

# KENTUCKY PEST NEWS

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## TOBACCO

### CURRENT BLUE MOLD STATUS REPORT

by William C. Nesmith

Blue mold is now active in Kentucky. Moreover, it has been here for several weeks and was not detected, thus some spread has been occurring while we were assuming it was not around. Therefore, we have been flanked and need to adjust! Much of Kentucky's tobacco is at a very critical stage for blue mold development, especially where it is growing rapidly and blue mold favorable weather developed last week. Thus growers need to carefully reconsider their particular risk for blue mold.

Please scout carefully and report activity through county extension offices to help us determine where the disease is present. We have not been able to conduct an effective survey for blue mold since the findings listed below were reported, so we do not know how widespread the disease might be. I suspect the disease is well established in eastern Kentucky at very low levels, and could be developing rapidly following the weather events of the past few days. Some key questions that need to be answered are: How far west and north has it become established in Kentucky? What ages of lesions are present? What is the level of current activity? Was Ridomil Gold or Ultra Flourish used on the site? I strongly urge aggressive scouting of fields and plant beds, to determine where the disease is present, with prompt reporting of any blue mold activity.

The first confirmed case this season in Kentucky is from

the Bass Community on the border of Casey and Taylor Counties. It was found on June 26, but it had been present for several weeks. I concluded from evidence collected at the site that initial infections occurred first in early June and that the disease had cycled at least four times. Both systemic infections (stunted, yellowed plants being confused with black shank and tomato spotted wilt virus) and foliar lesions were present. Conditions at this site were more conducive to blue mold development because it was a ridge-field located at about 1000 ft elevation with some shade. The activity started on the east side of the field where the top of the hill was shading the small plants earlier in the day from the west side. New lesions were developing rapidly and moderate to heavy sporulation had started, especially in the healthier tobacco. We suspect that strong sporulation occurred at this site late last week and over the weekend, and will continue until well applied fungicide applications are made or weather events check disease development.

Also, a single sporulating lesion was found during a routine field visit in Fayette County on June 28. No other confirmed cases have been reported from Kentucky, but several growers have reported finding a few scattered lesions in shady areas of fields within central Kentucky.

Blue mold continues to increase east of Kentucky from Florida to Connecticut. New activity is probably also developing in east Tennessee and western Virginia, following the weather events of last week. With the weather systems developing, Kentucky's tobacco growers need to be concerned about both short range and long range transport of inoculum. Trajectory analysis will be important, which can be accessed through our website, located at

<http://www.uky.edu/Agriculture/kpn/kyblue/kyblue.htm>

Spray programs should be put in place within 25 miles of the Bass community mentioned above, especially those northeast and north of this activity. It is very important that we be able to find the distribution pattern for the initial outbreaks before more meaningful advisories can be issued. Once we know where the disease has become established, we can make meaningful estimates of where it most likely is developing. We need to remain focused on preventing build up in abandoned transplant sites - both burley and dark. Either destroy the plants or keep them protected with fungicides. Burley crops in southeastern and southern Kentucky and anywhere the crop is being irrigated, should be scouted twice weekly for evidence of blue mold. If activity is found, promptly report it, and immediately start fungicide programs in the field that include Acrobat MZ or Acrobat 50W, because they will check sporulation if applied well. See issue 948 of Kentucky Pest News (April 22, 2002) for the foliar fungicide options labeled in Kentucky for use in the field. Many crops have now reached sufficient size that Actigard can be used to induce resistance to blue mold, but this product should not be used on plants that are not at least 18" tall.

## **TOBACCO APHIDS AND HORNWORMS ACTIVE**

**By Lee Townsend**

Aphid colonies are building up on untreated tobacco now. Infestations of winged adults land on plants and begin to produce colonies on leaves in the tender bud area. Arrival of these adults cannot be predicted, so weekly field checks are needed to catch the onset of the problem. An insecticide should be applied when small colonies of aphids can be found on 20% of the plants in the field. Earlier detection and treatment are needed to keep aphid populations at acceptable levels. Hornworms are feeding now too and can be very damaging to small plants. See ENT - 15 for insecticide recommendations for tobacco.

