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TOBACCO

CURRENT BLUE MOLD STATUS REPORT
by William C. Nesmith

As of April 29, blue mold had not been reported from anywhere in the Ohio River Valley or Tennessee River Valley. This is good news considering the earlier trajectories from the southeast into our area. Had infections resulted from the events of early and mid-April that threatened the area, growers should have found the disease by now. By the way, winds were right again this past weekend to bring spores into the region, but rain activity should have washed out the spores close to the southern sources, well before they reached most of our region. Even though the potential is very low, it is not zero. Thus, the closer you are to the Georgia sources, the greater the risk - the Tennessee / Kentucky border had a higher potential for receiving inoculum from the weekend events than did the Kentucky / Ohio border.

Transplanting to the field is now underway in several areas of the state. The majority of the crop will be set with Kentucky-grown transplants. However, seedling-plug plants and finished transplants continue to arrive from the southeastern states and are being planted into northern, eastern, and southern Kentucky. To our knowledge, blue mold was not known to be present in the counties where the plants were grown in the southeast, but their route of travel to Kentucky should have taken them directly through the region of the USA with blue mold activity. Consequently, viable spores could have made contact with these plants, increasing their potential to introduce blue mold earlier than arrival via natural events. Agents in central and western Kentucky also report that some out-of-state plants are being use, but their transplants are from states north of Kentucky and outside the tobacco production area.

Transplant producers should continue to take steps to reduce leaf moisture through careful management of ventilation, and keep in place a regular fungicide spray program. See issue 943 of Kentucky Pest News (March 18, 2002) for more specifics on chemical options for disease control in tobacco transplant production. Weekly fungicide sprays in the field are <u>not</u> warranted at this time, based on the information available to us, unless a southern transplant connection exists with the crop. See issue 948 of Kentucky Pest News (April 22, 2002) for the foliar fungicide options labeled in Kentucky for use in the field.

CORN

CORN FLEA BEETLES IN SWEET CORN
by Ric Bessin

It seems as if we listen to the same tune repeating itself on a broken record, ... but following the mild winter we need to monitor and manage corn flea beetles in sweet corn. Generally, numbers of this insect pest are higher in the

spring following a mild winter. So we should expect to see above average levels of corn flea beetles in sweet corn and field corn this spring.

Corn flea beetle overwinters as an adult beetle in protected areas around fields. As corn emerges, the beetles move into fields and feed on the leaves of developing seedlings. They only remove a thin line of tissue on the upper surface of the leaves, so damage resembles thin scratches to the leaves. If beetle numbers are high and corn is growing slowly, the field can take on a grayish cast due to the damage. With field corn, in all but exceptional cases, the corn is able to outgrow feeding by flea beetles when optimal growing conditions return. If growing conditions are poor, some stand loss due to corn flea beetle feeding may occur to some sweet corn varieties.

Corn flea beetle can also transmit the bacterium that causes Stewart's Wilt of corn. This can be a serious problem in some sweet corn varieties that are susceptible to the disease. There are some new commercially applied corn seed treatments that provide very good control of corn flea beetle. These include Guacho, Guacho Extra and Prescribe. Each of these treatments have the same active ingredient, *imidacloprid*, but at different concentrations. Those with higher concentrations provide longer corn flea beetle control. Foliar sprays also provide effective corn flea beetle control in sweet corn and field corn. Check the 2002 insecticide recommendations for a list of these products.

WHEAT

FOLIAR FUNGICIDES FACTS
by Don Hershman

There are apparently many questions floating around the state about the use and usefulness of the various wheat foliar fungicides that are available here. This article is an attempt to shed some light on several questions that I have been asked lately.

One point I would like to make about the general situation is this: All wheat in the state is beyond the point where anything except Quadris and formulations of mancozeb can be legally applied. Stratego, Tilt and PropiMax all have label restrictions that prohibit their application beyond the flag leaf emergence stage. I am quite certain that there is not a field in Kentucky that has not already passed the flag leaf stage. Other states do have section 24c's that allow later applications of one or more of these products up to crop flowering; however, Kentucky is not one of them. There are several reasons for this situation and it is not an oversight on anyone's part. The lack of 24c labels for Tilt, PropiMax or Stratego in Kentucky is due to Kentucky Division of Pesticides policies regarding 24c labels, and decisions and priorities made by the respective chemical companies.

