UK COOPERATIVE EXTENSION SERVICE
University of Kentucky – College of Agriculture

LEXINGTON, KY 40546

KENTUCKY PEST NEWS

ENTOMOLOGY • PLANT PATHOLOGY • WEED SCIENCE
On line at: www.uky.edu/Agriculture/kpn/kpnhome.htm

Number 1143 **September 10, 2007**

CORN

STALK ROT RISK
by Paul Vincelli

The drought stress during and following silking that many areas experienced this season may lead to reduced stalk strength and to stalk rots in corn. Grain fill is a period of heavy demand for photosynthate (the products of photosynthesis), and drought stress at that time can reduce stalk strength. Here is how this happens. Within the plant, biosynthetic metabolic pathways including photosynthesis are sensitive to even mild water stress, so less photosynthate is produced by plants when water becomes limited. Yet plants under water stress will still attempt to fill the grain. However, when photosynthesis cannot meet the demand, the plants draw carbohydrates from the stalk. This weakens the stalk, and it sets it up for invasion by stalk-rot fungi.

Several stalk rots are possible under the conditions prevailing this summer. Fusarium stalk rot will probably be the most common one, although Diplodia, Gibberella, and charcoal rot are also possibilities. Stalk rot diseases are described in the "Diseases" section of the Extension publication ID-139, *A Comprehensive Guide to Corn Production in Kentucky* (available online at http://www.ca.uky.edu/agc/pubs/id/id139/DISEASE.PDF).

Diagnosis of a particular stalk rot in a drought-stressed field often isn't critical, since several stalk rots can be active in a given field, and it is common to find stalks affected by more than one stalk rot. However, if a lot of charcoal rot is observed, that is a yellow flag to be cautious about planting soybeans next season, since charcoal rot will aggressively attack soybean should drought conditions repeat next year. When charcoal rot is present in corn, it can be recognized by the charred appearance of the pith (the inside of the stalk). The charred appearance is due to the presence of many tiny black fungal structures.

The weather experienced this summer may certainly lead to enhanced stalk rot pressure in some fields. In addition, other factors can increase the risk of stalk rots and lodging. High plant populations are probably top on the list. High nitrogen level can also increase the stalk rot risk. Ear set in a high position on the plant can also increase the risk, by making the plant top-heavy.

While widespread and serious problems with stalk rots seem unlikely at this time, it is always advisable to scout corn for lodging potential as it approaches maturity. This practice helps identify fields that should be harvested early and dried down. A simple way to scout for lodging potential is to walk the field and push plants 12 inches from vertical at about chest height. Stalks that don't spring back have the potential to lodge in a strong wind. If 10-15% of the field shows such lodging potential, plan on harvesting the field soon after the grain is physiologically mature (development of black layer, about 30% grain moisture).

FRUIT CROPS

PIERCE'S DISEASE FOUND IN KENTUCKY
by John Hartman

Pierce's Disease was found this past week on a single vine of Vidal Blanc grape growing in Fayette County. The cause of the disease, a bacterium called *Xylella fastidiosa*, was detected in the U.K. Plant Disease Diagnostic Laboratory using an ELISA test. Two different samples were collected and both were positive.

Symptoms. Pierce's Disease symptoms vary with the different host species and cultivars. Symptoms in spring and early summer include delayed shoot growth, leaf mottling, and dwarfing of new shoots. Late summer and fall symptoms are more dramatic and include distinct reddish-brown scorching and burning of leaf margins with the part of the leaf blade nearest the petiole and the main veins remaining green. Another symptom may include separation of leaf blades from petioles, with petioles remaining on the vine sticking out like matchsticks, although this can also happen in the absence of Pierce's Disease. Some infected stems will develop an alternating green and brown banding along the affected grapevine. This uneven maturation of the vine may even persist into the dormant season. The Pierce's Disease bacterium is vectored by leafhopper insects.

A few weeks ago, a case of Pierce's Disease was suspected in Nelson County, but follow-up sample collection and extensive laboratory testing could not verify the disease there. Leaf scorching symptoms observed in that case may have been due to lack of water due to drought. Drought-scorched leaf margins tend to take on a tan color rather than reddish brown. A few years ago, Pierce's Disease was found on Mars grape in a Hancock County vineyard in west Kentucky and that outbreak is the only other time this disease has been observed in the state. As far as is known, Pierce's Disease no longer occurs in Hancock County because the grower eradicated all of the infected grapevines.

