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ANNOUNCEMENT

UK CROP & WEED MANAGEMENT FIELD SCHOOL

The Field School will be held June 21, 2007 at the UK Spindletop Research Farm on Ironworks Pike in Fayette County. It is approved by the KDA for 4 general hours and 1 Category Specific hour for Categories 1A, 10, 12, or 14. This program is also approved for 6 hours of credit for Certified Crop Advisors (3 hrs Pest Management, 3 hrs Crop Management). Contact Dr. JD Green at jdgreen@uky.edu or 859-257-4898 for more information.

TOBACCO

BLUE MOLD UPDATE
by Kenny Seebold

Perhaps the biggest mystery surround our recent outbreak of blue mold in Fayette County (June 1) was the source of the outbreak. At the time, blue mold had not been found anywhere else in the U.S., giving us the "honor" of reporting the disease first for the fourth consecutive year. Analysis of weather patterns leading up to the discovery of blue mold yielded no clues, and unlike last year, we had no indication of potentially infected plants being brought into Kentucky from another state.

Things changed, however, on June 7. We learned that plants had been brought from Greenville, Tennessee on May 15 to the greenhouse where blue mold was found in Fayette County. Plants in the Tennessee greenhouse were inspected on June 7 and actively sporulating blue mold was found. What's more, the disease had appeared to have been present for two to three weeks, meaning that disease onset occurred before the outbreak in Kentucky. This also meant that the plants sent to Kentucky from Tennessee were very likely infected with the blue mold pathogen, and that this was probably the source of our outbreak.

Immediately after the discovery of blue mold, all plants in the greenhouse in question were destroyed. Some tobacco had been set in the field from this facility; however, no blue mold has been found to date. With the destruction of plants in both the Tennessee and Kentucky greenhouses, these locations are no longer sources of inoculum. Thus, the overall risk to tobacco in Kentucky appears low. No reports of disease have been made in Kentucky since the original discovery on June 1. Still, we need to proceed with caution. Several weeks elapsed between initial infection and discovery (and elimination) of plants with blue mold in Tennessee. There is a small chance that spores could have moved out of the Tennessee location prior to the finding of disease, and some could have found their way into Kentucky. Growers need to scout tobacco in the field and still in the float system for the presence of disease. Begin preventive applications of fungicide if disease is found. All tobacco transplants should be treated with Dithane DF weekly until they are set as an extra measure of precaution.

Please let me know if you find blue mold or suspect it in your area. I will continue to send out emails to keep you posted on the situation, and you can visit the Kentucky Tobacco Disease Information page for regular updates on blue mold and other diseases (http://www.uky.edu/Ag/kpn/kyblue/kyblue.htm).

CORN

TIMING FUNGICIDE APPLICATIONS ON CORN
by Paul Vincelli

Though fungicide use in corn is probably not something producers should do routinely, some fields may benefit economically from a spray. More information on fungicide use in corn can be found in the April 30, 2007 issue of *Kentucky Pest News*, ("Fungicide Considerations for Corn in 2007", http://www.uky.edu/Ag/kpn/pdf/kpn_1125.pdf).

Questions have arisen as to the best time to apply a fungicide spray. There isn't a wealth of research specifically comparing pre-tassel treatments to treatments applied at tasseling or silking, although some studies exist, including work we've conducted here in Kentucky. The research that is available shows no consistent and meaningful advantage to applying a fungicide prior to tasseling. We also know from numerous research studies that gray leaf spot and northern leaf blight can develop very aggressively in the latter weeks of grain fill. Furthermore, studies show that fungicides that don't last long enough to protect during this period (Tilt®, for example), sometimes suffer more disease and reduced yields compared to fungicides that last longer (Quadris® or Headline®).

I am interested in continuing to see research data comparing a pretassel fungicide application to an application at tasseling; we still have much to learn about this topic. However, while such studies and grower comparisons are being done, studies to date indicate that tasseling is probably the best time to use a fungicide, if one decides to use it at all in this corn crop.