Propiconazole: This active ingredient is present in identical quantities in both **Tilt Fungicide** (manufactured by Syngenta) and **PropiMax EC** (Dow AgroSciences). Unless the inert ingredients differ between the two products (which I have no way of knowing), they are for all practical purposes the same fungicide. As indicated above, neither product can be applied to a crop after flag leaf extension. Propiconazole will give good control of tan spot; very good control of powdery mildew and leaf/stripe rust; and excellent control of speckled leaf blotch, as well as Stagonospora leaf and glume blotch. It is recommended that a non-ionic surfactant be used when applying propiconazole, but this additive is not essential to getting excellent disease control. When properly applied, expect about two weeks of full disease control. After this time the protection will wear thin as the crop grows and, and the fungicide is metabolized and/or breaks down. Propiconazole is partially systemic and is absorbed into leaf tissue following application.

Propiconazole + **trifloxystrobin**: The fungicide represented by this combination of active ingredients is Stratego (manufactured by Bayer). Because of the propiconazole in the product, the label also has a flag leaf application restriction identical to Tilt and PropiMax. At the 10 fl oz/A rate, the disease control spectrum is about the same as with Tilt/PropiMax. However, Stratego will likely be somewhat more efficacious against the rusts, and perhaps not as efficacious against powdery mildew. Control of other common foliar diseases and glume blotch will be about the same whether one applies Stratego, Tilt or PropiMax. Stratego has both surface protectant and locally systemic activity. The cost of Stratego, Tilt, and PropiMax are comparable.

Azoxystrobin: The product represented by this active ingredient is Quadris Flowable Fungicide (manufactured by Syngenta). Azoxystrobin is very similar to one of the active ingredients in Stratego (trifloxystrobin), but the concentrations of azoxystrobin and trifloxystrobin between the two products, respectively, are dissimilar (22.9% in Quadris and 11.4 % in Stratego). Unlike PropiMax, Tilt or Stratego, Quadris may be legally applied to wheat up to crop flowering. Thus, Quadris may still be legally used just about everywhere in Kentucky. Quadris is primarily a surface protectant with some locally systemic activity. It provides excellent and somewhat extended activity against rusts compared with the other products, especially Tilt/PropiMax. It is weakest of the fungicides, thus far mentioned, against powdery mildew. Quadris provides excellent activity against speckled leaf blotch, Stagonospora leaf and glume

blotch and tan spot. The cost of Quadis is prohibitive to most wheat operations in Kentucky, so this is the primary factor limiting use of the product on wheat in Kentucky. Higher value crops, primarily vegetables, are the primary market for Quadris; the economics of high value crops can support the current price structure of Quadris.

Mancozeb: There are numerous products and manufacture's for fungicides which have mancozeb as an active ingredient. Mancozeb is very infrequently used on wheat in Kentucky even though it is relatively inexpensive (about 1/4 the cost of Tilt, for example), provides decent disease control when properly applied, and can be applied up to crop flowering. The main reason for the lack of use on wheat is that the fungicide MUST be applied before infection to have any disease control activity. It is strictly a protectant fungicide and it is not taken into plant tissues. This means that the timing of application of mancozeb must be perfect, or nearly so, in order to achieve the desired disease control results. I do know that acceptable timing of application has been very difficult for wheat producers to achieve through the years. Mancozeb is also difficult to apply, since large volumes of product (lbs per acre) must be used, and these rates tend to clog nozzles. Finally, mancozeb, being retained on the leaf / plant surface, is extremely affected by weathering. The result is that one can only expect good disease control for 7 days - 10 days under ideal circumstances. When properly applied, mancozeb will give good control against leaf rust, leaf and glume blotch and speckled leaf blotch. It is completely ineffective against powdery mildew.