Growers suspecting Pierce's Disease in their vineyard are urged to collect and deliver to their County Extension Agent samples of symptomatic leaves with petioles and have them submitted to our lab for testing. Since this disease can be very devastating, growers will want to use the results of such testing to decide whether or not there is a need to remove and destroy affected grapevines.

VEGETABLES

PHYTOPHTHORA ROOT ROT OF CABBAGE REPORTED IN KENTUCKY
By Kenny Seebold

Large-scale production of cabbage was initiated in Daviess Co., KY earlier this year and producers have been faced with a number of challenges ranging from extreme drought to intense pressure from insects. We can add disease now to that list of challenges. Recently, a relatively high number of maturing cabbage plants from a summer planting were found to be dying in a large field. Approximately 10% of plants in the field showed symptoms. Closer inspection revealed necrosis of stems and roots of affected plants, along with the presence of purplish cankers at the soil line. Initial analysis ruled out pathogens such as *Pythium* and *Rhizoctonia*; however, following incubation of symptomatic tissue, a species of *Phytophthora* was isolated. Based on reports from the literature, and upon physical characteristics of the pathogen itself, we believe the causal agent of the cabbage root rot to be one of three species of *Phytophthora*: *P. megasperma*, *P. sojae*, or *P. drechsleri*. The most alarming aspect of this particular case is the high incidence of disease in a field planted to cabbage for the first time.

A root and basal stem rot caused by *Phytophthora* has been reported elsewhere in the U.S., but is not a common disease and is certainly new to KY. As with other diseases caused by *Phytophthora*, saturated soils favor infection and spread. This was the case in Daviess Co. – no symptoms were observed in the affected field until the installation of drip irrigation to help overcome extremely dry conditions. Moisture levels increased substantially after drip lines were installed, and the disease was observed soon afterward. The pathogen survives between crops as oospores, thick-walled resting structures, in plant material and in soil. The source of the pathogen in the Daviess Co. case is not known. *P. sojae* is a pathogen of soybean in KY, and is relatively common. We know the field where Phytophthora root rot was found had a history of soybean production, and it is possible that this could be the source of inoculum. From the literature, we know that *P. sojae* (and *P. megasperma*) will affect cabbage and other cole crops under favorable conditions – wet soils and cool to moderate temperatures. The latter has left us scratching our heads a bit, since "cool to moderate" is a far cry from the scorching temperatures that have prevailed over the past few months. At the moment, we are in the process of identifying the species of *Phytophthora* causing the root rot in Daviess Co., and this will help us understand the epidemiology of this disease.

Control of Phytophthora root rot on cabbage is centered on keeping conditions unfavorable for development of this disease. Producers should avoid excess irrigation, and promote drainage in fields to avoid saturated conditions. Avoid planting cabbage and other cole crops in fields with a history of Phytophthora root rot. As a preventive measure, mefenoxam (Ridomil Gold EC or SL, or Ultra Flourish) can be applied before or at planting (rates are 1-2 pt/A for Ridomil Gold and 1-2 qt/A for Ultra Flourish). The material can be applied broadcast to soil, or banded, and may also be put out in irrigation water. Make sure that mefenoxam is incorporated after treatment – either mechanically or by irrigation. Do not use mefenoxam as a transplant-water treatment.

SILVERLEAF WHITEFLY ON SQUASH
by Timothy Coolong, Extension Horticulturist and Ric Bessin, Extension Entomologist

Recent samples to the diagnostic lab and squash plants at the UK Horticulture and Spindletop farms have shown evidence of silverleaf whitefly damage. Silverleaf whitefly, *Bemisia argentifolli,* is a relatively new pest to Kentucky. Although they have been a problem for growers in southern regions of the U.S. for several years, outbreaks in Kentucky had been relatively uncommon. Silverleaf whitefly is a common pest of greenhouse plants throughout the year and, in the past, has been a relatively uncommon pest of cultivated plants in the field in Kentucky. Because it is unable to overwinter in Kentucky, it is more likely to be a problem of plants in greenhouse, high tunnels, on transplants shipped from southern regions, or in the field in mid summer and fall. Hot, dry weather during the summer can favor rapid buildup of the silverleaf whitefly on wild and cultivated hosts outside of the greenhouse.