CORN & SOYBEANS

JAPANESE BEETLES IN CORN AND SOYBEAN
by Doug Johnson

Several agents and consultants are reporting large numbers of Japanese beetles (JB) in corn and soybeans. This has mostly occurred in the western area of the state and in particular in counties near the Mississippi River. Also, several reports indicate that most of the activity is on field edges. Both of these items are to be expected. June is the traditional time for JB emergence, which like almost everything insect wise, is dependent upon temperature. It is also common to notice many or most of the beetles along the field edges. These insects are not going to move any farther than necessary into the fields to find their food. We have also noticed some of the larges populations of JB (in field crops) in the western extreme of the state. This is because that area is the latest to have been invaded by the JB. Like other areas of the state, this area will probably have the insect, but the over all population size will decline over time, due to the JB having been recognized as a food source by the local predators (especially birds).

CORN: The main concern for corn will be with silk feeding. Although the JB will feed on other corn plant parts, it is unlikely that they will remove enough leaf areas to have any economic affect. However, JB feeding can affect kernel set in corn. If the JB keeps the silks clipped to within ½" long while pollen is shedding, kernel set can be reduced. This generally does not happen, and when it does is often limited to the field edges. However, the potential is there. If silk clipping is occurring and there is an average of two JB per ear, then control is needed. Once the silks have turned brown control is no longer needed as pollination is complete.

SOYBEAN: JB can reduce foliage in soybeans, especially small plants, to economically important levels. This is a very unusually occurrence in Kentucky but it does happen. Generally speaking, soybean plants in the vegetative stages will sustain up to 30% defoliation before an economic loss occurs. A more precise economic threshold can be computed by using Table 2, in the ENT-13, Insecticide Recommendations for Soybean – 2007. This table allows you to take into account the anticipated yield, cost of control and market value of the beans, as well as the percent defoliation, when making a control decision. JB are relatively easy to kill. ENT-13 list a variety of products that may be used.

To find insecticide recommendations for Corn (ENT-16) and Soybeans (ENT-13), contact your County Extension Office or look on line at: http://www.uky.edu/Ag/PAT/recs/rechome.htm.

FRUIT CROPS

APPLE SCAB RESISTANCE BREAKDOWN REPORTED
by John Hartman

The following article appeared in the June 7, 2007 issue of Purdue University Cooperative Extension Publication "Facts for Fancy Fruit." It was written by Janna Beckerman, Extension Plant Pathologist at Purdue University.

Scab Resistance Breakdown:

In Indiana, the Midwest, and most of the United States, apple scab is the most important disease of apples. For this reason, plant breeding programs, like the PRI collaborative program between Purdue University, Rutgers, the

State University of New Jersey, and the University of Illinois, developed scab resistant apple cultivars like Williams' Pride, Enterprise, Prima, Priscilla, and GoldRush. These cultivars were developed by breeding resistance from *Malus floribunda* 821 into commercial cultivars with high fruit quality to produce high quality eating apples with scab resistance.

Since 1970, approximately 80% of the scab-resistant cultivars that have been released worldwide purportedly carry the Vf gene from *M. floribunda* 821, with very few cultivars carrying other sources of resistance. In 1993, scab lesions were found on 'Prima,' a Vf- selection in an orchard in Germany (Parisi et al. 1993). Although 'Prima' was now susceptible to this race of scab, these isolates were not able to infect the resistant parent *M. floribunda* 821. These isolates were designated Race 6. One year later, inocula from an unlabeled *M. floribunda* was found capable of infecting *M. floribunda* 821, thereby identifying a new race of the pathogen, Race 7 (Roberts and Crute 1994).

Back in North America, we still only had five races of scab, none of which could infect our scab resistant apples. However, in a pathogen like scab, it was only a matter of time until new races would be identified. On May 18, 2007, Ryan Deford and I found scab on *Malus floribunda* 821 in the Old Hort Farm. Subsequent searches on resistant varieties like 'Williams' Pride,' 'Enterprise,' 'Prima,' 'Priscilla,' 'Scarlett O'Hara,' and 'GoldRush' has NOT revealed scab on these cultivars to date. This would strongly suggest that Race 7, but not Race 6 is present in this orchard. Further work is currently underway to confirm this in the laboratory.

Nationally and internationally there is no doubt about the economic importance of reliably scab-resistant apple cultivars in both organic, and sustainable apple production. With the majority of resistant cultivars possessing single gene scab resistance from *M. floribunda* or *M. floribunda* '821' (Vf) we've created a situation where "all of our eggs are in only one basket." The reliance on a single Vf- gene for resistance in apples that are cultivated worldwide places tremendous pressure on the pathogen, and a likelihood that this gene would fail and infection would occur. This is evolution at work.

