



KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • AGRONOMY

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ANNOUNCEMENTS

CCA TRAINING

Continuing Education Training for Certified Crop Advisors is scheduled for October 28 and 29 at the Holiday Inn, Bardstown. The program is scheduled from 8:30 am - 5:05 pm (local time) on Wednesday (Oct 28) and from 8:30 am - 3:05 pm on Thursday (Oct 29). Contact Dr. Lloyd Murdock at UKREC in Princeton (502) 365-7514 for more information.

CORN

SOUTHWESTERN CORN BORER DAMAGE COMMON

By Ric Bessin

Because of the spring rains and delayed planting or replanting of many fields this year, many corn growers have had to watch for southwestern corn borer this summer. Some have seen the extent of the problem on their farm as they were shelling corn. Particularly hard hit were counties in the Purchase, Pennyrite, and Green River Areas. While it is too late to prevent damage for 1998, growers need to begin thinking about 1999.

Delayed planting usually results in more severe insect problems. This year a lot of corn went into the ground late or was replanted after flooding. Consequently, some fields have experienced much higher insect pressure than normal. During the late 1970's the southwestern corn borer was regarded as one of the most serious insect pests of corn in the state. It is closely related to the European corn borer and has a very similar life cycle but the southwestern corn borer is much more destructive to corn and more difficult to control.

At this point, what can we do to reduce lodging? Harvest fields as soon as possible. Fields that were planted with full-season-control Bt hybrids, such as YieldGard and StarLink hybrids, should not see much damage. Insecticidal control at this point would not be a good decision but identifying fields with the worst infestations and selecting them for the earliest reasonable harvest would be a good decision.

SMALL GRAINS- WHEAT

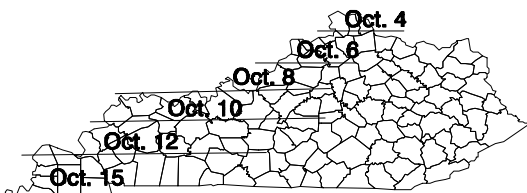
AVOIDING INSECT PROBLEMS

by Doug Johnson

There can be no doubt that AVOIDING insects is

the most effective and economical method of control in winter wheat. In general, this can be achieved by delaying planting until after the weather begins to cool down. As a rule of thumb, this means planting after the Hessian Fly free date. The graphic below illustrates the dates suggested for Kentucky. These are not carved in stone and can vary based on the weather patterns of a particular season. For instance, if the weather is continually warm, the recommended planting date would be later than the fly free date. In a season with early cool weather or frost, the recommended date would be earlier. It is important to understand that from the insect control point of view, planting earlier than the fly free date should be viewed as having greater risk of insects and associated diseases, while planting after the date will have reduced risk.

Map showing normal safe dates for sowing wheat (approximate), to escape injury by Hessian Fly.



Adapted from: Metcalf, C.L., W.P. Flint, and R.L. Metcalf. *Destructive and Useful Insects*. McGraw-Hill. NY. 1962. P.534

There are three insects that attack wheat in the fall of the year. Of these the fall armyworm is the least important and only occurs in the fall. There is no treatment threshold but one to two worms per square foot may be a good number to use for triggering a control application. This is complicated by the fact that Fall armyworm are 'grazing' on the wheat and will not kill the plants.

The Hessian fly, for which the fly free date was named, also attacks in the fall causing loss of stand through the winter. However, if many survive the winter there may be a spring population that can cause further stand loss or reduction in plant vigor. We do not have a good handle on how much damage the Hessian fly is causing in Kentucky. We do know that we have biotype L that can break all known resistance genes, and that insecticide

applications are of little use. Therefore, the fly free date is the major control option.

By far the most important pests are the aphid complex which vectors the Barley Yellow Dwarf virus. Primarily the Bird cherry-oat aphid, but also the corn leaf aphid commonly occur in the fall. The impact of all of these pests can be reduced by delaying planting until after the Hessian fly free date.

Delayed planting is a powerful tool for pest avoidance. However, this control alone may not provide all the control needed especially for aphids and Barley Yellow Dwarf Virus. You should scout your fields on a regular basis ESPECIALLY from plant emergence until the daily temperatures fall below 50 degrees.