Though the silverleaf whitefly and its more common relative, the greenhouse whitefly, are both small (about 1/8th inch) and similar in appearance there are some key differences. Silverleaf whiteflies tend to have more yellowish body and position their wings closer to the sides of their bodies whereas the more common greenhouse whiteflies are generally paler in color and tend to hold their wings on flat their backs. Typically the wings of the silverleaf whitefly do not touch such that a small portion of the yellow abdomen is visible between the wings.

The silverleaf whitefly cannot overwinter in Kentucky because they are unable to survive the freezing temperatures that occur here. However, they can survive in greenhouses and are commonly introduced on transplants produced in warmer regions of the U.S. They have a very wide range of hosts including: tomato, pepper, squash, bean, lettuce, eggplant, broccoli, cabbage, potato and watermelon.

When silverleaf whitefly immature stages feed on squash leaves, their saliva introduces toxins into the plant that can have a dramatic effect on leaves. Developing leaves of affected plants can take on a silvery appearance starting from the leaf veins and moving outward. The leaves on which the immature stages are feeding may not develop symptoms. During heavy outbreaks entire plants can take on a silver appearance in just a few days. The upper epidermis separates from the lower cells causing the white appearance. Affected plants can be stunted resulting in reduced yields and fruit quality.

Unfortunately, small numbers of silverleaf whitefly can cause silvering of small squash transplants. However, once the whiteflies are controlled, the leaves and plants will begin to recover. Damage to younger plants maybe more severe than that to plants closer to harvest.

There are a number of predaceous insects that feed on silverleaf whitefly and one commercial parasitoid wasp, *Eretmocerus emericus,* that has been used successfully in greenhouses.

Chemical control of whiteflies can be difficult as the adults and immature stage occur on the undersides of leaves, particularly older leaves, making spray coverage difficult. Insecticides listed for whitefly control in ID-36, *Vegetable Production Guide for Commercial Growers*, can be effective against silverleaf whitefly.

STORED GRAIN

QUESTIONS ABOUT INSECT CONTROL IN CORN STORAGE
by Doug Johnson

There continue to be questions concerning insect control in stored corn storage. At this time of year it is too late to employ many of the important strategies. But let's have a quick review.

First and foremost: "store clean dry grain in clean dry bins". This will solve the vast majority of problems. Below find a checklist of good storage techniques.

UK-IPM Checklist for Controlling Insects in Stored Corn
Doug Johnson, Extension Entomologist and Sam McNeill, Extension Agricultural Engineer
University of Kentucky

Before Harvest / Pre-Binning
- Clean all equipment used to handle grain (Examples: combines, carts, trucks, receiving pits/hoppers) thoroughly to remove old grain, trash, and debris that might contaminate the new crop.
- Use pressurized air/water.
- Remove all old grain from inside storage bins. Use a shovel, broom and vacuum. Every kernel counts!
- Check for holes and cracks in bin roofs and walls. Seal them to prevent leaks and entry of insects and rodents. (Look closely around ladders, roof vents and other openings).
- Treat the interior floor and bin walls with an approved insecticide.
- Remove spilled grain around pits/hoppers, and storage bins.
- Mow, spray or remove weeds/grass/vegetation

around storage bins.
- Treat the outside base of bins and the surrounding area with an approved insecticide.
- Fumigate the space beneath the perforated bin flooring. **Warning!!!** Fumigation is complicated and dangerous. If possible, hire a commercial fumigator. Restricted use pesticide certification is required for purchasing the fumigants. Specialized training from a commercial applicator is strongly recommended. Specialized equipment, including gas masks, self-contained breathing apparatus, and fumigant gas detection equipment is required for safe, effective and economical applications. Obtain and read the product label and manufacturer's instructions.

During Harvest / Binning
- Operate combine(s) to minimize grain damage, trash and fines or clean grain mechanically.
- Store corn at 15, 14 or 13% moisture when holding for 6, 9, or more than 9 months, respectively.
- Consider applying a grain "protectant" to the bulk grain mass after drying and cooling. Do NOT apply before heated air drying or to hot grain!!
- Consider applying a "cap out" treatment to the grain surface (Do not apply if a protectant is used).

Post-Harvest / After Binning
- Use "pitfall" traps to monitor insect activity. Use three traps per bin. Check traps weekly in August and September. In colder months trap for four days each month.
- If insects are detected have them identified and classified as primary or secondary feeders. Be especially interested in the true "weevils".
- If insects are numerous enough to result in a discount or you are planning to hold the grain into the next warm season consider having the grain fumigated.
- Monitor grain temperature and moisture monthly.
- In September, run fans to cool corn to near 60oF.
- In October, run fans to cool corn to near 50oF.
- In November, run fans to cool corn to near 40oF.
- After cooling to 40oF, seal fans with plastic to prevent air movement in the bin.
- Operate fans any time the need arises to control temperature or moisture.

