KENTUCKY PEST NEWS

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TOBACCO

CURRENT BLUE MOLD STATUS
By William Nesmith

The level of blue mold activity continues to increase rapidly in western Kentucky. Strong centers of blue mold are also present in western Tennessee and significant development is now occurring in the mountains of eastern Tennessee, western North Carolina, and western Virginia. The disease has also become established in southern and central Kentucky, at least as far east as Clark, Estill, Lincoln, and Pulaski counties. Although the level of confirmed activity in central and southern Kentucky has been low, some centers of very strong activity are present. Moreover, under cool and wet conditions a few lesions of blue mold can destroy a transplant production site within a week.

Weather conditions during much of last week and that forecast for much of the coming week are ideal for rapid spread and development of blue mold in Kentucky. Both local and long range spread has been occurring via airborne and transplant-borne routes. Field plantings and transplant production are threatened if not protected with fungicides in a preventive manner. Many growers are waiting too late to start fungicide sprays. Expect new centers of disease to develop and for the disease potential to increase rapidly in communities where blue mold has become established.

Most of the blue mold operating in Kentucky is resistant to the active ingredients in Ridomil and Ridomil Gold. However, preliminary tests indicate the outbreak in Estill Co. involves strains highly sensitive to Ridomil.

Foliar fungicide spray programs should be maintained at five-day intervals in all transplant production systems in the state. Field sprays should be started in all counties with active blue mold, as well as in neighboring counties. With the number of unknowns involved, spraying of newly set fields throughout the state, irrespective of how close they are to known sources, is reasonable and prudent at this stage of the season. Acrobat MZ @ 2.5 lbs/100 gallons and Dithane DF @ 1.5-2.0

lbs / 100 gallons are the two fungicides labeled for field use in Kentucky. The volume should be adjusted for crop stage with Acrobat MZ. Good coverage of the entire plant's foliage, stem, and bud is critical with both fungicides. Failure to apply these fungicides correctly will result in little control and high input costs. In contrast, a very high level of control is possible with proper application of Acrobat MZ and moderate control is possible with Dithane DF. However, economic benefit is not achievable with foliar fungicides in crops with low yield potential, because of the high input costs associated with frequent foliar fungicide applications.

BLUE MOLD WATCH EXISTS STATEWIDE AND WARNING exists for the following State Extension Areas: Purchase, Pennyrile, Green River, Mammoth Cave, Lake Cumberland, and Fort Harrod. Blue mold has been confirmed in the following Extension Areas / Counties:

PURCHASE AREA: Calloway and Graves
PENNYRILE AREA: Caldwell, Christian, Muhlenberg and Todd.
GREEN RIVER AREA: Daviess, Hancock, McLean, Ohio, and Webster.
MAMMOTH CAVE AREA: Barren, Logan, Monroe, Simpson, and Warren.
LAKE CUMBERLAND AREA: Casey, Pulaski, and Wayne.
LINCOLN TRAIL AREA: Washington
FT. HARROD AREA: Lincoln
BLUEGRASS AREA: Clark and Estill.
LOUISVILLE AREA: none
NORTHERN KY AREA: none
LICKING RIVER AREA: none
NORTHEAST KY AREA: none
QUICKSAND AREA: none
WILDERNESS TRAIL AREA: none

USING BACKPACK SPRAYERS FOR FOLIAR FUNGICIDE APPLICATIONS IN TOBACCO

By William Nesmith

Foliar fungicide sprays offer the best approach to controlling the strains of blue mold resistant to Ridomil. However, foliar fungicide sprays must be applied often and well enough to achieve good coverage of the foliage, buds, and stems. This means at least weekly sprays in wet weather and a good sprayer must be used.

