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KENTUCKY PEST NEWS

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WATCH FOR:

STORED PRODUCT pests are the most common insects found in the home during the winter but CLUSTER FLIES and LADY BEETLES can be active on warm days; SUCKING and BITING LICE can become a problem on beef and dairy cattle.

CORN

DISEASES RISKS WHEN CORN FOLLOWS CORN

by Paul Vincelli

Crop rotation is one of the most fundamental disease control practices available. Rotating to other crops deprives *pathogens* (disease-causing microorganisms) of a food source and exposes them to starvation. Furthermore, as infested crop residues decompose, pathogens are exposed to antagonism by native soil microbes. These mechanisms have the effect of naturally eradicating many pathogens from the soil.

Several diseases can be more active under continuous corn, particularly those caused by pathogens that survive in crop residue or in the soil.

Gray Leaf Spot

This disease is a significant threat wherever corn is grown after corn. The fungus survives between growing seasons in residues of corn leaf blades and sheaths. From there, it is spread by wind and rain to leaves of the new corn crop. Tillage practices can reduce levels of *inoculum* (spores or other pathogen structures that initiate disease), but rotation is a key management practice, as well. Thus, in the absence of crop rotation, susceptibility to gray leaf spot should be carefully considered when selecting a hybrid.

Hybrids exhibit differing levels of *partial resistance* to gray leaf spot. Partial resistance is the most common type of disease resistance in field crops. Varieties with partial resistance are those that, under uniform conditions, exhibit less disease than some standard cultivar or host line. Gray leaf spot will still develop on a partially resistant hybrid, but it typically is slower to develop and less severe. For example, compared to a fully susceptible hybrid, a hybrid with partial resistance will usually have fewer lesions for a given spore load, and those lesions will be smaller. This reduces the impact of the disease on crop development and yield.

When growing continuous corn, always select hybrids with as high a level of resistance as you can against gray leaf spot. This is particularly important in fields under conservation tillage, in which corn residues provide high amounts of inoculum.

Diplodia Ear Rot

Although most corn fields do not experience much damage from this disease, Diplodia ear rot can occasionally cause severe epidemics, causing rot on as many as 50-75% of the ears in a field. The fungus that causes the disease only attacks corn, and it survives between seasons in residue of corn stalks, cobs, and fallen kernels. Thus, continuous corn production–especially under conservation tillage--allows the pathogen to build up to potentially destructive levels.

It is a good practice to scout fields for Diplodia ear rot as the crop matures, especially if under conservation tillage. Pull back the husks of 50-100 plants selected at random as you walk the field. Look for white, cottony mold growth between the kernels, which usually progresses upwards from the base of the ear. Suspect samples can be confirmed through your county Extension agent. Producers growing no-till corn who find more than 2-3% of ears with Diplodia ear rot should consider implementing some management practice, such as rotation to another

crop, tillage, or both.

Whenever corn is planted following corn, check with your seed supplier to determine if the seed company specifically breeds hybrids with partial resistance to Diplodia ear rot; some companies do, but not all. Also, avoid hybrids that have experienced serious outbreaks of Diplodia ear rot, since this may indicate unusually high susceptibility to the disease.

Anthracnose Stalk Rot and Top Dieback
The anthracnose fungus survives in corn residue, and causes a variety of symptoms including leaf spotting and blighting. The leaf blight phase only affects plants at the one- to four-leaf stages, but it alerts growers to scout fields later in the season for the lower stalk rot phase and "top dieback" (upper stalk rot) phase, which can affect yield or harvestability. There was quite a bit of anthracnose top dieback in 2006, so I suspect inoculum levels are rather high in many fields. Be sure to give consideration to selecting for anthracnose resistance if the field goes back into corn in the next couple of years, especially if the disease was observed in the field.

Pythium Seedling Diseases
Pythium microbes commonly present in agricultural soils can cause a variety of symptoms on corn seed and seedlings. Seed decay, pre-emergence damping off, and post-emergence damping off are the more striking problems caused by Pythium. However, Pythium can also infect root hairs and young rootlets, causing reduced vigor of developing plants, which can ultimately affect yields. Studies with a variety of monocot crops, including corn and sorghum, have shown that Pythium diseases can significantly reduce stand, vigor, and yield in continuous cropping situations. These studies have shown a significant advantage to using seed treated with fungicides which specifically target Pythium, such as metalaxyl or mefanoxam. Given the relatively low cost of seed treatment fungicides and the enhanced Pythium risk when monocots are cropped without rotation, sowing seed treated with metalaxyl or mefanoxam would make sense where corn follows corn. This is especially important under conservation tillage, where soils warm up and dry out more slowly, conditions which favor Pythium diseases.