For additional information check the following University of Kentucky publications.
 ID-125, A Comprehensive Guide to Wheat Management in Kentucky
 IPM-4, Kentucky IPM Crop Management Manual for Small Grains.
 ENT - 47, Insecticide Recommendations for Small Grains.
 Entfact-110 Fall Armyworm
 Entfact - 101 Hessian Fly in Kentucky

TOBACCO

BLUE MOLD RESTING SPORES NOT FOUND IN 1997 CROP

By William Nesmith

Blue mold is an important consideration concerning tobacco exports, especially concerning exports to China. The key question relates to the presence of resting spores (oospores) in Kentucky's tobacco. To assist those involved in making export decisions about Kentucky's tobacco, surveys have been conducted for several years.

The most extensive survey was conducted with the 1997 tobacco crop, a year when the disease developed widely over the state. Leaves diseased with blue mold were collected (usually by the local county extension agent) near harvest time from most Kentucky counties reporting blue mold in 1997. These leaf tissues were examined by University of Kentucky plant pathologists to confirm that blue mold was present. After air curing, these samples were forwarded to Dr. Harvey Spurr, Plant Pathology Laboratory, Oxford Plant Protection Center, North Carolina State

University. Dr. Spurr's laboratory conducted assays to determine if oospores (sexual resting spores) of the blue mold fungus were being made or present.

No oospores were found in any of the samples submitted from Kentucky's 1997 crop. His findings are consistent with our findings, that oospores were not found associated with the 1997 crop. These findings should be most valuable to those attempting to determine the risk of blue mold associated with exporting Kentucky's tobacco.

Dr. Spurr and I wish to thank all that were involved with collection and submitting of samples for these assays, especially the local county extension offices and the two plant disease diagnostic labs.

SHADE TREES AND ORNAMENTALS

DROUGHT AND ARMILLARIA ROOT ROT MAY CAUSE TREE AND SHRUB DECLINE by John Hartman

Many areas of Kentucky received some rain a week or so ago, but much of Kentucky is still suffering dry soil conditions that could have adverse long term implications for woody plants in the landscape. Even though it is autumn and the weather is a bit cooler and trees are losing their leaves, trees and shrubs still need water. Drought stress can have many effects on trees and shrubs. Drought stressed plants are more susceptible to canker diseases, winter cold injury and to *Armillaria* root rot disease. Symptoms and signs of root rot are already present in some landscapes and will most certainly increase next year following the current stressful conditions.

When infected with the *Armillaria* root rot fungus, woody plants show symptoms of dieback and decline in the landscape. Closer examination of the base of the trunk often reveals loose or decayed bark and dead cambium. By peeling back the bark one can often observe dark brown rhizomorphs (thick strands of hyphae), resembling narrow "shoestrings". These rhizomorphs are signs of one or more species of *Armillaria* and perhaps other related fungi, cause of shoestring root rot. Decayed roots with rhizomorphs growing along their surface can be observed by digging up the roots. Creamy white fans of fungal mycelium may also be observed under the bark. The mushroom stage of shoestring root rot sometimes develops in fall on dead trees or decayed logs.

This disease has several names: *Armillaria* root rot, shoestring root rot, mushroom root rot, and oak root rot. The disease is sometimes confused with *Phytophthora* root and collar rot which was reported earlier this season during wet weather. The decay associated with *Phytophthora* is often a darker brown color, decayed bark is more moist, and rhizomorphs are absent.

Shoestring root rot has a very wide host range and is most frequently observed in oaks, maples, pines, hornbeams, taxus, and fruit trees in the landscape. Often, it is associated with formerly wooded sites converted to landscapes because the fungus can persist for many years in decaying wood in soil. Most trees with *Armillaria* root rot will have been previously exposed to stressful growing conditions such as drought, winter injury, insect defoliation or borers, mechanical injuries, or construction damage. These kinds of stresses, along with infection by the *Armillaria* fungus, are frequently part of the sequence of events that leads to decline and death of trees and shrubs.

Once trees or shrubs begin to show serious symptoms of decline, including dieback of twigs and branches, undersized and off-color leaves, increased trunk and limb sprouts (epicormic branching), and excessive fruit set, the decline is often not reversible. Thus, trees or shrubs with *Armillaria* root rot probably cannot be saved, and should be removed. Reduce the threat of this disease by providing good conditions for tree growth, minimizing stress, and removing infected stumps and roots. If water is limiting, at least irrigate the most valuable trees and shrubs in the landscapes. Needle evergreens especially need water going into the winter because they continue to transpire.