Many growers with small acreage have difficulty obtaining timely access to tractor-mounted spray equipment. Timely and proper fungicide applications are available for tobacco on the small farm through hand-held and backpack equipment. Motorized options of the backpack sprayer allows for sustained pressure in excess of 80 psi. Even with low pressure, however, hand-held and backpack sprayers can be successfully used if equipped with hollow-cone nozzles, the wand is carefully directed so that all plant surfaces are covered and application is made from both sides of the row. Some growers have also successfully adapted these small sprayers to their cultivating tractors for use while the tobacco is small, but walking is necessary as the plants become larger.

One excellent sprayer option is the motorized, backpack mist blower. This is a very high pressure sprayer that will penetrate the foliage with a fine mist. For best results, application must be made from both sides of the row to achieve good coverage in large tobacco. This sprayer is also an excellent option for applying foliar fungicides in the greenhouse. However, in such enclosed environments, extra protection is needed for the applicator, including a spray suit and respirator.

FOLIAR CHEMICAL OPTIONS LABELED FOR TOBACCO DISEASES IN THE FIELD - 1998

By William Nesmith

Few fungicides and bactericides are LABELED for foliar use in tobacco fields in Kentucky. The following options are available:

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 after 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 our data have indicated that only

limited blue mold control occurs with Streptomycin.

Dithane DF @ 1.5-2.0 lbs / 100 gallons of water is labeled for weekly foliar sprays to control blue mold under a 24-c, state label until June 16, 1999. The fungicide mixture should be applied to achieve complete coverage of the plant's foliage. Sprays should be discontinued when the threat of blue mold no longer exists. No applications should be made within 30 days of harvest.

Acrobat MZ @ 2.5 lbs / 100 gallons / acre (volume adjusted for stage of growth) is labeled under a section 18, Specific Emergency Exemption, until September 30, 1998 for use in Kentucky to control blue mold. It is NOT labeled for use in McCreary Co. Application can be made on a 5-7 day spray schedule, once advisories are 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.

TOBACCO INSECT ACTIVITY
By Lee Townsend

Budworm and hornworm moths should be flying and laying eggs soon. Growers who are using Admire as the foundation of their insect control program need to remember that this product is not active against worms at all. Field checks are needed to detect budworm or hornworm infestations. Hornworms are the greatest potential threat at this time because a single worm can consume an entire small tobacco plant. Treatment is recommended if 5 or more worms (either type) are found per 50 plants.

Tobacco flea beetle damage has been severe in many fields where no preventive program was used. Beetle activity should slowly decline as the overwintering beetles die. Growers who will be setting a second crop in about a month to take advantage of double-barning should plan to use a systemic transplant water treatment to protect these transplants. This is about the time that a new generation of these small insects will emerge as adults and begin to feed. Established tobacco should be large enough to escape damage by these tiny leaf feeders.

CORN

SOUTHWESTERN CORN BORER ACTIVE
By Ric Bessin

Reports from counties using Southwestern corn borer traps indicate that there is a strong moth flight underway in some western counties. Once regarded as the worst insect pest attacking corn in Kentucky, Southwestern corn borer has been rebounding in the western portion of the state, particularly in counties along the Mississippi River and Ohio River west of Owensboro. While the damage caused by the first generation is very similar to that caused by the European corn borer, fall damage to late-planted corn can cause severe lodging and harvest losses.

During the next few weeks, producers should monitor their corn for this pest. While damage is similar to European corn borer, the threshold is lower. An insecticide is recommended for control is 35% of the plants are infested and live larvae are found in the whorl. See ENT-16 for a list of recommended insecticides.

MONITOR FOR EUROPEAN CORN BORER
by Ric Bessin

Reports of corn borer infestations in Kentucky have ranged from light to moderate in early-planted corn. Some fields have exceeded economic thresholds. There was even a case of corn borers attacking a commercial strawberry planting last week. However, to our south and west, there are reports of high corn borer infestations in Tennessee and Arkansas. If producers have not done so already, fields should be evaluated for first generation larvae with special attention given to early planted fields.

