



# KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • AGRONOMY

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## TOBACCO

### CURRENT BLUE MOLD STATUS

by William Nesmith

The very hot and dry weather of mid to late July greatly reduced, but did not eliminate, blue mold activity in the Ohio River Valley. Based on updated status reports from County Extension Agents and samples submitted to our diagnostic labs, the disease is still active at low levels in and near the Ohio River Basin (north and south of the river) west to about Owensboro and throughout eastern Kentucky from the Ohio River south to Clinton County. Damaging levels of new activity were confined to tobacco crops that were growing rapidly following timely rains the past two weeks. Most communities did not receive enough rain to support such growth, however. Many growers outside the areas listed above are also finding blue mold in their crops when entering the fields to top, and claiming new activity; but in most such cases submitted to our labs, the disease had been active for several weeks with little or no new infections or sporulation. New lesions will be light yellow with new sporulation appearing blue to gray in color.

The cooler temperatures experienced last week and

those expected most of this week are highly favorable for blue mold development. Systemic vein strikes in the upper leaves followed by distortion of the leaves are possible on fast growing crops. Little long range movement of spores has been occurring recently, so the new threats should be mainly confined to communities with active disease on rapidly growing crops that have had moisture. Fungicide sprays are still needed in such crops, especially on late-set crops located in foggy locations.

### TOBACCO HORNWORMS

By Lee Townsend

Tobacco hornworms can be found in virtually all fields at this time of year. They do the bulk of their feeding from the time they are 1-1/2" long until they are full grown (about 4"). If control is necessary, treat when most are 1" to 2" long. While it is convenient to apply an insecticide with the sucker control material, the timing may not be good. The effective life of most of the insecticides used at this time is 3 to 7 days. If hornworms happen to be present, then control should be good. However, moth flight lasts for many days and hornworms that escape the treatment can be very damaging. Continue to examine fields at weekly intervals between topping and harvest. Treat when

there are 5 or more healthy hornworms per 50 plants. See ENT-15, Insecticide Recommendations for Tobacco.

Parasitized hornworms can be recognized by the small, white, football shaped cocoons along their backs. Fields should not be treated if a significant proportion of them are parasitized.

## **CORN**

### **DROUGHT STRESS INCREASES MYCOTOXIN RISKS**

**by Paul Vincelli**

Drought stress on the corn crop has been variable across the state, and by itself represents a serious limitation to corn yields in many areas. Extension agents will also want to consider the effect that drought stress can have on mycotoxins.

When significant levels of aflatoxins are detected in corn, drought stress and high temperatures are typically associated with it. Aflatoxins are carcinogenic toxins sometimes produced in corn by the fungus *Aspergillus flavus*. Injury to kernels from insects and possibly other factors also increases the risk of aflatoxin accumulation. Aflatoxins occur very infrequently in Kentucky, and often are associated with poor handling and storage. However, in this kind of growing season, it is possible to have high levels of aflatoxin in corn coming right out of the field.

An important fact to understand about aflatoxin contamination in the Midwest is that, when it occurs, the incidence and severity can be very, very variable. Even in a county or portion of a county with the occasional field with high levels, one can also expect to find fields with low levels and undetectable levels. Aflatoxin levels in food and livestock feed are regulated by the U.S. Food and Drug Administration.

Recognize once again that aflatoxin contamination is usually very infrequent to nonexistent, so I am not anticipating substantial problems with aflatoxins. Nevertheless, Extension agents seeking more information on aflatoxins can look to the Extension publication *Aflatoxins in Corn*, ID-59. That publication includes information on utilizing aflatoxin-contaminated grain, should the toxins be detected. In addition to the overview in that

publication, producers may be interested to know of recent research showing that the aflatoxin content of infected kernels rises rapidly as the kernel dries below 20% moisture. Therefore, if feasible, it may be advisable to harvest drought-stressed fields before the corn drops below 20% moisture content and dry the grain appropriately.

