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CORN

Fungicides and Stalk Quality

By Paul Vincelli

Certain fungicides, particularly Headline®, are being marketed for their ability to enhance corn stalk quality. There is no doubt that fungicides can improve stalk quality, but in almost all experiments I've seen thus far, stalk health improvement relates to control of foliar diseases. Stalk health isn't always improved by fungicides, but when it is improved, it is typically because foliar diseases like gray leaf spot are being controlled. Thus, if your overall risk of foliar diseases is low, so is the chance that you'll get improved stalk health from a fungicide application. The following article by Dr. Carl Bradley from the Illinois *Pest Management & Crop Development Bulletin* presents excellent visuals and graphics to illustrate this.

In the last week, I've received a few questions about the effect of foliar fungicides on stalk quality of corn. In 2008, stalk quality was evaluated in some of my corn fungicide research trials. When the black layer was evident in corn, stalks in each plot of these trials were split open with a knife and evaluated for stalk rot severity using a 0 to 5 scale (0 = no stalk rot evident and 5 = complete destruction of the pith with lodging below the ear; this scale was developed by Ron Hines, formerly with the University of Illinois).

Figure 1. Sample stalks with different values using the 0 to 5 stalk rot severity scale (Ron Hines).

Belleville and Dixon Springs trial. One of the research trials in which stalk rot was evaluated was planted at both Dixon Springs and Belleville. The Dixon Springs site was planted in early May, while the Belleville site was not planted until June because of heavy rainfall throughout May. At Dixon Springs, foliar disease pressure was low, and no statistical differences in foliar disease severity were observed between the untreated control plots and the fungicide-treated plots (Headline at 9 fluid ounces per acre, in this case). At Belleville, common rust severity was extremely high and caused considerable foliar disease severity in the

untreated control (72% severity on the ear leaf). Headline fungicide was able to provide adequate protection, and treated plots had low foliar disease severity (less than 10% severity on the ear leaves of treated plants). Stalk rot severity followed a similar trend; it was relatively low at Dixon Springs, with fungicide having no effect. In contrast, at Belleville, stalk rot was statistically less severe in Headline-treated plants vs. non-treated plants.

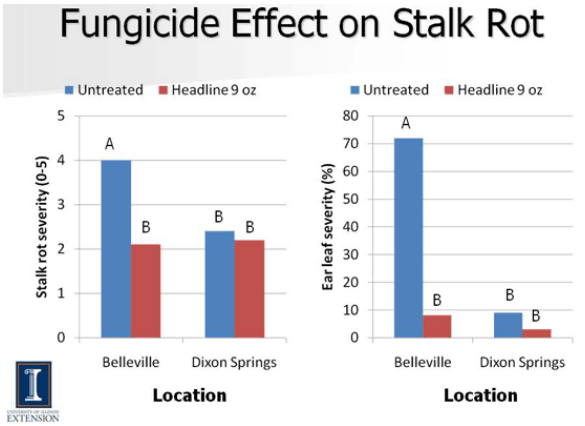

Figure 2. Effect of Headline fungicide on stalk rot severity and foliar disease severity at Belleville and Dixon Springs, IL in 2008.

Urbana trial. A fungicide research trial conducted at Urbana included one hybrid considered to be susceptible to gray leaf spot (GLS) and another considered to be moderately resistant to it. In addition, this trial was mist-irrigated throughout the season to help ensure a favorable environment for GLS. Foliar disease severity was greatest on the susceptible hybrid, and the foliar fungicide (Headline at 6 fluid ounces per acre) reduced disease severity compared to the untreated control on this hybrid. On the moderately resistant hybrid, no statistical difference in foliar disease severity occurred between non-treated and Headline-treated plots. Similar to the foliar disease ratings, stalk rot severity was greatest on the GLS-susceptible hybrid, and Headline fungicide reduced stalk rot compared to the untreated control in this hybrid. On the hybrid that was moderately resistant to GLS, no differences between non-treated and Headline-treated plants occurred for stalk rot severity.

