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KENTUCKY PEST NEWS

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WATCH FOR

GREEN JUNE BEETLES and **JAPANESE BEETLES** cruising over lawns and feeding on fruits and vegetables; **BURROWING SOD WEBWORM** in lawns; **CORN ROOTWORM BEETLE** emergence; **TWO SPOTTED SPIDER MITES** on crops and in home gardens, **EUROPEAN RED MITES** in fruit trees; **FOURLINED PLA NT BUG** feeding on herbs and flowers; **HORNWORMS** and **BUDWORMS** on tobacco; **ANTS** under pavements and along foundations

TOBACCO

DISEASE UPDATE FOR THE WEEK OF JUNE 30
by Kenny Seebold

Blue Mold

The status of blue mold in the U.S. remains unchanged from last week – active disease is known to be present only in GA, FL, and VA. In the short-term, blue mold poses a minimal threat to KY. Current forecasts indicate that inoculum from known sources of blue mold should not move into our area. However, since we have active sources in the Deep South, it would be advisable to continue monitoring our crops in the field for signs and symptoms of blue mold. The weather for the week of June 30 will be sunny and warm early with increasing chances of rain and somewhat cooler temperatures at week's end. Conditions later in the week could be favorable for development of blue mold should inoculum be introduced into the region.

For more information on the status of blue mold in the U.S. and recommended controls, visit the Kentucky Tobacco Disease Information Page online or contact your local Cooperative Extension office.

Fusarium Wilt

Fusarium wilt of tobacco is beginning to crop up around the state. We have had a surge in the number of cases and calls related to Fusarium wilt in recent days. Plants with this disease tend to be stunted and often show a one-sided wilting of the plant or one-sided yellowing of leaves; however, whole-plant yellowing is not uncommon. A key diagnostic feature can be observed by cutting through the stem of a suspect plant. In plants affected by Fusarium wilt, the xylem tissue will be brown-to-black in color, giving the appearance of a ring of discoloration when looking at a stem in cross-section. Unfortunately, at this point in the season, there is little that can be done in terms of management in fields where Fusarium has been diagnosed. Efforts should be directed to minimize the spread of the Fusarium wilt pathogen from infested to clean fields.

Figure 1. Symptoms of Fusarium wilt on burley tobacco, including one-sided wilting and yellowing of leaves.

Fusarium wilt is a soilborne disease like black shank, and many of the control options are similar to what we recommend for black shank (sanitation, rotation, and

resistance). The pathogen, *Fusarium oxysporum* f.sp. *nicotianae*, is moved easily by any means that would spread infested soil, so sanitation is very important (particularly cleaning equipment and feet when moving between fields). Fusarium wilt spreads much more slowly than black shank, and it is very unlikely to complete multiple infection cycles in a season. Dry weather tends to increase the severity of Fusarium wilt in the field, and this is one of the reasons that the disease is becoming evident – despite early rains, many areas around KY have had a fairly dry June. There are no practical chemical controls available at this time; resistance and rotation are the keys to managing this problem. Unlike black shank, the choice of varieties with reasonably good resistance to black shank is limited to KY 14 x L8, NC 4, NC 7, Hybrid 403, Hybrid 501, R7-11, and R7-12. Unfortunately, these varieties do not have good resistance to black shank, and those that have decent black shank resistance (like KT 204) have very little, if any, resistance to Fusarium wilt. Varieties like TN 86, TN 90, and TN 97 have no resistance to Fusarium wilt.

Figure 2. Browning of vascular system - a key diagnostic test for Fusarium wilt on tobacco.

TOBACCO HORNWORMS AND BUDWORMS
by Lee Townsend

Tobacco hornworms are active in southern Kentucky tobacco fields. This marks the first of two generations that occur each year. While the number of eggs laid for the first generation usually is not great, damage in some fields can be significant because plants are small and hornworm appetites are large. Hornworms hang on the underside of leaves and chew smoothly-rounded holes. It is easy to overlook damage caused by young larvae but their feeding rate soon increases and only bare mid-ribs are left behind. The treatment guideline is 5 or more hornworm larvae per 50 plants. Fortunately, they are easy to control with any of the insecticides listed for worm control in ENT 15 - Insecticide Recommendations for Tobacco Beds and Fields.