What does this mean for growers? In the absence of any spray, as is the case at the Old Hort Farm, the scab infection on *M. floribunda* 821 is significant in one of the driest years on record. The question regarding how widespread Vf breakdown is remains to be seen, but I have identified a scab-infected *M. floribunda* in Ohio that was previously reported as resistant for over thirty years. These two findings in two different states suggest that Race 7 is widespread, and not an isolated occurrence in Indiana.

What does this mean for the future of scab resistant apples? In looking to Europe, where they've dealt with this issue for almost 20 years, it's important to note that a few Vf-resistant cultivars ('GoldRush,' 'Reanda,' 'Regine,' 'Renora,' 'Resi,' 'Rewena' and ' Enterprise') remain uninfected and show clear resistance reactions to Race 6.

To date, cultivars like 'Nova EasyGro,' with another resistance gene, called Vr, derived from Malus pumila 'R 12 740 7A' have never shown any scab symptoms, whereas cultivars crossed with Va resistance from 'Antonovka' have only lightly sporulating lesions occasionally reported. Additional good news: The spread of Race 6 and 7 has not been rapid: In fact, in several locations in southern Germany, Vf-resistant cultivars remained free of infection, despite susceptibility of *M. floribunda* in regional apple genebanks. The various scab occurrences are presumably based on different race spectra in each location, including Race 6 in northern Germany and Race 7 in southern Great Britain. In other locations, the race spectrum is still being investigated. Races 1–5 are not yet able to break the scab resistance of Vf cultivars.

I would state that as of right now, the other shoe hasn't dropped—yet. However, for organic or sustainable apple production, it is essential to rigorously apply fungicides to prevent primary infection during key scab periods when the weather is cool and wet weather while the tissue is young and susceptible to infection. The simple, but conscientious application of one to three sprays to prevent primary infection in the spring should keep resistant cultivars free of scab for the entire season. To date, these minimal, or organic practices to control other diseases like powdery mildew and and cedar-apple rust may have contributed to the preservation of scab resistance in these lines. This is the "glass is half full" view. Alternatively, the apples at the old Hort Farm, or Meig's, or areas surrounding known Race 7 infections, may have only escaped disease, and that scab is a matter of time, and that the time will be sooner rather than later. This would be the "glass is half empty" view. Being a pragmatist, I suggest we agree the glass has water in it, and keep an eye on things. (Beckerman)

VEGETABLES

MANAGEMENT OF CUCUMBER BEETLES AT HARVEST
by Ric Bessin

Cucumber beetle management is critical at planting or transplanting time with cucumbers and melons. It is recommended that growers treat the same day to avoid

plant loss and significant incidence of bacterial wilt. However, with all of the cucurbits, cucumber beetle management is also important during the harvest period. The beetles become direct pests feeding on the rind of the fruits that we hope to market. This will reduce the marketability of most cucurbits. The beetles are often found hiding on the underside of the fruits, near where the fruit touches the soil.

Several factors can make control during this period more difficult. First, if early infestations were not controlled properly, then large populations may be present at harvest. During the harvest period we often have higher temperatures, this can reduce the efficacy of the pyrethroid insecticides while increasing the effectiveness of insecticides in other classes. During the harvest period, the canopy of the cucurbit crops makes coverage more difficult, especially when considering that the beetles are on the undersides of the fruit. Stalked cucumbers have a distinct advantage with respect to coverage. Applications of Admire, Platinum, and Venom made a planting have run their course and no longer affect the beetles during the harvest period.

When selecting an insecticide during the harvest period there are several factors to consider. First, check the PHI (pre-harvest intervals) of the various products and how they fit into the harvest schedule. Don't use one that will prevent a harvest for occurring. Secondly, if a soil application of Admire, Platinum, or Venom was used then I would recommend against using a foliar application of Venom as a resistance management precaution. A number of alternative insecticides are available for cucumber beetle control, see ID-36 for a list of available alternatives. Finally, to ensure better coverage, use a higher pressure spray and increase the volume of application to penetrate the canopy.