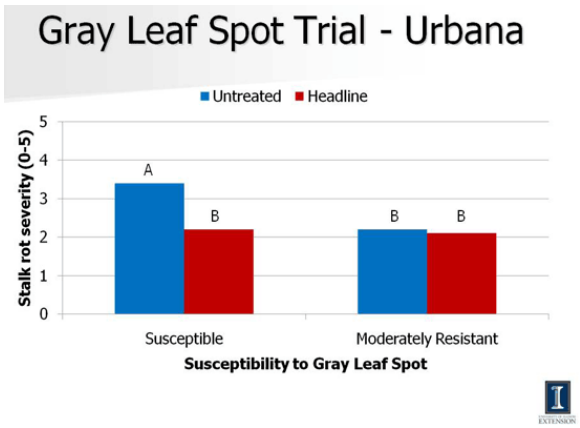

Figure 3. Effect of Headline fungicide on stalk rot severity of a hybrid considered to be susceptible to gray leaf spot and one considered to be moderately resistant to gray leaf spot at Urbana in 2008.

Relationship between foliar disease and stalk rot. Based on the results I've presented above, I think it is fair to state that there is a relationship between foliar disease severity and stalk rot severity. This relationship has been observed before by others and has been studied in the scientific literature. When foliar disease pressure is severe, the "blighted" leaves cannot produce enough photosynthates (sugars) to adequately fill the ear. When this happens, the plant may "rob" the stalk for additional sugars, which can damage the integrity of the stalk and allow additional colonization by stalk rotting pathogens. So foliar fungicides can impact stalk rot, but they likely do not directly control stalk rot pathogens; rather, they control foliar pathogens, which allows the plant to get more photosynthates from leaf photosynthesis because of reduced foliar disease severity. Knowing this, it's likely that we will only see improved stalk quality with fungicides when foliar disease pressure is high.

Funding for some of these research trials was provided by the Illinois Department of Agriculture Fertilizer Research and Education Council (FREC) and the USDA-CSREES North Central Regional Integrated Pest Management Program.--*Carl A. Bradley*

TOBACCO

Blue Mold Confirmed in Kentucky

By Kenny Seebold

On July 16, a fairly significant outbreak of blue mold was found in several fields located along the Clark - Montgomery county line. The disease appeared to have started roughly 2 weeks earlier, based on the appearance of older lesions, and the origin of the outbreak has not been determined. The incidence of disease was near-100% in two fields, and severity was quite high. Actively sporulating lesions were abundant, making this a strong source for disease. Additional cases have not been reported as of July 20; however, there's a good chance that we'll find more in the vicinity of the current outbreak, and to the east of this area in the coming days.

For now, the areas facing the strongest threat blue mold are located in the immediate area of the current find, and eastward. Within the "danger zone", growers are advised to begin application of fungicides as quickly as possible to help protect tobacco and to contain the outbreak. If blue mold is active on tobacco at the time of fungicide application, I recommend treatment with Quadris at 12 fl oz/A; use 8-10 fl oz/A for protection. Growers may also use the combination of mancozeb (Dithane, Penncozeb, or Manzate) plus dimethomorph (Acrobat or Forum). In this case, apply 2 lb/A of mancozeb and 3-7 oz/A of dimethomorph (user higher rates on bigger tobacco or if active disease is found). Actigard will probably not be a good choice in the areas affected by the blue mold warning, as they may have been exposed to the pathogen, and Actigard needs to be in place 4-5 days before exposure to the blue mold pathogen in order to activate plant defenses.