HOUSEHOLD

FENDING OFF FRUIT FLIES by Mike Potter and Lee Townsend

Fruit flies can be a real nuisance this time of year. Tomatoes, melons, squash, and other perishable items brought in from the garden are often the initial source. However, the adults can also fly in through open windows and doors. These flies then can infest rotting bananas, potatoes, onions, and other unrefrigerated produce. As if that weren't enough, they can breed in drains, garbage disposals, empty bottles and cans, trash containers, mops and

cleaning rags. All that is needed for development is a moist film of fermenting material.

Adults are about 1/8 inch long and usually have red eyes. The front portion of the body is tan and the rear portion is black. They lay their eggs near the surface of fermenting foods or other moist, organic materials. Upon emerging, the tiny larvae continue to feed near the surface of the fermenting mass.

Fruit flies are primarily nuisance pests. However, they also have the potential to contaminate food with bacteria and other disease-producing organisms.

Prevention- The best way to avoid problems with fruit flies is to eliminate sources of attraction. Ripe produce should be eaten, discarded or refrigerated. Cracked or damaged portions of fruits and vegetables should be cut away and discarded in the event that eggs or larvae are present in the wounded area. A single rotting potato or onion forgotten at the back of a closet, or fruit juice spillage under a refrigerator can breed thousands of fruit flies. So can a recycling bin in the basement that is never emptied or cleaned.

People who process their own fruits and vegetables, or make wine, cider or beer should ensure that the containers are well sealed; otherwise, fruit flies will lay their eggs under the lid and the tiny larvae will enter the container upon hatching. Windows and doors should be equipped with tight-fitting (16 mesh) screens to help prevent adult fruit flies from entering from outdoors.

Eradication- Once an infestation has started, all potential breeding areas must be located and eliminated. If not, the problem will continue no matter how often insecticides are applied to control the adults. Finding the source(s) of attraction and breeding can be very challenging. Potential breeding sites that are inaccessible (e.g., garbage disposals and drains) can be inspected by taping a clear plastic food storage bag over the opening overnight. If flies are breeding in these areas, the adults will emerge and be caught in the bag.

After the source of attraction/breeding is eliminated, a pyrethrum-based, aerosol insecticide may be used to kill any remaining adult flies in the area. A better approach, though, is to construct a trap by placing a paper funnel (rolled from a sheet of notebook paper) into a jar which is then baited with a few ounces of cider vinegar or a slice of

banana. This simple but effective trap will soon catch any remaining adults. Faster results can be achieved by installing additional traps. Since more fruit flies will be caught in traps closest to the breeding source, the technique can also help pinpoint the source of the problem. Adult fruit flies caught in traps can be killed.

DON'T LET THE HARMONIA INVASION BE A SURPRISE ATTACK

by Ric Bessin and Lee Townsend

Each October, a lady beetle invades homes and buildings across Kentucky. This lady beetle, *Harmonia axyridis*, also called the "halloween beetle", is relatively new to Kentucky and has caused quite a stir. While people are able to put up with a few fall insect invaders entering their homes, this insect often arrives in the ten of thousands or hundreds of thousands. Fortunately, they are not poisonous, do not bite or sting, are not carriers of disease, and do not eat wood. However, they do have a disagreeable odor and can leave a yellow stain when crushed.

These oval, convex, 1/3 inch beetles are pale orange in color with up to 19 black spots on the wing covers. The variable number of spots makes an accurate description difficult. The margins of the segment in front of the wings is white with a characteristic black "W".

During most of the year this insect is an important beneficial species. It feeds on aphids and scales on a wide variety of plants including tobacco, apples, woody ornamentals, and shade trees. Because of this, we would recommend against using insecticides to kill these beetles if possible.

Cooling temperatures and shortening day lengths will cause these beetles to begin to search for overwintering sites. The flight begins suddenly, usually on a clear, sunny afternoon in mid- to late October. The sudden onset makes it seem that there may have been an intentional release of this insects in an area. This is not the case. These insects have moved into and across Kentucky on their own. Their massive flight is an instinctive response triggered by environmental conditions.

We expect that the same homes that had problems last year may have them again this year. Generally, we have seen many more of this species of lady beetle during this past summer than last year.

Prevention is the key to managing problems with these beetles, and now is the time to get your defenses in place. An article on pest-proofing the home (in the previous issue of KPN) provides some tips on keeping numbers down. They cannot be eliminated. If lady beetles get into the house or attic, sweep or vacuum them out.

VEGETABLES

BEET ARMYWORM ACTIVE

By Ric Bessin

There has been a report of high numbers of beet armyworm in fall broccoli in Daviess county. Producers of fall cole crops and peppers should monitor for this tough pest. The beet armyworm is a light-green to black larva with four pairs of abdominal prolegs and a dark head. There are many fine, white wavy lines along the back and a broader stripe along each side. There is usually a distinctive dark spot on each side just above the second pair of true legs.