GRASS SAWFLIES IN WHEAT
By Lee Townsend

Grass sawfly larvae were found feeding on wheat in Breckinridge Co late last week. At a glance, they are similar to armyworms in general appearance and feeding damage.

Sawfly larvae are green with no stripes and the yellow brown head has a single black eye spots on each side. There are a pair of fleshy prolegs on each segment of the abdomen. Armyworms have a greenish brown body with a thin stripe down the center and two orange stripes along each side. The brown head is honeycombed with dark markings but there are no eye spots. Armyworms have fewer fleshy prolegs (4 pair on the abdomen and one pair on the last segment. Larval development of both insects takes about 3 to 4 weeks. The adult stage of the armyworm is a moth while the adult of the sawfly is a type of wasp.

Feeding damage by both insects is similar - they chew along the edges of the leaves, feeding on the flag leaf and adjacent leaves. Sawfly larvae prefer to feed on the stems and are potentially more damaging than armyworms. They begin to climb and feed on stems when half grown. Stem clipping often occurs before leaf feeding is complete and / or the grain reaches physiological maturity.

Sampling for both insects should begin in late April to detect small larvae before head clipping begins. Although sawflies tend to be found earlier than armyworms, both species may be found in the same field. Sawflies tend to be more numerous along field margins while armyworms seem to prefer lodged grain. To get a complete picture, look throughout the field for leaf feeding damage, clipped heads and larvae.

Young sawflies often blend into the vegetation. Since sawflies feed during the day and can be found on the plants, sample plants by shaking the wheat stalks of two rows toward the innerspace between the rows. Examine 5 linear feet between two rows in at least 10 sites. Count the number of worms and note any head clipping at each site. Sawflies can quickly cut heads so treatments should not be applied if you find 2 larvae per 5 foot of row innerspace (0.4 per foot of row) (Univ. Delaware).

Armyworms usually hide under debris and weeds and feed at night. Check for small armyworms curled in a C-shape at the base of plants or under debris and weeds. The treatment guideline is 4 or more armyworms (½ to 3/4 in long) per square foot, or if head clipping is seen.

FRUIT CROPS

FAVORABLE WEATHER ACTIVATES APPLE DISEASES
by John Hartman

Apple growers in Kentucky annually face several weather-influenced diseases, especially in springtime. The past weekend's weather events likely influenced apple diseases, depending on the location of the orchard. April Satanek and Dwight Wolfe have provided me with weather and disease modeling data from the U.K. Horticultural Research Farm in Lexington and the U.K Research and Education Center in Princeton.

Fire Blight. If apples were still in bloom (more than 20% open flowers), trees were at risk for primary fire blight. This weekend's (April 27-28) weather was conducive for primary fire blight infections. If trees were not still in bloom, primary infection risk was reduced.

During weekend thunderstorms and with a quickly-moving cold front, there was considerable wind in many locations. With gusty winds, as recorded in Lexington, some leaf trauma may have occurred, providing added

wounds for entry of fire blight bacteria into all trees, not just those in bloom. It has been noticed that Sunday's drying winds and sunshine may have scorched some of the injured foliage leaving symptoms resembling fire blight. This is not fire blight. Actual fire blight symptoms on twigs and branches will occur eventually, but we do not expect the shoot blight symptoms to develop for several more days, depending on the weather. These symptoms would be from fire blight infections which took place two weekends ago (April 20-21).

Apple Scab. With 24 hours of nearly uninterrupted leaf wetness on Saturday and Sunday, an infection period that will cause heavy scab did occur. The average air temperature during the wetness was 63F.

Cedar Apple Rust. Prolonged wetness conditions needed for heavy rust infections also occurred this weekend. In many locations, there was adequate moisture for rust infections the weekend before (April 20-21).

Sooty Blotch and Flyspeck. Most growers are close to the first cover period (10 days after initial petal fall). At the U.K. Horticultural research farm, using the "Show-Me" disease predictor, we have begun the computer program for sooty blotch and flyspeck. This program records and sums all leaf wetness from first cover until a total of 168 hours of leaf wetness is reached. At that point, growers know that they will need to apply a fungicide that will effectively control sooty blotch and flyspeck.

