Funding to Support the Georgia Soybean Rust and Fungal Disease Sentinel Plot Monitoring Program to Include Field Trials to Assess New Fungicide

Report for 2019

Presented to the Georgia Commodity Commission for Soybeans

Robert C. Kemerait, Jr. PhD
Professor and Extension Specialist
Department of Plant Pathology, the University of Georgia
2360 Rainwater Rd., Tifton, GA 31793
Phone: (229) 386-3355
E-mail: Kemerait@uga.edu

In 2019, Dr. Kemerait was funded for $30,000 for this project. Given that soybeans were planted on approximately 110,000 acres in the state, such amounted to about $0.27 per acre. The results of sentinel plots shared throughout the season with county agents, growers and consultants through e-mail and Twitter, allowed growers to save between $10 and $30 per acre by delaying sprays or by choosing less expensive fungicide programs. The potential for a severe outbreak of rust was high based upon early detection of the disease. However, the very slow spread from kudzu to soybeans, likely because of drought, stifled the epidemic until late in the season.

Situation/Need for research effort in Georgia

Despite the continued importance of Asian soybean rust to production, at least in the southern United States, Georgia remains one of only three states with a vibrant and active sentinel plot program. Dr. Robert Kemerait and his Extension program remain responsible for coordinating and implementing the state's Asian Soybean Rust Sentinel Plot Program which provides an early-warning system for growers in Georgia and throughout the United States. As of the conclusion of the 2016 season, national funds, e,g, the National Soybean Board, are no longer available. Although Asian soybean rust has not been a serious production problem outside of the southeastern United States, soybean producers in Georgia need to be prepare to manage this disease annually. In a stark example from 2012 where a grower managed rust in one half of a field but not the other, yields in the untreated half were reduced by 50%. Asian soybean rust has been detected in Georgia annually since 2004; however through sentinel plot efforts in 2014, 2017 and 2018 it was determined that this disease was NOT a threat to our producers because of its late arrival in the state. However, Asian soybean rust appeared early in 2015 and 2016 and losses did occur. Losses also occurred in 2019 on later-planted soybeans. In 2014 it is estimated that information from sentinel plots saved our soybean producers at least $0.7-2.1 million in the cost of fungicides alone that would likely have been applied preventatively. Based upon our research, fungicides that were applied based upon early warning may have protected yields by 25 bu/A (or more in some cases). (Yields in excess of 12 bu/A were protected in 2019.) It is absolutely certain that Asian

soybean rust will remain an important concern and limiting factor for growers in our state into the future.

The success of the Asian soybean rust sentinel plot program was especially pronounced in the 2018 and 2019 seasons.

Weather conditions (extended periods of rain) early in the 2018 season appeared to be extremely favorable for development of soybean rust and other diseases; however the re-introduction of the disease was long delayed and spread of rust was quite slow. Without the sentinel plot program, recommendations early in the season would have been to apply fungicides which would have increased production costs for the growers. With a sentinel plot program in place, recommendations to apply fungicides were not given until late in the 2018 field season.

The winter of 2018-2019 was mild, especially in the southern part of Georgia. Asian soybean rust was found (on kudzu) earlier in 2019 than at any time since 2005. For this reason, there was concern that 2019 could be "The Year" for an early outbreak of the disease. Soybean producers were poised to respond with applications of fungicides. However, because of the sentinel plot program funded by the Georgia Commodity Commission for Soybeans, recommendations for fungicide applications were not made until later in the season. Growers with earlier-planted soybeans were able to save on the cost of fungicide applications. However, where soybeans were planted later in the season, yields were improved by more than 12 bu/A with timely fungicide applications.

Timing of Detection:

Tattnall County (kudzu) 4/9/19
Toombs County (kudzu) 4/12/19
Lowndes County (kudzu) 5/2/19
Thomas County (kudzu) 5/7/19
Appling County (kudzu) 5/11/19
Baker County (kudzu) 5/21/19
Grady County (kudzu) 5/21/19
Miller County (kudzu) 5/29/19
Cook County (kudzu) 6/10/19
Brooks County (kudzu) 6/17/19
Decatur County (kudzu) 6/26/19
Jefferson County (kudzu) 7/25/19
Tift County (Soybean) 8/21/19
Burke County (Soybean) 8/23/19
Union County (Soybean) 9/18/19

Not found on soybeans in the following sites (last sampling date)

Decatur County (8/30/19)
Colquitt County (8/30/19)

Stripling Irrigation Park (9/6/19)
Toombs County (9/6/19)
Sumter County (9/6/19)
Bulloch County (9/6/19)
Dooly County (9/6/19)