Growth stage	Percentage infested plants				
	40%	50%	60%	70%	80%
Early whorl	4.9	6.5	8.3	10.3	12.6
Late whorl	3.9	5.2	6.6	8.3	10.1
Pretassel	5.9	5.2	10.0	12.4	15.0

Pollen shed	3.9	5.2	6.6	8.3	10.1
Kernels initiated	2.7	3.6	4.5	5.6	6.9

Generally, most producers use 50% of the plants infested with larvae in the whorls as the threshold. This is based on the presence of window pane feeding as well as pulling of a few whorls from the plants to determine the stage of the larvae. A more precise economic threshold can be determined for each field based on the preventable yield loss table (above).

This table allows the use of (1) % infested plants found by field scouting, (2) anticipated yield from the field (bu/a), (3) crop value ($/bu) and (4) the control cost ($/a for insecticide + application cost) to make control decisions. See ENT-49 for an example using this table.

STINK BUG INJURY IN NO-TILL CORN
By Lee Townsend and Ric Bessin

Stink bug-damaged plants can be seen in no-till corn, especially in fields following wheat.
Stink bugs feed on plant fluids by inserting their needlelike mouthparts into stems, leaves or seed pods. While feeding, they inject materials into the plant to aid in digestion and sap removal. Penetration by the mouthparts can cause physical damage, much like stabbing the plant with a fine needle. A combination of mechanical and chemical damage to the growing point of the plant may be responsible for the injury and symptoms seen in the field.

Stink bug feeding causes three types of damage. They may kill small seedlings, produce stunted plants, or cause "suckering" (the production of tillers from the base of damaged plants). Frequently a series of plants along a row may exhibit a progression of these symptoms, giving a stair step appearance (dead seedlings, stunted plants, and tillering).

There is usually a row of oval holes with yellow borders across the unwrapped leaves of damaged plants. This row results from the single feeding puncture that penetrates the wrapped leaves. A slimy, decaying area may be found in the stalk where the stink bug has fed. This probably results from activity of the insects digestive juices.

The most dramatic symptom is tillering of damaged plants. Tillering usually first appears about 10 days after the damage was caused. A shoot begins to grow from the base of the plant and may become as large as the original plant. Damaged plants may develop misshapen ears in place of the tassel.

Some herbicides can cause similar injury to developing corn. However, stink bugs will leave "styletes" in the plant tissue at the site of feeding. Laboratory staining of the leaves to detect the styletes can provide positive diagnosis of stink bug feeding.

Stink bugs can reduce yields in several ways. First, their feeding may kill small seedlings, resulting in stand reduction. Second, surviving plants are stunted and generally have reduced root mass. These plants may then be more susceptible to other stress-producing factors such as dry weather or attack by other insects. Stunted plants may catch up in height with undamaged plants in 2 to 4 weeks, but research at UK indicates that yield from these plants will be reduced about 10%.

Tillered plants may produce little if any grain. Some may produce small ears, with about 1/3 the yield of undamaged plants. In some cases the ears forms where the tassel normally appears. Tasseling and silking of these plants may be delayed a week or more. Tillered plants may grow to a height of several feet. In effect, they have been converted to weeds, competing for water and nutrients with undamaged plants.

SOYBEAN

BEAN LEAF BEETLES STILL A THREAT
By Doug Johnson

There are a great many soybean fields just now being planted and emerging. I continue to see fields that are being fed upon by bean leaf beetle (BLB). The threat of this insect will not go away with a calender date but rather will remain until bean fields are past the first trifoliate stage. The cool weather this past week will slow down bean growth but not BLB activity; this could allow BLB to inflict more damage. The coolness is not enough to cause major problems but will add to existing ones. In general, we have good growing conditions so any plants reaching the first trifoliate will be out of trouble. Plants just now emerging, and even more importantly, plants just now being planted, will face

the most danger. It is important to protect the seed leaves. These 'leaves' provide the plant with food until the true leaves unroll.