SHADE TREES & ORNAMENTALS

INOCULATIONS OF SCOTS AND AUSTRIAN PINES WITH *Diplodia pinea*

by Amy Bateman, Plant Pathology Grad Student

Each summer, Scots pine Christmas trees are sheared to create the classic conical Christmas tree shape. This shearing creates open wounds that could be infected by *D. pinea* spores deposited either during shearing or later if spread by rainsplash. A common defense of pines is resin production. Resin flows from these sheared tips and creates a resin cap.

U.K. plant pathologists wanted to test the effectiveness of this resin cap against *D. pinea* infection. To test this, artificial shearing was performed on 4-year-old potted Scots pines in the summer of 2006. The top ½ inch of 2-4 inch long shoots were removed from four branches (of the same whorl) of each Scots pine. Cut branch ends were allowed to produce resin and a tiny drop of spore suspension containing 10,000 spores was placed on the end of the cut branch. At the time of cutting (0 hours), resin was just beginning to flow. By 6 hours, a resin cap had started to form, but resin was still soft and liquidy. At 24 hours, the resin cap had fully formed, but was still not completely hardened. Spore suspensions were deposited at 0, 6, and 24 hours after removing the branch tip. A spore-free water control also was added at 0 hours. Ratings were taken of the disease progress a few weeks after inoculation.

Due to the location of inoculation, shoot necrosis occurred from the cut end and progressed down the shoot to the node. Trees inoculated at 0 hours, when resin was just beginning to flow had a higher percentage of shoot necrosis than the 6 or 24 hour inoculations. Thus, tip dieback decreased when resin caps had more time to form prior to inoculation. This may be due to fungitoxic effects of the resin; alternatively, the resin may have physically impeded penetration of the fungus on the cut stem possibly giving the plant more time to rally its defenses.

Since this experiment was done with a higher amount of spores than would most likely fall on one wounded tip (10,000 spores), this spring, more 4-year-old potted Scots pines will be mock-sheared and inoculated with a dilution series of spores, to see if spore concentration has an effect on symptom development.

Besides inoculating Scots pines, mock shearing was also performed on young Austrian pines where scalpel blades were used to slice through tissue known to be infected with *D. pinea* and then used to cut off the tips of the pines, simulating shearing that occurs in the field. Disease progression was then recorded.

The mock-shearing on the Austrian pines (done in the summer of 2006) has yet to produce symptoms on the trees. This may be due to the low quantity of inoculum that was naturally picked up on the blades. This, in combination with the resin capping study, suggests that there is a minimum threshold of inoculum needed in order to create symptomatic infections.

DIAGNOSTIC LAB-HIGHLIGHTS

by Julie Beale and Paul Bachi

Agronomic samples over the past week included symptoms of environmental (weather-related) stress in many crops, including corn, soybean, alfalfa and tobacco. Nutritional problems, many also related to recent hot dry

weather were seen, among them zinc deficiency in corn and manganese toxicity and temporary phosphorus deficiency in tobacco. Infectious diseases of agronomic crops included Rhizoctonia stem rot on soybean; and Fusarium wilt, Pythium root rot, and target spot on tobacco.

On fruit and vegetable samples we have diagnosed iron deficiency on blueberry; bacterial wilt on melon; Rhizoctonia root/stem rot on pea and pepper; and bacterial stem rot, Sclerotinia stem rot and early blight on tomato.

On ornamentals and turf we have seen oedema on geranium; powdery mildew on phlox; anthracnose on ivy; fire blight on pear and serviceberry; powdery mildew on dogwood; Phyllosticta leaf spot on boxelder; herbicide injury on numerous landscape species; brown patch on fescue; and dollar spot and Pythium root rot on bentgrass.

INSECT TRAP COUNTS

UKREC, Princeton KY

Kentucky — Tennessee

June 1-8, 2007

►***Jackson, TN***

Black cutworm 0
True armyworm.....0
Corn earworm.....0
European corn borer 0
Southwestern corn borer 0
Fall armyworm 0

►***Milan, TN***

Black cutworm 0
True armyworm.....0
Corn earworm.....0
European corn borer 0
Southwestern corn borer 0
Fall armyworm 0

►***Princeton, KY***

Black cutworm 0
True armyworm.....7
Corn earworm.....3
European corn borer 0
Southwestern corn borer 17
Fall armyworm 0

►***Lexington, KY***

Black cutworm 8
True armyworm.....388
Corn earworm.....37
European corn borer 0
Southwestern corn borer 0
Fall armyworm 0

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.

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