## **STRONG BLACK SHANK ACTIVITY DEVELOPING**

**by William Nesmith**

Black shank is occurring widely in many tobacco production areas of Kentucky. This is not surprising based on the weather we have experienced and the sharp decline in fungicide use. A significant concern expressed by several senior county agents is that many growers have tried to rely only on resistant varieties (with or without one year rotations) in an attempt to reduce production costs. This is not a sound control plan against black shank.

Another concern being expressed is why are we seeing the rapid plant death (without much yellowing) resulting from black shank. In the several cases of this rapid death we have evaluated, the initial infections are either directly to the stem or in roots immediately adjacent to the stem and follow one of three patterns:

1. Invasion is through a leaf in contact with soil or directly to the stem or bud.
2. The black shank pathogen is invading directly into the base of the stem through routes opened by Pythium, Rhizoctonia, and Fusarium (wilt and basal stem rot). In a few cases, root knot nematode has been involved. When these other diseases are involved, the plants are usually seriously stunted compared to healthy neighbors, even if they die suddenly once black shank attacks.
3. Invasion is directly through one or more roots but at the base of the stem and within the area of soilless media accompanying the transplant root ball. We suspect the media, which has a very high water holding capacity, is improving the habitat for the black shank pathogen. This change in habitat has allowed black shank to become much more serious in portions of the field not normally considered wet or having standing water. However, this microsite is remaining favorable for the pathogen to operate even if the larger soil arena around the plant is not conducive.

Maintaining fungicide programs (preplant, cultivation, and layby) in fields with a history of black shank is important, even with resistant varieties, especially if containerized transplants were used. Our studies have shown that Ridomil Gold and Ultra Flourish are equally effective when used at equal rates of active ingredient. The importance of cultivation and layby applications have increased with use of containerized transplants compared to traditional ground plants, probably because the media involved improves and prolongs the habitat for the black shank pathogen at the critical area at the base of the plant. Free water can be found in this zone much of the time in plants having soilless media associated with the stem base, thus favoring the more lethal shank-phase of black shank. Therefore, efforts made to adjust nozzles to insure the fungicide is directed under the plants and nearer the stem should improve control. Most of the crop is still at a stage where cultivation and layby treatments can be effectively applied.

## **CORN**

### **WATCH FOR FALL ARMYWORM IN CORN by Ric Bessin**

With much of the corn planted late this spring, growers should monitor their whorl stage corn for fall armyworm.

Fortunately, fall armyworm numbers have been low, but some corn fields may stay in the whorl stage through the end of July.

Fall armyworm cannot overwinter in Kentucky and must invade the state from overwintering sties along the gulf coast each summer. It prefers to attack whorl stage corn, and in most years usually does not reach damaging levels until corn has tasseled. Because of the late planting, corn will stay vulnerable to fall armyworm attack much longer this summer.

Fall armyworm can be a difficult insect to control with insecticide sprays. As with European corn borer, timing is critical for effective control. Small larvae feed in the whorl and are relatively easy to control. But older larvae expel large amounts of frass into the whorl which forms a plug and limits penetration in insecticides deep into the whorl.

Many growers used Bt corn with their late plantings to avoid problems with corn borers. But the Bt corn used by growers only suppresses fall armyworm feeding. Late-planted Bt corn will still need to be monitored for fall armyworm this summer.

## SOYBEANS

### NEW AND UNUSUAL SOYBEAN INSECTS by Doug Johnson

I have reports of two new or unusual insects feeding on soybean in the state. I received a reports (complete with picture) from Jason Hodge in Carlisle Co. about an insect which turns out to be bean leafroller. From Tom Miller in Ballard Co. I have received my first notice of the soybean aphid.

BEAN LEAFROLLER. This insect feeds on soybean and true to its name rolls the leaves up to protect itself. It is a pest, but generally is not very important. In fact I have not seen this insect in soybean since I left Florida. If it turns out to be widespread you may receive some questions.