GRASSHOPPERS IN NO-TILL SOYBEANS.
By Doug Johnson

Producers no-tilling soybeans into pastures should be on the watch for grasshoppers. Generally, we think of grasshoppers as a problem in the drought times of late July and August. However, planting into a grass stand is a special case. The worst grasshopper damage I have ever seen in Kentucky was due to this situation. Grass pastures may harbor large numbers of grasshoppers and the hoppers do little damage to the pasture. Think of this simply on the basis of plant stand. A pasture has a huge plant stand. However, when a producer plants a soybean crop into a stand of grass, then kills the grass, then the only thing left alive for this large population of grasshoppers to eat is your emerging stand of beans! This does not happen often, but when it does, the results can be severe. Remember, unlike plants with true leaves out, soybean plants with only 'seed' leaves and the unifoliate out are very susceptible to grasshopper feeding damage. In general, the problem will go away after the plants begin vigorously producing true leaves.

POTATO LEAFHOPPERS - VISIBLE SYMPTOMS BUT YIELD LOSS RARE
By Lee Townsend and Doug Johnson

Potato leafhoppers are more often thought of as alfalfa pests but they can do well on soybeans. In fact, as the first cutting of alfalfa is coming off, adult leafhoppers are forced to move. Nearby soybean fields will suit them just fine. Nymphs and adults can feed on soybeans. High populations produce symptoms that include distorted leaf veins, curled leaves, and yellowing and browning of leaves. Enough leafhoppers to cause noticeable injury may result in some stunted plants. This stunting may (or may not) be associated with yield reduction. You may see some symptoms and the small leafhoppers on beans over the next few weeks. Five or more leafhoppers per V4 stage plant is the approximate threshold but careful observation is about the only way to determine this.

As with alfalfa, pubescence or "leaf hairs" create a barrier that makes it difficult for leafhoppers to feed or lay eggs in plant tissue. Most commercial varieties are moderately hairy which should provide some effect against this insect.

LIVESTOCK

FEED ADDITIVE INSECTICIDES FOR BEEF CATTLE FLY CONTROL
By Lee Townsend

Horn flies and face flies breed in cattle droppings in pastures. This is a weak link in the life cycle of these pests because the maggots are concentrated in the manure before they emerge as adults and attack animals. However, manure piles are scattered over pastures; elimination of them or treatment of individual piles is impractical. In effect, manure can be made toxic by having animals consume a larvicide which passes out in the manure.

Mineral blocks or loose supplements are available which contain either the organophosphate insecticide Rabon (stirofos) or an insect growth regulator (methoprene). Rabon works upon the nervous system of an insect, killing it quickly. An insect growth regulator interferes with the development of the insect, specifically the molting process. Maggots generally survive but fail to become normal adults. The action of the maggots still contributes to the physical breakdown of the manure. Feed-thrus are only a part of a total pasture fly control program because horn flies and face flies will move in from nearby herds. Supplemental control though the use of dust bags or backrubbers is needed to deal with these "fly-ins".

Research from the University of Minnesota showed that horn fly emergence from manure of cattle on mineral supplements containing either Rabon or the IGR was not different from manure of cattle not receiving an insecticide. Inadequate consumption of the mineral (and insecticide) did not seem to be the reason for a lack of control. Measurements during the tests indicated that animals were eating enough active ingredient to produce good results. The researchers speculated that formulation changes may be needed to protect the active ingredient prior to elimination in the feces.

Vigilante (diflubenzuron) and Inhibitor (methoprene) are in the recommendations as bolus formulations for fly control. They were not evaluated in the Minnesota study. However, any

feed thru approach is likely to need supplementary tactics to deal with migrating flies.

LAWN AND TURF

EARLIER DECISION-MAKING WITH SOME WHITE GRUB PRODUCTS
By Lee Townsend

Traditionally, the recommended strategy for white grub control has emphasized cutting "flaps" in turf and checking the underlying soil and root zone for white grubs from early to mid-August (See ENT-10). This approach allows identification and treatment of areas where grub numbers (10+ per square foot) are sufficient to cause injury. It also aids in correct timing of the relatively short-lived OP insecticides widely used to control these insects. Changes in grub control chemicals prompt a change in strategy.