Another family of mycotoxins that are associated with drought in corn are the fumonisins. These mycotoxins have the potential to cause lethal diseases of horses and swine (the diseases are equine leucoencephalomalacia and porcine pulmonary edema, respectively). Preharvest contamination of corn by fumonisins is most often associated with drought stress at the silking stage. The fungus that produces fumonisins--*Fusarium moniliforme*--can grow in grain above 18.4% moisture. It is therefore advisable to harvest grain at 25-27% moisture content and dry it to below 16% within a day or two of harvest. More information is available in the UK Extension publication ID-121, *Mycotoxins in Corn Produced by Fusarium Fungi*.

Producers should be aware that both families of toxins can often be found at higher concentrations in injured and broken kernels than in sound kernels. Producers who clean their corn are advised not to feed screenings to livestock, since these pose the greatest risk. Many of the cases of poisonings of horses and swine from fumonisins in the Midwest resulted from feeding of screenings to livestock.

## **SOYBEAN**

### **IF YOU'RE STILL DRY, MAKE SURE MITES ARE NOT PRESENT IN YOUR BEANS**

**by Doug Johnson**

If your ground is still dry, then your beans have been sitting doing nothing but surviving for a long time. That makes them ripe for an outbreak of spider mites. Hopefully, you have been keeping your eyes open for this pest since we first mentioned it two weeks ago.

Spider mites are very small, so you will need a hand lens to see them. Two spotted spider mites are an off white color with two dark spots on the back. We also have a red form (the red spider mite) which is common in fruits but relatively rare in soybeans. Mites have eight legs, (though the very first stage will have only six legs) and are generally found on the undersides of leaves. If very large populations

are present, you also may find some silk webbing, hence the name spider mite.

Damage symptoms come in the form of yellowed or bronzed leaves. Spider mites suck the contents out of individual cells, removing the green chlorophyll, leaving the cell wall behind. You get a plant that has yellow or bronze specks (empty cells) but no holes in the leaves. For all practical purposes the cells are dead so it is just the same as if they had been eaten by a grasshopper or a caterpillar.

Spider mite infestations are a challenge to assess. Their potential impact on the crop is possibly the most difficult management decision that we face in Kentucky soybeans. If it does not rain, the beans will not make anything; if it rains enough, the mites will go away. The only thing you can do is decide whether or not it is possible to save your plants until it rains. Generally, treat all the bronzed areas of the leaf as if they have been removed. Then use the defoliation tables in ENT-13 to determine if a control is warranted.

This is a difficult pest to control, do not expect one application to do the job. That might be enough if you are lucky, but often it takes two applications a week to ten days apart to get the job done. Check ENT-13 for labeled insecticides / miticides.

## **ALFALFA**

### **BLISTER BEETLES IN ALFALFA**

**By Lee Townsend**

Several species of blister beetles live in Kentucky. Quite a few specimens have come in this year from tomatoes, which may indicate a higher than normal population in some areas.

Blister beetles are narrow-bodied and 3/4" to 1-1/4" long, with broad heads, and antennae that are about 1/3 the length of the entire body. The front wings are soft and flexible in contrast to the hard front wings of most beetles. Black blister beetle are jet black, striped blister beetle have orange and black stripes on the wing covers, and the margined blister beetle is black with a thin gray stripe around wing covers.

The adults feed on leaves in the tops of a plant but are especially attracted to flowers where they feed on nectar and pollen. They gather in groups, so large numbers can occur in concentrated clusters in a field. These beetles are mid to late summer insects, active

in mid-July and early August which translates to the third or fourth cutting.

### **Blister Beetle Toxicity**

Cantharidin is the poisonous substance in blister beetles. Its toxicity is comparable to cyanide or strychnine. Although horses are considered to be very susceptible, comparable doses can poison cattle or sheep. Very small amounts of cantharidin can cause colic in horses. The substance is very stable and remains toxic in dead beetles. Animals may be poisoned by ingesting beetles in cured hay. There is no sampling method that can detect toxic levels of blister beetles in cured hay.

Cantharidin can cause severe skin inflammation and blisters. It is absorbed through the intestine and can cause symptoms such as inflammation, colic, straining, elevated temperature, depression, increased heart rate and respiration, dehydration, sweating, and diarrhea. There is frequent urination during the first 24 hours after ingestion, accompanied by inflammation of the urinary tract. This irritation may also result in secondary infection and bleeding. In addition, calcium levels in horses may be drastically lowered and heart muscle tissues destroyed. Since animals can die within 72 hours, it is imperative to contact a veterinarian as soon as blister beetle poisoning is suspected.