If you would like to see some pictures go the site:

<http://creatures.ifas.ufl.edu/veg/bean/beanleaf.htm>

It is unlikely that this pest will turn out to be very important. However, in case it is a problems simply treat it as if you would any other foliage feeding pest of soybean. This would involve checking the percent defoliation and matching that to the appropriate threshold. Thresholds may be found in the Soybean IPM manual and ENT-13 the soybean insecticide recommendations. I doubt that any of the insecticides for soybean carry "soybean leafroller" on their pest list, but any of the products that are used against

green cloverworm or other caterpillar pests should work. They should be no trouble to control.

### SOYBEAN APHID by Doug Johnson

Tom Miller in Ballard Co. is the first to find this insect this year. Yeah Tom! His find does tell us the aphid is here. Additionally, it tells us they are here pretty early in the season. This means that they have most of the season to build up into large numbers. Will this happen? That question I can not answer. However, I don't think you can afford to find out by finding some beans that are too heavily infested to salvage.

This is how Tom describes what he found; "3 or 4 plants out of the sample had over 20[sic aphids] per plant. I had mainly been looking at upper leaves and found most of the aphids on the lower, 1st or second trifoliolate. One leaf had 2 large adults and 25 smaller aphids". He also provides this additionally information. The plants were mainly V3 stage. Of the thirty plants that make up a sample thirteen were infested. Of the thirteen infested plants the average rating was 1.3 (on average 10 aphids / plant).

May I suggest that all of us needs to get out and take a look around. If you find the aphid in your area I would sure like to know about it. The largest populations of this aphid have been found in late vegetative stage beans. One of the easy ways to look for the aphid is to look for lady beetles and / or ants. Lady beetles of course are eating the aphids, while the ants are protecting the aphids like cattle. Ants protect aphids from predators and harvest the "honey dew" which is a by product of the aphid infestation.

To see what is happening with soybean aphid in other states you may go to the aphid watch site at:  
<http://www.pmcenters.org/northcentral/saphid/Aphidin dex.htm>

Also, from here you can also see what has been reported in Kentucky this year and what was reported in 2001.

## FRUIT

### GRAPE DOWNY MILDEW by John Hartman

This season is shaping up to be a grape disease-favorable year. Unprotected grapes are already heavily infected with black rot disease. Now downy mildew is also appearing in some vineyards. Downy mildew can be a major disease of grapes in Kentucky. The fungus causes direct yield losses by rotting inflorescences, clusters and shoots. Indirect losses can result from premature defoliation of vines due to leaf infections. Premature defoliation is a serious problem

because it predisposes the vine to winter injury. In general, vinifera (*Vitis vinifera*) varieties are much more susceptible than American types and the French hybrids are somewhat intermediate in susceptibility.

**Disease cycle and symptoms.** The downy mildew causal fungus, *Plasmopara viticola*, overwinters as tiny oospores in leaf debris on the vineyard floor. In the spring, the oospores serve as primary inoculum and germinate in water to form sporangia. The sporangia liberate small swimming spores, called zoospores, when free water is present. The zoospores are disseminated by rain splash to grape leaves, stems, and flowers where they swim to the vicinity of stomata and encyst. Encysted zoospores infect grape tissues by forming germ tubes that enter stomata and from there invade inner tissues of the plant. The fungus can infect all green, actively growing parts of the vine that have mature, functional stomata.

Infected leaves develop yellowish-green lesions on their upper surfaces 7 to 12 days after infection. As lesions expand, the affected areas turn brown, necrotic or mottled. At night, during periods of high humidity and temperatures above 55°F, the fungus forms sporangia on branched sporangiophores, that protrude out through stomata on the underside of the leaf. Because leaf undersides contain high numbers of stomata, sporulation is dense and it gives the surface of the lesion its characteristic white, downy appearance. Sporangia are disseminated by wind or rain splash and on susceptible tissue they liberate zoospores into water films formed by rain or dew. These zoospores initiate secondary infections which can occur in 2-9 hours depending on temperature. Infections are usually visible as lesions in about 7 to 12 days, depending on temperature and humidity. The number of secondary infection cycles depends on the frequency of suitable wetting periods that occur during the growing season and the presence of susceptible grape tissue. In general, Catawba, Chancellor, Chardonnay, Delaware, Fredonia, Ives, Niagara, White Riesling, and Rougeon are highly susceptible cultivars.

