cimarron VR, a variety marketed as having moderate resistance to SCSR, provided a modest but statistically significant improvement in ground cover over Fortress, the susceptible check, in April 2000. This is the first time we have seen statistically significant improvement in plant health from SCSR-resistant varieties in a UK research trial. Note that, even in Cimarron VR, there was still incomplete alfalfa ground cover three years after the initial outbreak. Clearly the disease can have long-lasting impacts even in varieties with partial resistance.

WL 332 SR, a variety marketed as being Sclerotinia-resistant, showed no significant improvement in ground cover over the susceptible check. We have tested this variety twice with similar results. WL332 SR undoubtedly has some genes for resistance to SCSR, since it has performed well in tests further north, but evidently its resistance is not sufficient under Kentucky conditions.

Table 1. Adair County Sclerotinia Test on Alfalfa.

	% ground cover 6 May 97		% ground cover	
Cultivar	Mean[1]	Range	12 Apr 00	28 Apr 00
Cimarron VR	22 a[2]	2-65	63 a	79 a
WL 322 SR	13 a	1-30	46 b	68 b
Fortress	7 a	1-20	41 b	62 b

[1] ANOVA effect for cultivar is insignificant *(P*>0.2*)*

[2] Means followed by the same letter are not significantly different, Waller-Duncan k-ratio t-test, *k*=100, *P*=0.05

Our results from Adair County and previously published studies suggest the following.
1. Certain alfalfa varieties with partial resistance to SCSR may provide for a modest but statistically significant improvement in stand health for fall seedings, should SCSR become active at the site.
2. Don't expect complete control of SCSR from alfalfa varieties with partial resistance.
3. Some varieties reported to have partial resistance to SCSR may not exhibit any resistance under Kentucky conditions.
4. Alfalfa has the ability to compensate for stands thinned by SCSR increasing the size of individual plants.

Bottom line: Producers considering seeding alfalfa late this summer should first consider the field's relative risks for a SCSR outbreak; see the UK Extension publication *Risk Factors for Sclerotinia Crown and Stem Rot of Fall-Seeded Alfalfa*, PPFS-AG-F-2, for more information. If planning to fall-seed alfalfa, there may be some value in selecting a variety that has been shown to have partial resistance to SCSR, in addition to other desirable traits like multipest resistance, high yields, and persistence, especially if this has been demonstrated under Kentucky conditions.

Thanks are expressed to Mr. Randy Nelson in Adair County, who was willing to conduct this test on his farm.

VEGETABLES

NOVA LABELED ON CUCURBITS FOR POWDERY MILDEW CONTROL

By William Nesmith

The DMI fungicide Nova 40W (myclobutanil) marketed by Rohm & Haas has been labeled nationally for cucurbits. The rate is 2.5 to 5 oz/A. Applications should begin at first signs of disease development and continue on a 7 to 10 day schedule. Application can be made up to, and including the day of harvest. Other fungicides will be needed to control the other diseases of cucurbits.

Unfortunately, this new fungicide has a high risk for resistance development, as do all the other new and highly effective mildewcides. Thus, it is imperative to use them in a fungicide program designed to manage resistance. I will have more to say about this

in later articles, but see ID-36 *Vegetable Production Guid*e for general information and other fungicides labeled for cucurbit crops.

LAWN & TURF

MIDSUMMER CULTIVATION TO REDUCE SPRING DEAD SPOT OF BERMUDAGRASS
by Paul Vincelli

Spring dead spot is the most serious disease of bermudagrass in Kentucky. Current management recommendations for the disease include acidification of the soil through use of ammonium-based fertilizers or sulfur and, in late summer, increasing mowing height and reducing nitrogen applications. Although these practices can help reduce the disease, it may still develop to notable levels in "hot spots" in bermudagrass swards.

Research by Drs. N. Tisserat and J. Fry at Kansas State University has shown that midsummer cultivation to disturb the upper root zone can lessen spring dead spot pressure. Of course, the long period for turf recovery negates the value of this treatment for most turf uses. However, they showed that the more agronomically acceptable treatment of aerification plus verticutting provided for significant reductions in disease severity over an untreated control. The use of either treatment by itself did not provide consistent reductions in the disease. Based on their studies, turf professionals who manage bermudagrass in Kentucky should consider instituting a program of aerification and verticutting twice–once in early July and again in early August (assuming adequate soil moisture to promote recovery)--in those turf areas where the disease has been particularly active. The only exception to this recommendation is for football fields, where UK agronomists recommend aerification as often as possible but avoiding verticutting, which may greatly enhance the potential of the sod to "kick out" during games.

WHAT WAS THAT BIG YELLOW, ORANGE & BLACK THING?!?
By Mike Potter

Cicada killers are now flying, prompting several calls from homeowners. Despite their menacing appearance (up to 2 inches long with rusty red head/thorax, amber-yellow wings, and black and yellow striped abdomen), the wasps seldom sting unless handled or otherwise molested.