The concentration of cantharidin varies with the species of beetle, as well as sex. The chemical is produced by the male, which has the highest content. Some is passed to the female during mating. Cantharidin content of the striped blister beetle has been measured to be about 5 times greater than the level found in the black blister beetle. The amount of cantharidin necessary to kill a horse is estimated at 1 milligram of cantharidin per kilogram of horse weight. For example, this translates to about 25 striped blister beetles for a 275 pound horse to over 100 for a 1200 pound animal. About 250 and 1,100 of the less toxic black blister beetles would be needed for the same two animal weights.

### **Hay Management**

The best way to deal with blister beetles is through management practices that will keep fields from being attractive. If practical use the first cutting hay for horse feed since the beetles are not active then.

The major step is to cut on a schedule that keeps alfalfa and weeds from producing the flowers that attract beetles and keep them in the field. Cut before an advance bloom stage. This means hay with high quality and protein content and keeps attraction of beetles low. Practice good weed management to keep other flowering plants to a minimum.

Other practices are necessary if flowers and beetles are abundant. The worst thing that can be done is to crimp or crush hay if beetles are present. Crushed beetles remain in the hay and can poison animals. DO NOT use a hay conditioner when harvesting blister beetle infested alfalfa.

Fields with flowered plants can be checked for blister beetles before harvest by using a sweep net as you would to sample for potato leafhoppers. This is not foolproof because large numbers of beetles can be concentrated in very small areas of a field. Collection of 100 sweeps for the field, as would be done for leafhoppers, is not sufficient to be confident that the beetles are not present unless flowering is limited to small areas.

Sickle bar mowers and some of the more modern circular or rotary mowers lay the hay down but do not crush it. Blister beetles have a behavioral characteristic that may be used against them. When plants are disturbed, blister beetles play "possum" and fall to the ground. As the hay dries and cures, the beetles will leave to seek food and moisture.

#### Horse Owners

Horseowners can reduce the risk of feeding blister beetles to their horses by implementing the following precautions:

- Grow your own alfalfa, if possible, so that you can control all management practices and be sure the crop is beetle free.
- If you do not produce your own hay or need more, buy from a local source and work with that producer to insure that you know what kind of management the hay has had. Develop a good working relationship with your hay producer.
- Set aside or buy hay from the first cutting since it is much less likely to have beetles in it. In Kentucky, we see these beetles in the third and fourth cuttings.
- There is no efficient way to inspect hay carefully enough to be sure that it is beetle free or to

determine that beetles are below damaging levels before it is fed.

## **PESTS OF FALL SEEDINGS**

**by Lee Townsend**

Several insects feed on fall-seeded alfalfa, and if numerous and unnoticed, may produce significant stand loss. The most common culprits are fall armyworms, grasshoppers and crickets. Occasionally, Mexican bean beetles and spotted cucumber beetles (southern corn rootworm beetles). Regular inspection of new seedings will allow early detection of pest problems, assessment of damage, and treatment if necessary.

Fall armyworm infestations will tend to be clumped and intense because each female can lay 100 or more eggs in a mass. The small larvae will move out from this focus as they grow and consume all of the nearby plants. Look for roughly circular areas of missing plants. Examine the soil surface for the striped larvae. If needed, spot treatments can be used to deal with the problem.

Grasshoppers and crickets can graze off small seedlings. Damage should appear at the edges of the field and progress across it. These insects will move readily so feeding should be more diffuse over an area. Mexican bean beetles and spotted cucumber beetles also may move in and feed. Their activity should be spread over the field as well.

Evaluate injury carefully. Low rates and spot treatments may be all that is needed to deal with pest activity. See ENT-17 for control recommendations.

