Soybean Fungicide Management Considerations for 2013

Frogeye leaf spot

Even though it is likely early to start to consider the R3/R4 soybean fungicide application strategy, it is important to make a few considerations this season. Last year, two fields (one in each in Carroll County and Coahoma County) were determined to contain strobilurin-resistant isolates of the frogeye leaf spot fungus (see: http://www.mississippi-crops.com/2012/10/05/strobilurin-resistant-frogeye-leaf-spot-confirmed-in-mississippi/). A total of 15 samples from soybean fields exhibiting frogeye leaf spot were sent to Dr. Carl Bradley at the University of Illinois to determine if the frogeye fungus was sensitive or resistant to the strobilurin active ingredients. As a general comment, if the fungus has been determined to be resistant to a single strobilurin, then it is resistant to ALL strobilurin active ingredients. In adjacent states (Arkansas, Tennessee) several fungicide failures were observed in situations where a stand-alone strobilurin fungicide was applied to manage frogeye leaf spot. In the past, applying a strobilurin fungicide as either Headline or Quadris was the most commonplace suggestion since the application was believed to reduce the likelihood of the fungus infecting plant material that had not previously exhibited symptoms of the disease. Keep in mind that even though Dimilin (diflubenzuron) has oftentimes been mentioned as a product to reduce frogeye leaf spot, Dimilin is a chitinase-inhibiting insecticide and should not be relied on as a curative fungicide. Laboratory research suggests that Dimilin, on its own, cannot reduce growth/reproduction of the fungus that causes frogeye leaf spot. As a part of a Mississippi Soybean Promotion Board project, a graduate student in Starkville (Mr. Jeff Standish), working under the supervision of Drs. Maria Tomaso-Peterson and Tom Allen, will be investigating frogeye isolates from MS to determine how prevalent the resistant strains of the fungus are in our soybean production system.

The members of the genus *Cercospora* are likely to develop resistance to strobilurin compounds through continued use of the fungicide members within the class. Over the past three seasons reports of strobilurin-resistance in *Cercospora sojina* (frogeye leaf spot) populations have been made from numerous states (AL, AR, IL, KY, LA, MO, MS, and TN). In addition, reports from Louisiana have also been made that suggest that *Cercospora kikuchii*, the fungus that causes Cercospora blight (or late-season Cercospora), has widespread tolerance to members of the strobilurin fungicides as well as thiophanate-methyl, the key ingredient in Topsin M. To date we have not identified fungicide resistance within *C. kikuchii* in MS; however, based on how poorly fungicides appear to perform to this particular fungus we believe it is only a matter of time before fungicide resistance is documented.

Fungicide selection

As a general guide, here are some suggestions if you decide to continue to make an R3/R4 fungicide application. Remember, the R3/R4 fungicide application is based on a fungicide product that is either a stand-alone strobilurin (e.g., Headline, Quadris, or several other associated products) or a strobilurin + triazole (e.g., Quilt, Stratego, or the newer, novel fungicide Priaxor which contains a strobilurin + carboximide) as either a pre-mix or tank-mix combination. Applying a product that contains a stand-alone triazole (e.g., Domark, Tilt, Topguard) should be saved for when foliar disease is identified. In addition, the R3/R4 fungicide application is made at that specific timing regardless of the presence of disease. Even if the weather is hot and dry at the time of application it is what

happens subsequent to the fungicide application that necessitates the preventive fungicide application. Moreover, the R3/R4 fungicide application produces the best results when applied in what can be generally considered to be â€œhigh-yieldingâ€ soybean fields which can be classified as those fields with a) continuous soybean history and b) irrigated field situations. A continuous history of soybean would be one where a double-crop situation (soybean following wheat) had not been a cropping history.

The information contained in the greater Mississippi State University data set regarding response of soybean to fungicide application suggests that triazole products applied at R3/R4 do not provide near the yield benefit as do the strobilurin containing fungicides. The fungicides that contain stand-alone triazoles are outstanding products but they should be relied on for specific uses such as managing for yield loss as a result of frogeye leaf spot or a disease such as soybean rust.

Information regarding the specific classes of fungicides labeled for use in soybean production systems can be located at:

http://www.mississippi-crops.com/2013/03/19/the-fungicides/

The information contained in this particular post will help guide you through the classification of fungicides used in soybean systems to manage losses as a result of foliar fungal diseases. Keep in mind there may be some generic fungicide products that are not contained in the associated tables; however, the general information regarding classification of active ingredients (either strobilurin or triazole) will help determine the specific fungicide classes.

Suggested R3/R4 application strategies for 2013

To date, there are three different scenarios that may present themselves in soybean production systems. First and foremost, the most important thing to determine is whether or not a specific variety is susceptible or tolerant/resistant to the frogeye leaf spot fungus. To benefit from the information contained below you will need to determine this information. In the past, we have done a good job of managing frogeye leaf spot by planting resistant varieties. However, over the past few seasons extremely susceptible varieties have been made commercially available and even though they are outstanding yielders, they increase the likelihood of the development of fungicide-resistant frogeye leaf spot since they are extremely susceptible to the fungus.

1. In situations where a frogeye susceptible variety is planted in a continuous soybean cropping system and NO frogeye is present at the desired time of fungicide application. For the R3/R4 fungicide application, if you absolutely have to make a fungicide application and expect to receive the general benefit associated with a fungicide application made at that particular timing, rely on a product that contains a strobilurin + triazole (or strobilurin + carboxamide). If frogeye is present in the field at the time of application and it appears that the disease gets worse after application please call so we can come retrieve leaf samples for fungicide-resistance analysis.

2. In situations where a frogeye tolerant/resistant variety are planted in a continuous, irrigated soybean cropping system. For the R3/R4 fungicide application relying on a stand-alone strobilurin will still be an acceptable practice **IF** a frogeye tolerant/resistant variety has been planted. If you know your specific variety and need help verifying whether or not the variety is susceptible or resistant please donâ€™t hesitate to call.

3. In situations where a frogeye susceptible variety are planted in a continuous soybean cropping system and frogeye HAS BEEN DETECTED. If you are going to make an R3/R4 fungicide application and frogeye has already been detected in a field of a frogeye susceptible soybean variety then making a fungicide application with a labeled triazole fungicide could reduce the likelihood of a yield loss.