Other Diseases
The fungi that cause northern leaf blight (NLB) and southern leaf blight (SLB) survive in corn residue. NLB. has re-emerged in the past several years as a serious limitation to yield in fields in Kentucky where susceptible hybrids are grown, so I would consider the susceptibility of the hybrid to NLB when growing continuous corn. SLB generally occurs at low levels in Kentucky, because past breeding efforts have led to high levels of resistance in most of the hybrids currently available. Since inoculum levels of NLB are so much higher than those of SLB, selecting resistance to NLB takes a much higher priority than SLB.

Concern is sometimes expressed that stalk rots might be worse in a continuous corn situation. In reality, studies to date indicate that rotation has little to no direct impact on the severity of stalk rots. Stalk rot incidence is influenced by high plant populations, excessive nitrogen, leaf diseases, and other factors. However, increasing acreage of continuous corn could result in an extension of the harvest season simply because fields may stand unharvested while other corn acreage is being combined. This could result in occasional increases in lodging risk and marginal increases in mycotoxin risk while mature ears stand out in the field for longer periods than normal.

FORAGES

MILD WINTER MAY LEAD TO REPEAT OF UNUSUAL FORAGE PESTS
by Lee Townsend

We saw two insects early last spring that we have not had to face before. The cowpea aphid (also called the black legume aphid) and the greenbug), made their presence known in a few Kentucky forage fields last spring. Low numbers of each may have been present in the past but not a levels that were obviously detectable. Their abundance in 2006 may have been related to mild winter temperatures that allowed them to survive the winter and begins to reproduce early.

The cowpea aphid was found at noticeable levels in several alfalfa fields scattered over the state. These gray to black aphids are distinctly different from the light green pea aphid that is common in alfalfa in springs following mild winters. This aphid injects a toxin into plants as it feeds that can stunt or kill plants. It also produces lots of liquid waste (honeydew) that supports sooty mold growth. It is easy to check for this insect by looking for colonies of the aphids at plant tips at scattered locations over a field.

Greenbug infestations in southeast Kentucky orchardgrass fields were severe enough to kill large patches of the grass. The greenbug, also an aphid, injects a toxin as it feeds. The main sign of an infestation is spots of yellow to brown grass that gradually expand from an origin point. Carefully inspect plants at the outer margin of the circle for light green aphids with a single dark streak along the center of the back.

FRUIT CROPS, SHADE TREES & ORNAMENTALS

PLUM POX VIRUS REVISITED
by John Hartman

The first U.S. finding of Plum Pox Virus (PPV) in Pennsylvania in 1999 was described and its implications for Kentucky were noted previously in *Kentucky Pest News* (# 870, January 24, 2000). This article provides an update on more recent PPV detections and research.

Plum Pox Virus disease has been a significant problem in Europe for many years. After the initial discovery PPV in Adams County, Pennsylvania, the disease was subsequently found in Ontario, Canada in 2000. In both cases, plant regulatory officials from USDA-APHIS and Canadian and Pennsylvania regulatory agencies have diligently contained the disease and confined its presence to those two sites. However, in July, 2006, PPV was found in western New York, not far from the original Canadian site and in August 2006, PPV appeared in southwestern Michigan. In both New York and in Michigan, early detection will likely lead to successful containment and perhaps eradication of the disease.

USDA and Pennsylvania State University plant virologists have recently reported results of host range studies for Plum Pox Virus using aphid vector and graft transmission approaches (*Plant Disease*, January 2007). These studies are helpful in determining which hosts might harbor PPV outside the orchard and which host plants might provide sources of resistance. There are several findings that might be interesting to Kentucky peach and plum growers.