The Strobilurin Fungicides and First Cover. The new strobilurin fungicides, Sovran and Flint, control many diseases. However, they are prone to the development of resistance. Growers should try to use strobilurins to maximize effectiveness and minimize resistance. One suggestion (as outlined in the recent Indiana Facts For Fancy Fruit newsletter) would be to use Flint or Sovran ONLY in the FIRST, THIRD and SEVENTH cover sprays (three times only) for control of fruit scab and sooty blotch and flyspeck. Field testing at other universities confirms the idea that Sovran, applied at the full rate, gives excellent control of both fruit scab and sooty blotch and flyspeck when applied at these three times (first, third and seventh cover). The real strength of Strobilurins may lie in the control of fruit scab and sooty blotch and flyspeck.

STRAWBERRY GRAY MOLD MANAGEMENT REMINDER
by John Hartman

Strawberry growers are reminded that if fungicides are to be used for management of fruit rot diseases, now is the time to apply them. Gray mold fruit rot, caused by the fungus *Botrytis cinerea*, is the most common fruit rot disease of Kentucky strawberries. Fruit rot is favored by rainy weather such as we have been experiencing in Kentucky for the past several weekends. Strawberries which have been mulched with straw will not have as much fruit rot. To prevent fruit rot, fungicides are best applied during bloom, and not to the fruits themselves closer to harvest.

Fungicides for strawberry gray mold fruit rot. Benlate, Topsin-M, Elevate, Switch, Captan, and Thiram are cleared for use on strawberries. Benlate, Topsin-M, Elevate, and Switch are prone to development of resistance by the gray mold fungus, so they must not be used by themselves for the whole season. Of these, Benlate and Topsin have similar modes of action, so they would not be used in alternating spray program. Captan or Thiram may be used alone, because they are not prone to fungal resistance development. Switch is a new fungicide and provides excellent control of Botrytis.

LAWN & TURF

EARLY DOLLAR SPOT ACTIVITY
by Paul Vincelli

Within the last two weeks, an aggressive case of dollar spot developed on creeping bentgrass putting greens in Lexington, which is earlier than I am accustomed to seeing it in Kentucky. Last week, Bayleton 50 was applied to the site at 0.5 oz, and luxuriant mycelium was apparent 10 days after this application. This suggests that a pathogen population with reduced sensitivity to DMI fungicides has developed on this site (we will be running lab tests to confirm this later this spring). I saw very low levels of dollar spot mycelium in samples submitted from a Kentucky golf course this winter, so the mild winter may have set us up for earlier dollar spot problems this year.

Dollar spot is generally regarded by golf course superintendents as a more serious problem now than it was perhaps a decade ago. There is no agreement as to why this is the case, but there are several factors discussed below that are worth considering as one develops a management program for this disease. Also, one of the most effective things one can do to improve dollar spot control is to implement a program for morning leaf wetness removal, particularly on problem sites. Practical ways to do this include mowing disease-prone sites first, and early morning syringing or dragging of fairways with hoses.

Cultural Factors

Low Nitrogen Rates. Nitrogen rates have fallen over recent years, for good reasons. However, many courses probably have undershot the mark in recent years.

Research has shown that turf receiving low N fertility often suffers from more severe dollar spot. Consider whether the turf has a good color and an adequate growth rate for this time of year. The turf should be "pushed" with substantial and regular applications of nitrogen in the autumn (a good time for granulars), treated with slow-release nitrogen in winter, and "spoon-fed" with frequent, low rates of soluble fertilizer in spring and summer.

Close Mowing Heights. Like nitrogen rates, the trend for mowing heights in recent years has been downward, and more closely mowed turf is more likely to suffer severe outbreaks of dollar spot for longer periods of time than taller turf. I'm not going to make the argument to raise mowing heights–dollar spot management is not the driving force in selecting mowing heights. Just understand that the closer mowing heights enhance pressure from this disease.

Low Water Input. There are good reasons to manage turf on the dry side, since excessive water in the thatch and root zone can favor infectious diseases as well as abiotic stresses. Once again, understand that this management approach can enhance the susceptibility of the grass to dollar spot.