Female hornworm moths fly at night and glue individual eggs to lower leaf surfaces of tobacco and related plants. A single female can lay as many as 2,000 eggs and as many as 5 per plant. At that rate, it doesn't take too many moths to create a serious infestation. Eggs hatch in about 4 days and individual larvae feed for about 3 weeks. Considering the length of moth flight, the hornworm feeding period in a field is probably spread out over a 5- to 6-weeks. Mature hornworm larvae enter the soil to pupate. The moths will emerge and lay eggs from late July through August.

Tobacco budworms are active now, too. Earliest set fields have the greatest potential for infestation. Careful inspection of the bud on randomly selected plants is a good way to detect budworms. An insecticide application is recommended if you find 5 or more budworms per 50 plants.

Budworm moths also fly at night and glue individual eggs to the undersurface of bud leaves. The larvae feed for just over 2 weeks, primarily on the terminal tissue but can tunnel into the stalk. Control can be a challenge. Orthene and Tracer have been effective insecticides in UK field trials but in some years 60% control must be considered to be "good". Hot temperatures affect budworm control because leaves will tend to close to protect the plant bud. This can mean reduced coverage and poor control.

Winged tobacco aphids and some small colonies were found on untreated tobacco, also. The period of potential concern is from 4 to 6 weeks after transplant until the crop is topped. Infestations begin when the darker, winged aphids land on plants. They will probe the plant with their mouthparts and deposit a few live young (nymphs) if they like what they taste. These nymphs will mature in about a week and begin producing their own offspring. Aphid populations can build rapidly. During that time, sap feeding by aphids can cause significant yield and quality reductions. An insecticide application is recommended if 20% or more of the plants in a field are infested. An infested plant has a colony (50+ wingless aphids). Be sure to check the WPS section of the label to determine re-entry intervals following any pesticide application.

CORN

CORN INSECT UPDATE
by Ric Bessin

As the crop progresses this season, the types of pests attacking corn changes. Corn rootworm beetles and Japanese beetle have begun to emerge from corn fields and need to be monitored over the next few weeks. Monitoring of rootworm adults serves two purposes, first

corn rootworm adults can interfere with pollination if silk feeding is severe prior to and during pollen shed. In addition, beetle counts this year are used to determine the need for a soil insecticide next year if corn is to be replanted in the same field.

Japanese beetles and corn rootworm beetles feed on corn silks and can, potentially, interfere with pollination. Generally, silk feeding by these beetles does not reduce pollination because they often cut the corn silks after pollination has already taken place. If corn silks are cut prior to pollination, they will continue to grow. However, if two or more Japanese beetles or five or more corn rootworm beetles are present per ear and silks are clipped to less than 1/2 inch *prior* to pollen shed, then treatment may be required. Bt hybrids are not resistant to either of these adult beetles.

Corn rootworm beetle counts are used to determine the need for soil insecticides in continuous corn next year. The numbers of beetles are recorded from a group of twenty consecutive plants in each of a minimum of five locations per field. If an average of 1 or more rootworms beetles per plant is observed at anytime during the next 4 weeks, then a soil insecticide, a rootworm insecticide seed treatment, or a Bt hybrid for rootworms next spring is necessary if corn is to be grown in the same field next year.
Fall armyworm is active in some late-planted fields (and there are plenty of late planted fields this year!) but I have not had reports of any treatable infestations. Corn producers using Bt-corn hybrids need to realize that, there are some substantial differences among Bt types.

YieldGard CB Bt will suppress fall armyworm while Herculex 1 for corn borers provides high levels of control. Late planted non-Bt corn (including refuges) should be monitored for the ragged whorl feeding typical of fall armyworm. Often there will be groups of adjacent plants damaged as the female lays her eggs in masses.