Insecticides and Fumigants Recommended for Corn
We recommend that you do not use malathion for any treatments. Most forms of malathion are no longer labeled for use. More importantly, the product no longer provides adequate insect control. See: ENT-16 Insecticide Recommendations for Corn.

Empty bins - applied to walls and floor: Tempo7 SC Ultra. (DO NOT APPLY TO GRAIN!), Actellic® 5E, or Insecto. Do not use the same product for empty bin and grain "protectant" treatments.

Under Floor Fumigants - Chloro-pic (Can not currently be shipped in small containers, you may find that your local dealer has some on hand or in large e.g 200 lb. bottles), Methyl-Bromide, Phostoxin® / Fumtoxin®. **THESE PRODUCTS ARE EXTREMELY DANGEROUS AND REQUIRE SPECIAL EQUIPMENT AND TRAINING!**

Protectant - applied directly to the bulk grain: Actellic® 5E. Insecto may be used as a "protectant", but some buyers will not accept grain treated with this material. Be sure of your market. (If grain is handled and stored properly this is not generally economically advisable.)

Cap out treatment applied to the top 4" of grain - (Do not make this application if a protectant has been applied to the bulk grain): Actellic® 5E and Insecto for beetles and moths or products containing Bacillus thuringiensis, e.g. Dipel7, Javelin7, Sok-B.t.7 etc. for Indian meal moth.

For more information about crop and livestock pests, visit "Insect Management Recommendations".

DIAGNOSTIC LAB-HIGHLIGHTS
by Julie Beale and Paul Bachi

Agronomic samples over the past week included stinkbug injury on corn; aphid feeding on orchardgrass; charcoal rot of soybean; and black shank and chemical injury on tobacco.

On fruit and vegetable samples we have diagnosed Pierce's disease on grape; anthracnose on cucumber; an unknown potyvirus on pumpkin; and early blight and Rhizopus stem rot on tomato.

On ornamentals and turf we have seen Fusarium wilt, Pythium root rot, Rhizoctonia root rot and iron deficiency on chrysanthemum; Cercospora leaf spot on honeylocust; Botryosphaeria canker on rhododendron; tip blight on pine; bacterial leaf scorch on oak, sycamore and hackberry; gray leaf spot on perennial ryegrass; anthracnose on bentgrass; and take-all patch on bentgrass.

TRAP COUNTS
UKREC, Princeton KY
Kentucky — Tennessee
August 31-September 7, 2007

►***Jackson, TN***
Black cutworm 3
True armyworm 2
Corn earworm 0

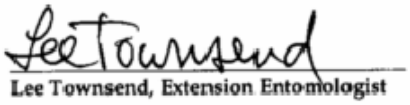
European corn borer....0
Southwestern corn borer....8
Fall armyworm....12

►***Milan, TN***
Black cutworm....0
True armyworm....0
Corn earworm....0
European corn borer....11
Southwestern corn borer....13
Fall armyworm....2

►***Princeton, KY***
Black cutworm....3
True armyworm....4
Corn earworm....19
European corn borer....0
Southwestern corn borer....74
Fall armyworm....2

►***Lexington, KY***
Black cutworm....1
True armyworm....10
Corn earworm....207
European corn borer....6
Southwestern corn borer....8
Fall armyworm....1

This season insect trap counts will be provided for locations in Kentucky and Tennessee.
View trap counts for past seasons and the entire 2007 season at –
http://www.uky.edu/Ag/IPMPrinceton/Counts/2006trapsfp.htm
View trap counts for Fulton County, Kentucky at -
http://ces.ca.uky.edu/fulton/anr/
For information on trap counts in southern Illinois visit the Hines Report at –
http://www.ipm.uiuc.edu/pubs/hines_report/comments.html
The Hines Report is posted weekly by Ron Hines, Senior Research Specialist, at the
University of Illinois Dixon Springs Agricultural Center.



Lee Townsend, Extension Entomologist

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.

COOPERATIVE
EXTENSION
SERVICE

UK

UNIVERSITY OF KENTUCKY
College of Agriculture

Cooperative Extension Service

University of Kentucky
Entomology
S-225 Ag. Science Center North
Lexington KY 40546-0091