Severely infected leaves may curl and drop from the vine. The disease attacks older leaves in late summer and autumn, producing a mosaic of small, angular, yellow to red-brown spots on the upper leaf surface. Lesions commonly form along leaf veins and the fungus sporulates in these areas on the lower leaf surface. When young shoots, petioles, tendrils, or cluster stems are infected, they frequently become distorted, thickened, or curled. White, downy sporulation can be abundant on the surface of infected areas. Eventually, severely infected portions of the vine wither and die. Infected green fruit turn light brown to purple, shrivel, and detach easily. White, cottony sporulation is abundant on these berries during humid weather. The fruits remain susceptible as long as stomata

on their surfaces are functional. After that, new infections and sporulation do not develop, but the fungus continues to grow into healthy berry tissue from previously infected areas. Later in the season, infected berries turn dull green to reddish purple, remain firm, and are easily distinguished from non-infected ripening berries in a cluster. Infected berries are easily detached from their pedicels leaving a dry stem scar.

**Disease management.** The first fungicide applications may be needed during the period between bud break and bloom and the last ones may be needed after harvest to prevent defoliation. There are many different kinds of fungicides effective against this disease. Especially on highly susceptible cultivars, the early season fungicide program should contain a fungicide that has efficacy against downy mildew. For more information on managing downy mildew and other grape diseases, consult the Kentucky Commercial Small Fruit and Grape Spray Guide 2002, (ID-94), available at Kentucky County Extension Offices.

## **MITES MIGHT BE A PROBLEM IN YOUR ORCHARD**

**by Ric Bessin**

High temperatures early this summer have favored the rapid development of European red mite in commercial apple orchards. Last week, there were several reports of economic infestations, or near threshold numbers, of mites in apples. With those growers that I spoke to the mite problems were worse in some apple varieties than others. Red delicious was the most commonly infested variety.

There are different strategies for management of mites in apple orchards, but there is one tactic that is common to each strategy. Regardless of mites are controlled, growers must take care to avoid harming natural enemies that help to slow the buildup of mites. When conserved, these mites predators keep mites from building to damaging levels. When controlling other insects and diseases, pesticides must be selected that have the least damage to predator mites. In particular, some pyrethroid insecticides used early in the season have been shown to flare mite problems.

To control mite problems in midseason, growers have several alternatives. One alternative is to use a summer oils to smother mites. There are several summer oils to choose from, but combinations with some other pesticides must be avoided. In particular pesticides containing sulfur such as Captan and Sevin. The summer oil labels vary considerable, but may require as much as 60 days between the application of the oil and some other pesticides in order to avoid burn to leaves and fruit.

Other miticides are listed in ID-92, Commercial Tree Fruit Spray Guide. One not yet listed in the spray guide is

Acramite 50WS manufactured by Uniroyal Chemical. This was approved for apple use in spring 2002.

## HOUSEHOLD

### MOSQUITO SEASON IS HERE

by Mike Potter

Abundant rainfall has "jump-started" the mosquito season in Kentucky. To date, there have been no reported cases of West Nile Virus in humans, the mosquito-borne disease that killed and sickened several people in the Northeast. Health officials here are monitoring for the virus, and recently did find two infected birds, the primary wild host. The virus also was found last week in a colt in Fayette County, and the thoroughbred had to be euthanized. The risks of contracting West Nile Virus in Kentucky are slight, and in most affected individuals the symptoms/health consequences are not severe. Nonetheless, mosquitoes remain a perennial, warm-season pest for which there is no easy solution. As summer continues, there will be an abundance of misinformation about what works and what doesn't.