Effective control is based on three things. First, scout so that controls can be aimed at the smallest larvae, those less than ½ inch long. Once larvae are larger than that, they become very difficult to kill insecticides. Only with frequent field surveys can these pests be detected and controlled effectively.

Second, select the correct insecticide. Most of the commonly used products for cole crop and pepper production are of limited value for beet armyworm control. Best results can be expected with Baythroid, Spintor, Lannate, or any of the *Bacillus thuringiensis aizawai*-based products.

Third, cover the plants thoroughly when treating. Because insecticides can provide only moderate levels of control, it is important to deliver the proper dose to the pest. Drop nozzles, high pressure (200 psi), hollow cone nozzles, slower sprayer speed (2 to 2.5 mpg), and a high volume spray will allow for thorough coverage of these vegetable crops.

FALL CLEANUP IMPORTANT COMPONENT OF INSECT CONTROL

by Ric Bessin

Production from many commercial vegetable farms and home gardens may be going downhill with fall weather settling in, but to many of the arthropod

pests that you have battling throughout the summer, your fields or your garden can still be a pest paradise. Although we have taken most of what we consider to be the edible portions of these plants, these pests can still find food and shelter among the aging plants and weeds. Many insect pests are able to complete development in these crop residues long after the last fruits are picked. Some acquire disease causing organisms that they can use to infest young plants next year. Rank weed growth after harvest can also attract certain pests which may create problems for next season.

Several of the more serious insect pests such as European corn borer, squash vine borer, Mexican bean beetle, squash bug, diamondback moth, tobacco and tomato hornworm, cabbage looper, and imported cabbageworm are able to continue development on crop residues in the garden long after we take what we consider the edible vegetables. Other pests such as flea beetles can find food and shelter from weeds as well as crop residues throughout the winter. The two-spotted spider mites continue to feed on weeds after the crops have withered.

Wireworm, common stalk borer, and some cutworm infestations begin in the fall on rank weed growth, but problems aren't recognized until the following spring when crops are planted. With common stalk borer and wireworms, there are no effective controls available when damage begins to appear in the spring.

Destruction of crop residues shortly after harvest is recommended to discourage these pests from completing their fall development. Many insects need to attain a certain size or stage in order to survive the winter. Removal of crop residues may also reduce pest survival by exposing some of them to the winter elements. These weeds and crop residues will insulate these pests from frosts and freezes.

Destruction of cucumber and melon residues not only reduces food and shelter for cucumber beetles, but also reduces the acquisition of the bacterial wilt disease organism by the overwintering beetle generation. It is the bacterium that causes bacterial wilt that is stored in the gut of cucumber beetles this winter that will start the disease cycle next year.

A thorough fall cleanup should help to discourage some of the pests that may cause problems next y

year. Commercially, fields can be disked to destroy crop residues. Home gardeners can compost or till these residues into the soil. It is important to keep in mind that this should not be just a fall practice to destroy crop residues, as soon as a crop has been harvested for the last time, clean up should begin, even if that is early summer for spring crops.

DIAGNOSTIC LAB - HIGHLIGHTS
by Julie Beale and Paul Bachi

With the beginning of fall, we are starting to see fewer samples in the diagnostic labs, after a very busy summer in both ends of the state. Corn and soybeans continue to be sent in. Diagnoses over the past two weeks have included **frogeye, anthracnose, charcoal rot and stem canker of soybean**; and **Stenocarpella ear rot of corn**. In the landscape, most samples show **drought stress**. We also diagnosed cases of **white pine root decline (Verticicladiella), anthracnose and bacterial spot of ivy, and Colletotrichum leaf spot of hosta**.

We completed culturing of a commercial **strawberry** sample (irrigated crop) with a complex of **strawberry leaf spot (Mycosphaerella)** and **leaf**

scorch (Diplocarpon) affecting leaves and girdling petioles and runners. In home vegetable gardens, we are seeing some problems on **beans**, including **anthracnose** and **common blight (Xanthomonas)**.

INSECT TRAP COUNTS

September 11 - 18

Fall Armyworm	62
Corn Earworm	14
Southwestern Corn Borer	3
European Corn Borer	1

September 18 - 25

Fall armyworm	16
Corn Earworm	5
Southwestern Corn Borer	1
European Corn Borer	2

Lee Townsend, Extension Entomologist

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