- Domestic stone fruits *(Prunus*) grown in Kentucky orchards such as peach (*P. persica*), and plum (*P. domestica*), and sweet cherry (*P. avium*) were all susceptible to PPV both via aphid vector and grafting.
- Kentucky native plants such as American wild plum (*Prunus americana*), Chickasaw plum (*P. angustifolia*), black cherry (*P. serotina*), and chokecherry (*P. virginiana*) were all susceptible to PPV both via aphid vector and grafting.
- The native *Prunus* species such as black cherry produced mild and transient symptoms. For example, infected plants with mild chlorotic mottle foliar symptoms grew out normal healthy-appearing leaves after a time. These plants still produced mild, transient symptoms in subsequent seasons so the trees were systemically infected. This phenomenon could make the disease difficult to detect in native plants near an orchard.
- In the landscape, flowering *Prunus* species such as flowering cherry (*P. incam*), kwansan cherry (*P. serrulata*), cherry laurel (*P. laurocerasus*), and yoshino flowering cherry (*P. yedoensis*) are also susceptible to PPV via grafting or via aphid vector. Some of these plants also produced mild symptoms, and could make infected plant virus reservoirs difficult to detect in the field.

Plum Pox Virus is a destructive disease of stone fruit and could be a threat to peach, plum, and cherry production in Kentucky. Now that wild black cherry is a known host, it may be difficult to keep the disease from eventually coming to Kentucky because this species is common in forests and fence rows in the eastern U.S. Quarantines are useful for keeping diseased plants out of the state, but quarantines will not stop aphid vectors from migrating. Since the virus stays viable in the aphid's mouthparts for only about an hour, and since aphids might only move a few hundred yards at a time, movement of this disease to Kentucky could be relatively slow. Hopefully, by then good peach and plum cultivars with resistance to PPV will be available.

HOUSEHOLD & STRUCTURAL

WINTER STONEFLIES OUT – A SIGN OF GOOD WATER QUALITY
by Lee Townsend

Specimens of these insects came in from Clay and Menifee counties late last week and are a welcome sight. Stoneflies indicate good water quality and are very important in the aquatic food web. Some species are predators, others feed on plant tissue. In turn, they are eaten by larger insects and fish. Fly fishermen are very aware of this important insect group.

Stoneflies are primitive insects that spend the developmental part of their life clinging to rocks and vegetation in clear, flowing in water and a few days as winged adults. Dark-bodied winter stoneflies emerge during January and February but are not very good fliers. They may be seen resting on sunny sides of buildings near streams and rivers. Mated females will return to the water to lay eggs before they die. Most do not feed as adults and cause no harm.

TOP 10 ARTHROPOD IDENTIFICATIONS FOR 2007
by Lee Townsend

There were no major surprises in the top 10 arthropods (700+ specimens) submitted to Lexington and Princeton for identification during 2006. Here are they are with the appropriate Entfacts.

1. Spiders of all sorts topped the list. Wolf spiders, common household invaders, were the most common members of the group. http://www.uky.edu/Ag/Entomology/entfacts/struct/ef622.htm. Wolf spiders are roaming hunters that wander widely in search of prey. They are common in lawns and often enter structures in the fall through gaps under exterior doors or other openings.

2. Ants, primarily carpenter ants, http://www.uky.edu/Ag/Entomology/entfacts/struct/ef603.htm. Carpenter ant activity may mean wet wood in a structure, particularly around windows or doorways. Acrobat ants, pavement ants, and odorous house ants rounded out the group.

3. Several species of carpet beetles arrive each year. The varied carpet beetle, a small yellow, white and black-marked beetle was most common of the group. http://www.uky.edu/Ag/Entomology/entfacts/struct/ef601.htm

4. Lone star ticks arrive in the spring and again in early fall. Tiny larvae (seed ticks), larger nymphs, and adults feed on humans, so many sizes can be found. http://www.uky.edu/Ag/Entomology/entfacts/struct/ef618.htm

5. Boxelder bugs, common on the sides of houses and as accidental invaders, also are found in spring and fall. http://www.uky.edu/Ag/Entomology/entfacts/trees/ef444.htm

6. Springtails are tiny insects that can be amazingly abundant, especially at the end of cool, wet places in the spring. http://www.uky.edu/Ag/Entomology/entfacts/trees/ef420.htm

7. Eastern subterranean termites are a common cause for concern. They fly from March into June in Kentucky and are our most important structural pest. http://www.uky.edu/Ag/Entomology/entfacts/struct/ef604.htm

8. Drugstore beetles were the top stored product pest this year. They can be present throughout the year but are most common during the winter months. http://www.uky.edu/Ag/Entomology/entfacts/struct/ef612.htm

9. Foreign grain beetles can inundate new houses in August and September and are frequent members of the Top 10 list. http://www.uky.edu/Ag/Entomology/entfacts/struct/ef610.htm

10. Ground beetles are one-half inch long dark beetles that commonly invade households. http://www.uky.edu/Ag/Entomology/entfacts/fldcrops/ef104.htm

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