MSU Grain Crops Update
May 14, 2007
Dr. Erick Larson

Fungicides on Corn? - Timely fungicide application can be expected to help preserve corn yield potential of production fields when foliar disease threatens. However, current university data and knowledge do not justify that fungicide application on corn at a predetermined growth stage (tassel) will consistently produce a profitable response in our region. Such a program approach does not account for the substantial effects environment, culture and hybrid resistance are known to have on potential disease incidence, or the value that crop consulting/field scouting can have in addressing this issue.

Corn foliar disease development in Mississippi has been quite infrequent in the past and by no means consistent with tasseling, or any other corn growth stage. During the last 12 years in Mississippi, only two years produced widespread, substantial corn foliar disease problems – Common rust in 1997 and Northern corn leaf blight (Figure 1) and Southern corn leaf blight in 2004. The Common rust (1997) developed prior to tassel and leaf blight (2004) began developing 20-35 days after tassel. Another threatening foliar disease, Southern rust, has only typically developed very near the end of the corn growing season (50-60 days after tassel) in late July or August. Therefore, past corn yield losses from Southern rust in Mississippi largely have been limited.

Figure 1. Northern corn leaf blight lesions.

This unpredictable disease timing presents major limitations for producers, because corn grain yield can be limited by stress over a much longer period (~60 days) than what a single fungicide application can provide protection (~20 days). Accordingly, proper fungicide application timing largely determines the magnitude of crop response.

Most foliar diseases of corn, except for rusts, are spread by fungi that survive in infested corn residue left on the soil surface. Thus, our routine rotation of corn with other crops substantially reduces the significance of foliar diseases which survive on corn residue, such as Northern and Southern leaf blight, Gray leaf spot, and Anthracnose, compared to the southern corn belt, where continuous corn, reduced tillage systems and these diseases are common. Conversely, corn grown in a field following corn is more subject to disease infection.

The following season, spores are produced during moist periods and are rainsplashed or wind-dispersed onto lower leaves, where infection may occur, if the hybrid is susceptible. Lesions develop and produce more spores that are spread to and may infect upper leaves, if environmental conditions are conducive to disease development (generally warm temperatures and wet, humid weather) (Figure 2). Thus, crop consultants or others closely scouting their corn crop have ample opportunity to identify disease infection and recommend timely fungicide application, before the leaves producing the bulk of the photosynthetic energy are infected.

Figure 2. Southern corn leaf blight development in the lower leaves.

Furthermore, hybrid susceptibility to foliar diseases often varies considerably, with some hybrids proving to be quite resistant to specific a disease. This was quite evident during the 2004 season, when severe yield loss primarily due to Northern corn leaf blight was limited to about 12 out of 104 hybrids, as noted in the 2004 MSU Corn for Grain Hybrid Trials Bulletin (http://msucares.com/pubs/infobulletins/ib0416.pdf).

In summary, I believe producers will make more prudent management decisions by closely scouting the crop, and accounting for the weather, culture, and hybrid to make fungicide applications when conditions warrant, rather than betting upon a programmed approach. If disease is present in the field, the weather is conducive for disease development, the hybrid is susceptible to the disease, and the crop is at a growth stage when that disease could hurt yield, then spray a fungicide capable of preventing that specific disease. If any one of these parameters is not met, then fungicide application may not be profitable.

To add your address to the Corn and/or wheat email list, please send a request to: **elarson@pss.msstate.edu**

DEPARTMENT OF PLANT & SOIL SCIENCES
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