#### ***Where Do They Come From?***

Mosquitoes need quiet, non-flowing water for their development. In Kentucky there are two primary groups of mosquitoes, *Culex* and *Aedes*. Mosquitoes of the *Culex* group generally lay their eggs on the surface of water in rain barrels, bird baths, tin cans, old tires, cisterns, roof gutters and any other container that holds water.

Mosquitoes of the *Aedes* group lay their eggs at the base of vegetation bordering streams or in low-lying areas subject to flooding. *Aedes* mosquitoes can also deposit their eggs above the water line in old tires and other water-holding containers. Their eggs can withstand long periods of dry weather between bouts of rainfall, which is why mosquitoes can be abundant, even in the midst of drought.

Mosquitoes develop rapidly, transforming into biting adults in as little as one week. A neglected swimming pool, birdbath or boat bottom allowed to accumulate water can produce hundreds of new mosquitoes each day.

#### ***What Can I Do About Them?***

Eliminate Breeding Sites - The best way to control mosquitoes is to find and eliminate their breeding sites. This is often easier said than done, since breeding locations are not always obvious. Eliminating areas of standing water, such as swamps or ditches, may require community-wide effort. Nonetheless, homeowners can take several steps to prevent mosquitoes from breeding on their property.

1. Dispose of old tires, buckets, plastic sheeting or other

containers that collect and hold water. Do not allow water to accumulate at the base of flowerpots or in pet dishes for more than a few days. Clean debris from rain gutters and remove any standing water on patios or flat roofs.

2. Change water in birdbaths and wading pools at least once a week. Consider stocking ornamental ponds with predacious minnows. Known as mosquito fish, these minnows are about 1 - 1 2 inches in length and can be purchased or seined from streams and creeks. Another approach with ornamental ponds is to apply a mosquito-specific insecticide, which prevents the larvae from developing in the water. Products containing the insect growth regulating agent methoprene (Altosid®), or the bacterium, *Bacillus thuringiensis* var *israeliensis* (Mosquito Dunks®, Bactimos®, Vectobac®), are harmless to fish and other aquatic organisms. They are formulated as water-soluble granules, pellets, or briquets for ease of application and can be purchased from lawn and garden shops and farm supply stores.

3. Check around faucets and air conditioners, and repair leaks that result in puddles for several days. Eliminate seepage from cisterns, cesspools, and septic tanks, and standing water around animal watering troughs

4. Fill or drain ditches and swampy areas. Remove, drain or fill tree holes and stumps with sealant so as not to accumulate water.

5. Irrigate lawns and gardens carefully to prevent water from standing for several days.

Controlling Adults - It may be necessary to supplement breeding site reduction with control efforts directed against adults. Adult mosquitoes prefer to rest in trees, shrubs, vines and dense vegetation during the day. Consequently, yards with a lot of shade often have nightmarish problems with mosquitoes. Some species also can fly long distances and may be breeding on adjoining property.

Exclusion - Mosquitoes can be kept out of homes by securely screening windows, doors and porches. The occasional mosquito found indoors can be eliminated with a fly swatter. Aerosol-type insecticides labeled for mosquitoes, gnats, and other flying insects usually are not necessary and seldom provide much relief at the dosages applied by householders.

Vegetation Management - As mentioned earlier, adult mosquitoes prefer to rest in dense vegetation during the day. Consequently, homeowners should remove tall weeds and overgrown vegetation from their yard. To further reduce intolerable levels of biting adult mosquitoes, insecticides can be applied to the lower limbs of shade trees, shrubs, and shaded areas adjoining foundations and occupied areas. Lawn and garden formulations containing pyrethroids, e.g.,

bifenthrin, (Ortho Bug Stop); cyfluthrin, (Bayer Advanced Powerforce Multi-Insect Killer), lambda cyhalothrin (Spectracide Triazicide Soil & Turf Insect Killer) are generally most effective. A hose-end sprayer is usually the most effective and efficient way of making such large-volume applications, and homeowners choosing to do so should be advised to purchase the concentrated formulation rather than the pre-mixed jug that often comes with an attached spray nozzle. Those who choose not to perform such applications themselves can enlist the services of a professional pest control or lawn care company.