Two new grub control products (Mach 2 and Merit) must be applied much earlier than the traditional grub products, between early June and late July. They can provide excellent control but are most effective against the smaller larvae. Consequently, they do best in a preventive approach, well before damage appears.

Merit (active ingredient imidacloprid) is marketed to homeowners under the brand name GrubX. It works best against very young grubs of many species, including Japanese beetles and masked chafers. Imidacloprid is fairly long-lived in soil. According to the label, optimum control will be achieved when applications are made before egg hatch and are followed by sufficient irrigation or rainfall to move the active ingredient through the thatch. Merit can be used on golf courses and many turf sites but the label prohibits use on commercial sod farms.

Mach 2 (halofenozide) mimics the action of an insect hormone that induces molting. It is very active against white grubs and caterpillars (armyworms, cutworms, sod webworms) that can be turf pests. Mach 2 can be applied on any turfgrass site including golf courses and sod farms. According to the label, Mach 2 should be applied when the larvae are small. Irrigation is not essential for activation but heavy thatch will prevent the insecticide from penetrating to the site of larval feeding.

Several products are labeled for curative control of white grubs. These will be discussed closer to their optimum application time.

SOD WEBWORMS—OCCASIONAL PESTS
By Lee Townsend

Sod webworms clip off grass blades close to the ground and pull them back into their tunnels to feed. Small yellow to brown patches in normally green lawns may be the first signs that this insect is active. Damage is most serious during very dry summers. If left untreated, small patches can merge into large, irregular areas of dead or dying grass. Early symptoms of sod webworm injury can be masked if turfgrass has entered dormancy due to drought stress. Patches of dead turf become very apparent once rain begins to fall and undamaged portions of the lawn start to turn green again.

Feeding by sod webworms does not kill the turf. The real damage is done as hot sun beats down on the exposed crowns of the closely clipped grass. Often, the grass can be revitalized after the infestation is controlled by watering and application of fertilizer.

If sod webworms are the cause of the symptoms, careful inspection of damaged areas will show clipped grass and the dark waste pellets of digested grass left by larvae. Sod webworms feed at night. During the day they hide in burrows in the thatch or in the surface soil. See ENT-7 Controlling sod webworms for more details.

IRIS DISEASES ARE APPEARING NOW
By John Hartman

Many Kentucky gardens feature iris plantings; these flowers are popular and well adapted. Frequent rains this spring have favored several diseases. Leaf spot has been appearing and corm rot has been devastating to individual plants in some iris beds this season.

Iris leaf spots. The fungus *Didymellina macrospora* causes the most prevalent leaf spot. On the leaves, oval brown spots with gray centers and water soaked margins can become so numerous that leaves become blighted and die. Iris in beds with this leaf spot disease have been observed to be almost completely killed by this fungus; the dead, tan and brown leaves remain upright making the disease a real eyesore in the garden. If the center of

the gray spot is examined closely, dark fungal growth of *Heterosporium iridis*, the imperfect stage of the fungus, can be seen now.

Bacterial leaf spot caused by *Xanthomonas tardicrescens* shows symptoms similar to those of the fungal leaf spot without the fungal growth. This disease occurs less frequently in Kentucky, but can also cause blighting.

Rust disease results in rusty-red pustules appearing on either side of affected leaves. The fungus, *Puccinia iridis*, can cause considerable damage to several iris varieties. Iris rust is relatively uncommon in Kentucky.

To control leaf spot diseases, remove blighted leaves during the season, and remove and destroy all foliage in the fall. Fungicides such as Daconil 2787, mancozeb, Cleary's 3336, and Chipco 26019 can be used to protect iris from Didymellina leaf spot. Fungicides will not control bacterial leaf spot.