## **VEGETABLES**

### **DISEASE ADVISORY FOR LATE SUMMER AND FALL VEGETABLE PRODUCERS**

**by William Nesmith and Brent Rowell**

The dry weather experienced most of this season has greatly reduced most foliar diseases in vegetables. However, changing weather conditions could greatly change the potential for foliar diseases to develop in Kentucky's commercial vegetable crops. Cooler temperatures and fog will be key factors driving disease development during August. Controls need to be in place for powdery and downy mildew in fall plantings of cucurbits - pumpkins, squash and cucumbers. Bacterial leaf

spot activity in peppers has been light, but is increasing in susceptible varieties, so spray programs need to be improved. Spray intervals should be shortened, gallonage per acre increased, etc. to improve coverage. In fall tomatoes, be prepared to close the spray intervals to protect against increased early blight and Septoria leaf blight. Late blight has not been reported from any area, but scout carefully for it during cool periods, especially in cooler and higher elevations in eastern Kentucky.

We have spoken directly with several commercial vegetable growers and dealers recently in helping them formulate their spray programs. Several seem very surprised when requested to pull out a copy of ID-36 - "Commercial Vegetable Crop Recommendations" and turn to page so and so. Folks, if you are a commercial vegetable grower, please obtain and use this publication. We specialists in several departments have put in a lot of hard work, time, and expense to compile this information and get it to you. We can best help you when you use this publication as your guide and are contacting us only for clarification of other specifics not covered in the publication.

Most recent calls have concerned spray programs for pumpkins. Here are some things that have come up and are not covered in ID-36 because they related to changes in pesticides since ID-36 was published.

\* Nova 40W DOES NOT have a national labeled for use on cucurbit vegetable crops. However, it has received a Section 18 Emergency Exemption for use in Ohio from July 16 to September 30, 1999 for the control of powdery mildew, due to specific resistance-management concerns that exist in Ohio. This exemption does not apply to Kentucky, so any use of Nova on cucurbits in Kentucky is illegal.

\* Several are calling about the range of control provided by Quadris in fall cucurbits. Quadris is a broad spectrum fungicide and based on data from around the country, growers can expect control of a wide range of fungal diseases attacking cucurbits. But it is not going to control all diseases. Quadris has provided good control of powdery mildew in most national and regional tests. For Kentucky, its greatest weakness on fall cucurbits is likely to be with downy mildew, which is often as important as powdery mildew in some seasons. Even though Quadris is labeled for downy mildew control, some studies have shown that it cannot be relied upon to control the disease under strong pressure like we experience here. Therefore, Ridomil Gold Bravo or

Aliette will need to be rotated with Quadris to obtain adequate control of downy mildew on sites with a history of serious problems with this disease.

\* Some are confused about what is meant by "the one to one alternation of Quadris with another fungicide having a different mode of action. Basically, this means to spray Quadris one week, another material the next, and then back to Quadris if you are following the Quadris program. The reason for this labeling requirement is to decrease the possibility of fungi becoming resistant to azoxystrobin, the active ingredient in Quadris. For growers in Kentucky that are trying to control a wide range of diseases, this usually means applying Quadris one week and a chlorothalonil-containing fungicide (Bravo or Terranil, for example) the next, until the spray season is over. Since chlorothalonil will provide only limited control of powdery mildew, either Benomyl, Topsin M, or Bayleton will need to be added to the non-Quadris sprays where strong powdery mildew pressure exists in order to achieve adequate control of this disease.

## SHADE TREES & ORNAMENTALS

### ROSE DISEASES ARE HERE

by John Hartman

Roses, with their diversity of varieties and types and their often spectacular blooms make them a favorite for many gardeners. Roses in Kentucky are subject to several foliar diseases such as black spot, powdery mildew, downy mildew, and rust.

- Black spot caused by the fungus *Diplocarpon rosae*, produces dark, circular spots with fringed borders on either the top side or the bottom side of the leaves. Infected leaves often turn yellow and drop from the plant, thus reducing the number and quality of the flowers.
- Powdery mildew, caused by the fungus *Sphaerotheca pannosa*, attacks leaves, stems, and flower buds. Fungal signs, the white powdery growth of the fungus are easily seen on the infected plant surfaces. Infected leaves may be small and deformed.
- Downy mildew, caused by the fungus *Peronospora sparsa*, produces lesions that are at first an off-color, then purplish brown. Infections lead to defoliation.
- Rust, caused the fungus by *Phragmidium mucronatum*, is less common than black spot or powdery mildew. Rust appears as rusty spots on leaves and stems. Severely infected leaves may

shriveled and turn brown.