*Topically-Applied Repellents* - Repellents will help prevent bites when spending time outdoors. The most effective mosquito repellents contain the active ingredient diethyl toluamide (DEET). Higher percentages of DEET in the ingredients generally provide longer protection. Low - percentage formulations (10% or less) are available for use with young children. Non-DEET containing repellents (e.g. Avon Skin-So-Soft7, citronella) may provide some relief, but to a lesser degree and for shorter duration than DEET-containing products. It is often desirable to apply insect repellent on outer clothing as well as the skin. Always read and follow directions on the container. Mosquito repellent should not be applied to the hands of young children, and treated skin should be washed with soap and water after returning indoors.

*Bug Zappers, Citronella Candles, Ultrasonics, etc.* - Many consumer products claim to attract, repel or kill mosquitoes. Most of these devices do not work, or are only marginally effective. A Bug zappers@ using ultraviolet light as an attractant are generally ineffective in reducing outdoor populations of mosquitoes and their biting activity. Studies indicate that less than five percent of the mosquitoes killed by bug zappers are females B the only ones that actually bite. The rest are non-biting, male mosquitoes and other harmless night flying insects. Somewhat better results have been obtained with citronella candles. For maximum protection, use multiple candles positioned close (within a few feet) of where people are sitting. *A single candle stationed at the outer edge of a large picnic blanket probably won't provide much benefit, other than "atmosphere."* Ultrasonic devices, mosquito-repellent plants, garlic, and other gimmicks routinely touted in magazine advertisements are generally ineffective. When it comes to mosquito control, if it sounds too good to be true, it probably is.

## DIAGNOSTIC LAB HIGHLIGHTS

by Julie Beale and Paul Bachi

The Diagnostic Laboratory has been inundated with samples during the past week. Many of those were field crop samples, especially tobacco. Among the samples diagnosed were holcus spot on corn; leafhopper injury on

alfalfa; Fusarium stem/root rot on soybean; herbicide injury on corn, soybean and tobacco; extensive black shank on tobacco, as well as Pythium root rot, black root rot, soreshin (Rhizoctonia), Fusarium root and basal stem rot, tomato spotted wilt virus, transplant shock and manganese toxicity on tobacco.

On fruit and vegetable crops, we have seen anthracnose, black rot and chemical injury on grape; frog-eye leaf spot on apple; scab and brown rot on peach; Rhizoctonia root/stem rot on bean; angular leaf spot (Pseudomonas) on cantaloupe and cucumber; anthracnose on cucumber; bacterial spot and southern blight on pepper; bacterial crown rot on rhubarb; bacterial canker, bacterial speck and spot, blossom end rot, Septoria leaf spot, Pythium root rot, buckeye rot, and tomato spotted wilt on tomato.

On herbaceous ornamentals and turf we have seen Rhizocotonia root/stem rot on chrysanthemum, daisy, and gypsophila; Xanthomonas blight on canna; Entomosporium leaf spot on lupine; Septoria leaf spot on primrose; Cercospora leaf spot on tradescantia; and necrotic ringspot and localized dry on on bluegrass turf.

On woody ornamentals we have seen powdery mildew on dogwood; cedar-quince rust on quince; Pseudomonas leaf spot on hibiscus; Botrytis blight on honeysuckle; Verticillium wilt on catalpa; anthracnose on maple; black spot, powdery mildew and rosette disease on rose; and Botryosphaeria canker on yellowwood.

## INSECT TRAP COUNTS

UKREC, Princeton, KY - June 21-28

Black Cutworm .....	1
True armyworm .....	4
Corn earworm .....	11
European corn borer .....	1
Southwestern corn borer .....	0
Fall Armyworm .....	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.