When applying fungicides for control of blue mold, good coverage is critical for getting adequate control of disease – this means using an appropriate application volume and drop nozzles to get fungicide materials down into the lower plant canopy. The need to get after blue mold is really strong in the threatened area, because we are looking at some very favorable conditions for blue mold in the coming days. According to the forecast, we are going to have cooler-than-normal day and night temperatures, and mostly clear days. Long-distance transport will not be favorable, but we could see an explosion of blue mold within a field that has the disease and also short distances from these fields, mainly due to very favorable night-time temperatures.

Another point to consider is that tobacco that has been topped, or will be topped in a few days, will be less susceptible to blue mold, and may not need an application of fungicide. However, blue mold loves suckers, so good sucker control will be important.

Finally, in areas west of the current outbreak, the need to protect against blue mold is not as critical as for the affected zones. Those wishing to "play it safe" can follow the protectant guidelines listed above; if Quadris is used, they can also count on protection against target spot and frogeye if these diseases are present. The other approach is to monitor the blue mold situation and be prepared to spray immediately if movement is predicted from known sources of blue mold, or when blue mold is first found.

Please keep a close watch on tobacco in your area, and let me know if you find or suspect blue mold in your area. Now that it's here, having a good fix on the extent of the outbreak helps me keep us all up to speed. And don't hesitate to call if you have any questions.

If the blue mold situation changes, we'll post an alert through the Kentucky Blue Mold Warning System and on the Kentucky Tobacco Disease Information Page (www.uky.edu/Ag/KPN/kyblue/kyblue.htm). Please urge producers (particularly in eastern KY)to check their crops regularly for blue mold, and let me know if you suspect or find the disease in your area.

Stink Bugs on Tobacco

By Lee Townsend

Single wilted leaves on scattered plants in a field may be the result of feeding by brown or one-spotted stink bugs. Both are about 1/2" long brown, shield-shaped insects. Enzymes that they inject into

Figure 4. Tobacco leaf collapsed due to stink bug feeding.

the plant during sap removal can cause adjacent tissue to wilt or collapse. The collapsed area may recover leaving about a quarter-sized yellow area immediately around the feeding site. On hot sunny days these areas can become scalded and the affected tissue will eventually turn brown and die. Affected plants often are most common along field margins but usually are not noticeable until several days after feeding has occurred.

Symptoms require several hours to develop so the culprits are long gone by the time the injury is apparent. Stink bugs are good fliers and move frequently from plant to plant as well as into and out of the field. Because of their transient nature and generally minimal damage, insecticide applications specifically for stink bug are rarely justified.

FRUIT CROPS

Grape Black Rot Disease

By John Hartman

Grape Black Rot, caused by the fungus *Guignardia bidwellii*, is being found commonly in vineyards across Kentucky. Wet weather this spring has certainly contributed to disease outbreaks and made preventive sprays difficult. Being seen now in the field and in the plant disease diagnostic laboratory are infected leaves and fruit (Figure 5). Leaf spots due to black rot can be diagnosed by close examination of the tan centers of the angular spots and observing the tiny dark specks (pycnidia) arranged towards the edges of the spot (Figure 6). These pycnidia produce spores that in turn cause additional infections of leaves and fruit. Rotted fruits turn black and form mummies (Figure 7). About a month after bloom, grape fruits become resistant to new black rot infections. Thus, sprays applied now will not reduce black rot, but may help with other fruit rot diseases. Lesions may also develop on the grape vine (Figure 8). These lesions will need to be pruned out early next spring and any remaining mummies will need to be removed at the same time. If not, the black rot fungus in the lesions and in the fruit mummies will be a source of inoculum for new infections next year.

Figure 5. Black rot-infected grape leaves and fruit. Note tan leaf lesions with dark margins and rotted fruit in cluster at left.

Figure 6. Pycnidia of grape black rot fungus (close-up). Note angular lesion with a "ring" of tiny black pycnidia.

Figure 7. An individual grape fruit mummified by black rot disease.

Figure 8. Black rot lesions on grape vine. Note pycnidia.

Grape – More Pierce's Disease
By John Hartman

Figure 9. Scorched leaf with Pierce's disease symptoms.