Compacted Soil. High play volumes result in fairways, tees, and soil-based greens with more compaction potential. Compaction results in a restricted root zone, resulting in turf that suffers from temporary drought stress more quickly and for longer periods of time, enhancing the potential for dollar spot.

Chemical Factors

Reduced Sensitivity to Fungicides. The dollar spot fungus has proven to be very adaptable to fungicides used to control it. In the 1960's and early 1970's, strains with resistance to multisite fungicides (cadmium, mercury, and anilazine) were reported. When the highly effective benzimidazole fungicides (like thiophanate methyl, such as is found in Cleary's 3336) were introduced, it wasn't long before resistant strains were identified. Nowadays, reduced sensitivity to the highly effective DMI fungicides (propiconazole, triadimefon, myclobutanil, and fenarimol) appears to be somewhat common. We have documented several instances of reduced sensitivity to DMI fungicides in Kentucky, and early survey results from Dr. Mike Boehm's research program at The Ohio State University suggest that strains with reduced sensitivity are somewhat frequent.

Stretching Spray Intervals. I'm the first to try to find ways to use resources as wisely and efficiently as possible (just ask my wife how old my car is!). Stretching spray intervals beyond the interval recommended on the label is also a sound IPM practice: scout and treat when needed. Usually, I believe a scouting-based approach is the best way to treat for dollar spot, as opposed to a purely preventive approach. However, if the disease has been difficult to control in recent years, switch to a more preventive spray program, at least during the times of year when the disease is most likely to be active. It would be important to not let the disease get a "running start", because it sometimes can be difficult to control curatively, at least with contact fungicides.

Sprayer Considerations. Spraying low gallonages (1 to 1.25 gal / 1000 sq ft) certainly is appealing, because fewer trips to the filling station are needed. However, low gallonage may not provide adequate coverage of crowns for optimal disease control for the entire spray interval. The jury is still out on this, and more research is needed, but it is something I would consider. Also, consider trying to flat-fan nozzles. Again, there is not enough research on this as I believe we need, but some superintendents have noticed improvement in dollar spot control when they have made the switch. It is interesting to note that, to my knowledge, all researchers use flat-fan nozzles.

Biological Factors

Cultivar Selection. In our University of Kentucky educational programs for turf, we have often talked about the dangers of using cultivars of creeping bentgrass with unusually high levels of dollar spot susceptibility in this region. Examples include the cultivars Crenshaw, Backspin, Century, 18th Green; others can be found on the web site for the National Turfgrass Evaluation Program (http://www.ntep.org/). Avoid these cultivars in this region. Using them sets a person up for ongoing problems with dollar spot for as long as the sward is in existence.

Disease Resurgence. Several studies, including one at UK, have shown dollar spot *resurgence* after a fungicide application has "worn off" (more precisely, after it has weathered away). Even when fungicide applications can be justified, they have the potential to disrupt the ecological balance of the soil. When disease resurgence occurs, our suspicion is that soil fungi which are natural competitors of the dollar spot fungus have been temporarily suppressed. Until their populations recover, dollar spot may sometimes return with greater severity that it would in untreated turf. This probably does not happen often, but it may be a factor in some cases.

DIAGNOSTIC LAB HIGHLIGHTS

by Julie Beale and Paul Bachi

Samples diagnosed during the past week have included downy mildew on wheat; Fusarium crown rot on alfalfa; bacterial blackleg, Pythium root rot, target spot and wet

feet on tobacco.

On ornamentals, we have seen Rhizoctonia crown rot on daylily (following freeze injury); Heterosporium leaf spot on iris; iron toxicity on geranium; Rhizoctonia stem rot on marigold; Botrytis blight and nitrogen deficiency on impatiens; needle rust on pine; slime mold on turf (also seen on tobacco transplants); and normal spring leaf yellowing (older leaves) of holly.

INSECT TRAP COUNTS

UKREC, Princeton, KY - April 19-26

Black Cutworm	2
True armyworm	30
Corn earworm	18
European corn borer	0
Southwestern corn borer	0

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.