Rhizome and bulb disorders. Bacterial soft rot is a serious disease of the rhizome that can appear in newly planted as well as mature iris plantings. The pathogen, *Erwinia carotovora* causes a foul-smelling soft decay of the rhizome. The bacterium gains entrance into the plant through wounds in young leaves made by young larvae of the iris borer. Soft rot is prevented by planting healthy rhizomes and preventing the iris borer damage.

Botrytis convoluta and *Sclerotium rolfsii* are two fungi that can cause rhizome and crown rot diseases of iris. The former produces irregular black sclerotia in the decaying rhizome, while the latter produces small spherical sclerotia on the rotted leaf bases. Neither produces a foul-smelling decay. When affected rhizomes are found, they should be removed and destroyed.

Bulbous iris are subject to several bulb diseases and decays. Diseases such as black rot, ink spot, Fusarium basal rot, and blue mold cause decays of bulbous iris. Sort out and destroy diseased bulbs as they occur.

JAPANESE BEETLES SEEN IN WEST KENTUCKY

By Ric Bessin and Lee Townsend

Although the report was from corn, the Japanese beetle isn't a very picky eater so it is just as appropriate to announce its activity in this section. Also, this first report came from Carlisle county, reminding us that this insect has made its way across the state. Surveys over the past few years have shown the spread of the Japanese beetle but populations have been relatively localized in many of the western counties now included in its range.

DIAGNOSTIC LAB-HIGHLIGHTS

By Julie Beale and Paul Bachi

On **alfalfa**, we have seen a couple of cases of **spring black stem** and **Lepto leaf spot**. On **corn**, we are seeing considerable damage from **herbicides** in the western part of the state.

On **tobacco**, we are still seeing quite a bit of the aggressive, warmer weather species of **Pythium causing root and stem rots**, in addition to other stem problems, such as **blackleg** and our first case of **black shank** this year from an outdoor (traditional) plant bed. **Tomato spotted wilt virus** was also diagnosed on tobacco last week.

Ornamental diseases from the greenhouse have included **Botrytis blight** on **rosemary and vinca, Rhizoctonia stem canker** on **thyme**, **Ascochyta canker** on **clematis**, and **impatiens necrotic spot virus** on **begonia**--as well as **INSV** on **phlox** in the landscape. Other diseases in the landscape have included **powdery mildew** on **mahonia**, **white pine root decline**, **fireblight** on **ornamental pear**, **Coniothyrium canker** and **rose rosette** virus on **rose**, **brown patch** on **creeping bentgrass**, and **Pythium blight** on **ryegrass** (infections coinciding with previous periods of hot weather).

On fruits, we have seen **black rot** of **grape** and **anthracnose** on **raspberry canes**; on vegetables, **early blight** of **tomato.**

INSECT TRAP COUNTS

May 29 - June 5
Princeton

Black Cutworm	3
European Corn Borer	0
Southwestern Corn Borer	82
True Armyworm	87

PESTICIDE TRAINING MEETINGS

The following out-of-state meetings have been approved by the Division of Pesticides, Kentucky Department of Agriculture, for continuing

education credit for applicators certified in Kentucky. Any applicators planning to attend these meetings may want to take advantage of these continuing education opportunities.

Category 3 - Turf and Ornamental Pest Control

Ohio Florists' Association Short Course, July 11-15, Greater Columbus (OH) Convention Center
CONTACT: Cheryl A. Buck (614) 487-1117

Professional Lawn Care Association Meeting.
November 13-17 Opryland Hotel Nashville, TN
CONTACT: Thomas J. Delaney 1-800-458-3466

Category 8- Public Health Pest Control

BLITZ Training Program June 17 Best Western Gateway Inn & Conference Center 6007 U.S. Rt. 60 East, Huntington, WV and June 18 Ramada Inn, Rt. 119 South & I-68 Morgantown, WV
CONTACT: Dr. John F. Baniecki (304) 293-3911
Industrial Fumigant Food Industry Sanitation Auditors Seminar
July 14-15 West Lafayette, IN
August 18-19 Baltimore, MD
October 6-7 Atlanta
CONTACT: Anita L. Reed (913) 782-7600

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