Pierce's Disease, caused by the bacterium *Xylella fastidiosa*, has been found in two additional Kentucky locations. Late last month, we reported in Kentucky Pest News (Issue #1202, June 30, 2009) occurrence of this disease on a single grapevine in Fayette County. Last week the plant disease diagnostic laboratory confirmed the disease on several grapevines at another location in Fayette County and also one case in Montgomery County. Pierce's disease can be devastating and growers observing the leaf scorch symptoms (Figure 9) will want to be sure to get a correct diagnosis before taking steps to eradicate the infected plants.

SHADE TREES & ORNAMENTALS

Fall Webworm Tents Common From Late Summer to Early Fall
By Lee Townsend

Fall webworms are pale yellow, hairy caterpillars with two rows of black spots along the body. They are gregarious caterpillars that live together in silk tents spun at the ends of branches. Larval development takes about 6 weeks. These webworms feed on about 90 species of trees and shrubs and can be seen from late summer to early fall. Fall webworm infestations are unsightly and if present in sufficient numbers they may defoliate small trees.

Physical removal of tents and caterpillars may provide suitable control. Registered insecticides may be used for control if necessary.

TURF

Leafhoppers Can Be Abundant in Turf – Significant Impact is Rare
By Lee Townsend

Leafhoppers are about 1/8 inch-long wedged shaped insects that feed on plant sap. Small numbers of them are common in turf every year but these light gray to green insects can be very abundant, especially in irrigated turf. As grass gets tall, they may accumulate on yard chairs, pet dishes, children's toys, etc. They can be a temporary nuisance but are harmless to humans and pets, and rarely affect turfgrass.

DIAGNOSTIC LAB HIGHLIGHTS
By Julie Beale and Paul Bachi

Recent agronomic samples in the PDDL have included gray leaf spot, stinkbug injury and herbicide injury on corn; bacterial leaf spot and Phytophthora root rot on alfalfa; brown spot and potassium deficiency on soybean; angular leaf spot, black shank, target spot, phosphorus and potassium deficiencies, chemical injury, manganese toxicity and frenching on tobacco.

On fruit and vegetable samples, we have diagnosed black rot, anthracnose and Pierce's disease on grape; black root rot complex and common leaf spot on strawberry; leaf spot (Sphaerulina), anthracnose and Phytophthora crown rot on raspberry; scab, frogeye and cedar-apple rust on apple; leaf spot (Coccomyces) on cherry; web blight, anthracnose, common bacterial blight and Rhizoctonia root/stem rot on bean; bacterial wilt on cucumber; Alternaria leaf spot on cantaloupe; bacterial spot and southern blight on pepper; and bacterial canker, early blight, late blight, Septoria leaf spot, southern blight, blossom end rot, tobacco mosaic virus and tomato spotted wilt virus on tomato.

On ornamentals, foliar disease have been widespread, including leaf streak on daylily; Cladosporium leaf blotch on peony; downy mildew on buddleia; Gloeosporium leaf spot on birch; powdery mildew and Septoria leaf spot on dogwood; Cercospora leaf spot on hydrangea, redbud, rose, euonymus, and willow; Phyllosticta

leaf spot on maple, forsythia and itea; and leaf blister and anthracnose on oak. We have also seen Botryosphaeria canker on rhododendron and sumac; bacterial scorch on oak and sycamore; anthracnose and Pythium root rot on bentgrass; and brown spot on fescue.

INSECT TRAP COUNTS
July 10-17

By Patricia Lucas

Location	Princeton, KY	Lexington, KY
Black cutworm	11	1
Armyworm	30	149
Corn earworm	6	42
European corn borer	6	0
Southwestern corn borer	122	0
Fall armyworm	4	0

Graphs of insect trap counts for the 2009 season 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://ces2.ca.uky.edu/fulton/InsectTraps

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