European corn borer has been active in the central portion of the state with some of the larvae now in the stalks. Late planted non-Bt fields will be the most vulnerable to attack by the second generation. Moths that will be laying second generation eggs should be active this week in western KY and next week in the central portion of the state. Corn planted after May 1 is at greater risk to this mid-season generation of this pest.

SHADE TREES & ORNAMENTALS

LEAF AND STEM BLIGHTS DAMAGE LANDSCAPE GROUND COVERS
by John Hartman

Kentucky gardeners often plant shade-tolerant ground covers in locations where turfgrass is difficult to grow or to provide a change in texture in the landscape. Often-used ground covers such as pachysandra, vinca and English Ivy are subject to several diseases, some of them devastating.

Pachysandra
Some pachysandra beds develop patches of dead plants which are often very visible and unsightly. The most devastating disease of Pachysandra is leaf blight and stem canker, caused by the fungus *Volutella pachysandrae*. This disease kills plants and can destroy large areas in a bed.

Infected leaves first develop tan or brown blotches with dark brown margins, which expand, often with concentric lighter and darker zones. Stem and stolon cankers can become numerous, and plants start to wilt and die. Cankers appear as water soaked diseased areas, turn brown, shrivel and often girdle the stem. Infections often begin in damaged or senescent plant parts and spread into healthy plant parts. *V. pachysandrae* is an opportunistic fungus which invades wounds and, after infection, is capable of girdling stems within 2 weeks. Under warm, humid conditions in late spring and summer, the fungus produces pink fruiting structures containing masses of fungal spores on the surfaces of cankers and on the lower surfaces of infected leaves.

Volutella blight of pachysandra is often associated with plant stresses such as recent transplanting, exposure to direct sunlight, shearing, scale insects, and previous winter damage. Normally this disease does little damage to vigorous plants, so providing good growing conditions is the most important control measure. Some pachysandra beds have been aided by thinning of the plants to reduce dampness and humidity in the bed. Severely diseased plants should be lifted out and destroyed. Fungicides such as chlorothalonil or mancozeb can be used for control if needed.

Vinca
Stem blight, caused by the fungus *Phoma exigua* var. *exigua* is a serious disease of *Vinca minor* (periwinkle, ground myrtle) in Kentucky. Symptoms begin as shoots gradually fade, wilt, and turn dark brown. Black stem blight lesions girdle the base of affected shoots and tiny black pycnidia, the fruiting bodies of the fungus, can be found in the lesions. The fungus overwinters on old infected runners, often hidden from view by the new growth. Dieback symptoms may progress to death of entire clumps or patches of vinca, resulting in an uneven ground cover. Stem blight can be mistaken for root rot caused by *Rhizoctonia*, which can also develop black stem lesions. However, stem lesions from root rot infections do not contain the tiny black pycnidia.

Infected plants should be removed from the bed. Thinning of vinca beds and reduction of overhead shade will help reduce stem blight. Chipco 26019, Cleary's 3336, Domain, or Zyban can be used if fungicides are needed for control.

English Ivy
Summer weather brings on English ivy problems, primarily leaf spot diseases. There are two important English Ivy (*Hedera*) leaf spot diseases in Kentucky, one caused by a bacterium, and one by a fungus. The two diseases are sometimes difficult to distinguish.

Bacterial leaf spot is favored by periods of warm, wet weather typical of summer in Kentucky. This disease, caused by the bacterium *Xanthomonas campestris* pv. *hederae*, can be especially damaging to ivy growing in many landscapes. The bacteria invade leaves, shoots, and stems through stomata and wounds causing a greenish-brown angular leaf spot 1/4 to 1/2 inch or larger in size. The spots sometimes appear greasy and may have a yellow margin; as they age, spots turn dark brown and may crack as they dry.

The disease is diagnosed in the laboratory by observing bacterial streaming under the microscope, however, the disease is often so active that county agents or landscape industry specialists can also diagnose the disease in the field in the same way. Cut through several leaf spots with a sharp knife and place small infected leaf pieces on a glass slide. Add a drop or two of clean water to the infected tissue and cover with small glass cover slip. After a few minutes to an hour, bacterial streaming can be seen just by holding the glass slide up to the light and observing the milky color of the water near the dissected leaf spot.