Cicada killers do not live in communal nests like hornets or yellowjackets. They overwinter as larvae within cocoons, deep in the soil, emerging as adults during July. The females feed, mate, and excavate burrows in the ground about ½ inch in diameter, ending in a series of brood chambers. Excess soil is pushed out of the burrow, leaving a small, U-shaped mound of dirt at the entrance. Each female excavates numerous burrows and provisions them with adult cicadas which she ambushes, paralyzes with her venom, and stuffs into individual brood chambers. She then lays an egg on top, backs out, and seals the cell behind her. The egg hatches within a few days and the hungry larva devours the offering, eventually transforming into a pupa the following spring.

Management - Cicada killers seldom sting and the females normally do not defend their burrows. The males, while incapable of stinging, sometimes dive-bomb passers-by, or hover menacingly nearby. Insecticide treatment may be warranted where the soil burrows become unsightly. Individual burrows can be effectively dusted or sprayed with most yard insecticides (e.g., Sevin, diazinon, Bayer Advanced Lawn & Garden Multi-Insect Killer) or a wasp & hornet aerosol spray. Large numbers of nests may need to be treated with a broadcast application to the surface of the turf.

SHADE TREES & ORNAMENTALS

LEAF SPOTS CAN DAMAGE ENGLISH IVY
by John Hartman

There are two important English Ivy (*Hedera*) leaf spot diseases in Kentucky, one caused by a bacterium, and one by a fungus. The two diseases are sometimes difficult to distinguish. The warm weather and periodic thundershowers of recent weeks have favored ivy leaf spot diseases.

Bacterial leaf spot is favored by periods of warm, wet weather typical of summer in Kentucky. Bacteria living on the leaf surface may be splashed from plant to plant and driven into the leaf through open stomata during daytime thundershowers. This disease, caused by the bacterium *Xanthomonas campestris* pv. *hederae*, is especially damaging now to ivy growing in many landscapes. The bacteria invade leaves, shoots, and stems through stomata and wounds causing, on the leaves, a greenish-brown angular spot 1/4 to 1/2 inch or larger in size. The spots sometimes appear greasy and may have a yellow margin; as they age, spots turn dark brown and may crack as they dry.

The disease is diagnosed in the laboratory by observing bacterial streaming under the microscope. However, the disease is so active now that county agents or landscape industry specialists can also diagnose the disease in the field in the same way. Cut through several leaf spots with a sharp knife and place small infected leaf pieces on a glass slide. Add a drop or two of clean water to the infected tissue and cover with a small glass cover slip. After a few minutes to an hour, bacterial streaming can be seen just by holding the glass slide up to the light and observing the milky color of the water near the

dissected leaf spot.

Growers should avoid planting diseased plant material, and avoid sprinkler irrigation which splashes bacteria from diseased to healthy plants. Copper-based fungicides which also serve as bactericides can be used to slow the spread of bacterial leaf spot.

Fungal leaf spot (anthracnose) appears as large, irregularly shaped tan or brown spots having numerous pimple-like fungal fruiting structures in the dead tissues. The causal fungus is *Glomerella cingulata*, however, the imperfect fungal state, *Colletotrichum*, is normally observed now. Close examination with a hand lens may show spine-like formations associated with the fungal fruiting structures. There are other fungal leaf spot diseases of English Ivy which also produce fungal fruiting structures; these distinguish them from bacterial spot, which produces none. Fungal spots do not produce bacterial streaming as described above. Spores of the fungi causing leaf spots may be splashed from plant to plant by rainfall.

Controls for anthracnose and fungal leaf spots are similar to controls for bacterial leaf spot, except that fungicides such as thiophanate-methyl [Cleary's 3336] (cleared for anthracnose of landscape plants) and mancozeb [Fore] (used for fungal leaf spots of ornamentals and which can be tried on unlabeled ornamental plants) are also available.

DIAGNOSTIC LAB HIGHLIGHTS
by Julie Beale and Paul Bachi

Samples seen in the Diagnostic Lab last week included: maize dwarf mosaic virus and maize chlorotic dwarf virus on corn; angular leaf spot, target spot, blue mold, tobacco streak virus, tomato spotted wilt virus, Fusarium wilt, root knot nematode, black root rot, black shank and soreshin on tobacco.

On fruits and vegetables, we have seen scab, cedar-apple rust, and frogeye on apple; Blumeriella leaf spot on plum; black rot and anthracnose on grape; tomato ringspot virus on blackberry; bacterial leaf spot on oregano; bacterial spot on pepper; bacterial spot and tomato spotted wilt virus on tomato; and rust on sweet corn.

On ornamentals, we have seen brown patch on fescue and ryegrass; Bipolaris leaf blight on bermudagrass; Rhizoctonia stem and root rot on petunia and lily; southern stem blight and canker (Colletotrichum) on phlox; bacterial spot on barberry; hypoxylon canker on oak; and Botryosphaeria canker and dieback on willow.

INSECT TRAP COUNTS

UKREC, Princeton, KY -June 30-July 7, 2000

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.