Of these black spot and powdery mildew are the two most important. They are almost always a serious problem every year under our warm, humid growing conditions. Thus, with our warm, humid summer, a rose disease control program using fungicides should have been a summer-long project this year. Old leaves, winter damaged canes, and debris which are sources of fungal inoculum should have been removed and destroyed earlier this spring.

Rose growers can plant disease tolerant roses and benefit from improved performance and reduced fungicide use. Disease-resistant cultivars have been listed in previous issues of this publication, as well as in many nursery catalogs.

If disease-susceptible roses are being grown, a partial list of appropriate fungicides is presented here. Chlorothalonil (Daconil 2787) and mancozeb (Fore) will control black spot, downy mildew, and rust. Fenarimol (Rubigan), myclobutanil (Eagle, Immunox), propiconazole (Banner), and triadimefon (Bayleton), are quite effective against powdery mildew and rust. Azoxystrobin (Heritage), copper sulfate (Phyton-27), mancozeb plus thiophanate-methyl (Zyban), thiophanate-methyl (Cleary's 3336, Domain, Fungo-Flo), and triforine (Funginex), are labeled for the control of both powdery mildew and rust. To maintain disease suppression, repeat fungicide applications at 10-14 day intervals throughout the growing season.

Rose growers who wish to observe how good roses can look when given proper care and diseases are controlled need only look at the rose collection at the U.K. Arboretum on campus just off Alumni Drive. This assortment of over 400 roses is very likely the largest and best-maintained rose collection in the Midwest and is worth a visit when traveling to Lexington.

## **LAWN & TURF**

### **NIGROSPORA LEAF BLIGHT FOUND IN CENTRAL KENTUCKY**

**by Paul Vincelli**

An unusual disease of Kentucky bluegrass—Nigrospora leaf blight—has been diagnosed from several lawns in central Kentucky. This disease produces leaf lesions that can look very much like

brown patch on tall fescue: irregular lesions that are mostly tan but that have a thin, brown border. It causes leaves to blight away in diffuse areas in the lawn, or less commonly, in discrete patches. This disease occurs under periods of sustained hot, humid weather.

Management practices include reducing stress and leaf wetness periods through the following practices: if choosing to irrigate, do so deeply and infrequently; raise the mowing height; irrigate in morning rather than evening; avoid using insecticides and herbicides during hot weather; avoid trafficking when the turf is dry; and fertilize several times this fall to promote recovery. To my knowledge, none of the available turf fungicides are labeled for Nigrospora leaf blight. While some of the common products may provide protection, there are no data to support such a use. In any case, cool weather last week may have given many of these swards the relief they needed to enhance their own natural resistance level.

### **LATE SUMMER SWARMING ANTS**

**By Lee Townsend**

Yellow-orange winged ants can cloud the afternoon skies in late summer. Large yellow ants are also known as citronella ants because of the lemony odor given off when they are crushed. These ants nest in the soil under logs, rocks, patios, or concrete slabs but can be abundant in open fields. Usually there is a large pile of fine soil particles at the nest entrance. Large yellow ants feed almost entirely on "honeydew" gathered from root aphids and other sucking insects. Large swarms can be an annoyance to anyone who is outdoors at the peak of ant activity. Some people are concerned that these are termites.

Large yellow ants are normally not a household problem unless there are colonies along the foundation and the workers forage in the structure. Direct treatment of the nests, easily recognized by the large dirt piles at the entry, is the key to control in this situation. Ant baits are not too effective against these ants.

### **DIAGNOSTIC LAB - HIGHLIGHTS**

**by Julie Beale**

On corn we are seeing drought damage (shriveled ears and scorched leaves), gray leaf spot and maize dwarf mosaic virus. Although we have seen fewer

tobacco samples this week, there are still a significant number being sent in for confirmation of black shank; many also have soreshin. Other diagnoses on tobacco included blue mold, bacterial hollow stalk, Fusarium wilt in combination with root knot nematode, angular leaf spot, frog-eye leaf spot, and weather related leaf scald. We have also had several samples with Pythium stem canker. This disease resembles black shank and can only be differentiated by culturing for the fungus. We typically see this disease (Pythium) coming in after heavy rains or flooding; infection takes place on the stem at a wound site or at the water level after a flooding event.