Growers should avoid planting diseased plant material, and avoid sprinkler irrigation which splashes bacteria from diseased to healthy plants. Copper-based fungicides which also serve as bactericides can be used to slow the spread of bacterial leaf spot.

Fungal leaf spot (anthracnose) appears as large, irregularly shaped tan or brown spots having numerous pimple-like fungal fruiting structures in the dead tissues. The causal fungus is *Glomerella cingulata*, however, the imperfect fungal state, *Colletotrichum* is normally observed now. Close examination with a hand lens may show spine-like formations associated with the fungal fruiting structures. There are other fungal leaf spot diseases of English Ivy which also produce fungal fruiting structures; this distinguishes them from bacterial spot, which produces none. Fungal spots do not produce bacterial streaming as described above.

Cultural practices for control of anthracnose and fungal leaf spots are similar to cultural practices for control of bacterial leaf spot. The fungal diseases can be additionally managed with fungicides such as thiophanate-methyl [Cleary's 3336] (cleared for anthracnose of landscape plants) and mancozeb [Fore] (used for fungal leaf spots of ornamentals and which can be tried on unlabeled ornamental plants).

DIAGNOSTIC LAB-HIGHLIGHTS
by Julie Beale and Paul Bachi

During the past week, the PDDL received samples of Rhizoctonia stem rot and boron deficiency on alfalfa; black shank, Pythium root rot, soreshin, Fusarium wilt, cucumber mosaic virus, transplant shock, temporary phosphorus deficiency and manganese toxicity on tobacco.

On fruits and vegetables, we diagnosed black rot on grape; anthracnose and angular leaf spot (Xanthomonas) on strawberry; cedar-apple rust and Botryosphaeria canker on apple; Phyllosticta leaf spot, Rhizoctonia and Fusarium root/stem rots, and

southern blight on bean; bacterial soft rot, stinkbug injury, and zinc deficiency on sweet corn; bacterial wilt on cucumber; Pythium root rot and southern blight on pepper; Pythium stem rot on squash; powdery mildew on zucchini; bacterial spot, Septoria leaf spot, Rhizoctonia and Fusarium stem rots, tobacco mosaic virus, southern blight, and poor pollination on tomato.

On ornamentals and turf, we have seen black spot on rose; powdery mildew on dogwood; anthracnose on buckeye and chestnut; fire blight on pear; frogeye leaf spot and scab on crabapple; Rhizosphaera and Stigmina needle casts on spruce; Cercospora leaf spot on willow and redbud; iron deficiency and Actinopelte leaf spot on oak; Armillaria root rot on serviceberry and tree peony; and brown patch on fescue.

INSECT TRAP COUNTS

June 13-20, 2008

►***Princeton, KY***

Black cutworm	31
True armyworm	10
Corn earworm	69
European corn borer	0
Southwestern corn borer	0
Fall armyworm	0

►***Lexington, KY***

Black cutworm	60
True armyworm	202
Corn earworm	140
European corn borer	23
Southwestern corn borer	0
Fall armyworm	0

June 20-27, 2008

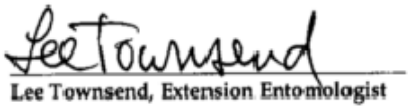
►***Princeton, KY***

Black cutworm	15
True armyworm	54
Corn earworm	25
European corn borer	0
Southwestern corn borer	0
Fall armyworm	0

►***Lexington, KY***

Black cutworm	72
True armyworm	680
Corn earworm	44
European corn borer	1
Southwestern corn borer	0
Fall armyworm	0

Graphs of insect trap counts are available on the IPM web site at -http://www.uky.edu/Ag/IPM/ipm.htm.
View trap counts for Fulton County, Kentucky at - http://ces.ca.uky.edu/fulton/anr/



Lee Townsend, Extension Entomologist

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