On ornamentals we have seen bacterial leaf spot and Pythium root rot on ivy; Rhizoctonia root and stem rot on field-grown chrysanthemum; and Pythium root rot on poinsettia. On turf we have seen Nigrospora blight, brown patch, southern blight and summer patch. Woody landscape plants are mostly showing drought stress symptoms although we have had cases of Entomosporium leaf spot on pear; pine wilt nematode on pine; and oak leaf blister.

On vegetables we have seen black rot of cabbage; bacterial spot, southern blight, Fusarium basal stem rot, anthracnose and Pythium soft rot (fruit decay) on pepper; and stinkbug damage and uneven ripening ("yellow shoulders") on tomato.

## **PESTICIDE NEWS & VIEWS**

### **CAPTURE 2EC RECEIVES APPROVAL FOR SOME VEGETABLES**

**by Ric Bessin**

Last week, FMC announced that the EPA has granted approval for use of Capture 2EC on some vegetables. Capture 2EC is a pyrethroid insecticide that has the active ingredient bifenthrin. Unlike many other pyrethroid insecticides, bifenthrin is also a miticide. In addition to uses on cotton, field corn, and popcorn, Capture 2EC can be used on eggplant, beans, peas, cabbage, broccoli, cauliflower, other cole crops, sweet corn, cucumbers, melons, squash, pumpkins, and watermelons.

The Capture 2 EC label bears the signal word "WARNING" and has restricted entry intervals (REI) of 24 hours to 18 days depending on the crop. Capture 2EC is a RESTRICTED USE insecticide. FMC has indicated that they are currently working with the EPA to significantly shorten many of the

REIs. In many cases the preharvest (PHI) intervals of 1 to 7 days are shorter than the corresponding REIs.

Capture is effective against a wide variety of insect pests on these crops including aphids, stink bugs, many lepidopterous larvae, thrips, plant bugs, leaf beetles, Japanese beetle, and whiteflies. Higher labeled rates provide control of two-spotted spider mites.

### **EPA ANNOUNCES FQPA-RELATED CANCELLATIONS**

**by Ric Bessin**

Last Monday the EPA announced that it is eliminating the use of methyl parathion (PennCap-M) and placing greater restrictions on the use of Azinphos-methyl (Guthion) as a result of the Food Quality Protection Act. These changes do not take effect until next year, so growers are encouraged to use existing stocks before the new regulations are implemented. August 3, 1999 was the Congressional mandated date for the EPA to reevaluate 1/3 of the pesticide tolerances under the new law.

Keep in mind that the EPA has made it clear that the use of either of these products as permitted by existing regulations does NOT pose a health threat. Families are reminded that the long-term health benefits of a well balanced diet including a wide variety of fruits and vegetables greatly outweigh theoretical risks associated with pesticide residues. The majority of fruit and vegetables has no detectable pesticide residues!

To some extent, both of these insecticides are used in Kentucky. PennCap-M has been used on a limited basis on tomatoes, apples and peaches. There are readily available alternatives for this insecticide that are listed in ID-36 and ID-92. PennCap-M use will not be permitted next year.

Guthion is labeled on several fruit and vegetable crops and has been used more routinely on apples for control of a wide variety of pests. Use of Guthion has not been eliminated, rather it has been limited. The new regulations for Guthion are intended to protect the applicator /field worker as much as reduce the already low residues on the fruit. The most significant changes for Kentucky include:

- + Application by backpack sprayer or hand wand sprayers will be prohibited.
- + Preharvest interval on apples will be extended to 21 days.
- + Total amount of azinphos-methyl applied to apples and pears will be limited to 4.5 lbs of active ingredient per acre per year (3.375 lbs ai /a / year on peaches).
- + All non-tree crop Restricted Entry Intervals (REI) will be extended from 48 hours to 96 hours.

### **INSECT TRAP COUNTS**

#### **UKREC, Princeton, KY, July 30–August 6**

European corn borer .....	4
Corn earworm .....	32
True armyworm .....	10
Southwestern corn borer .....	343
Fall armyworm .....	2

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**Lee Townsend, Extension Entomologist**