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# Georgia Soybean News

**WINTER 2020**

## **Introduction to new corn, soybean, and small grains specialist**

As your new extension grains agronomist for the UGA I would like to take this opportunity to introduce myself. My name is Corey Bryant and I grew up in a small town in southeast Arkansas. As the son of an extension agricultural economist I have spent my entire life surrounded by agricultural research and extension and understand its importance in helping growers achieve maximum yield and net returns. I hold degrees from the University of Arkansas at Monticello (B.S. in Agronomy), Texas Tech University (M.S. in Soil Science), and Mississippi State University (Ph.D. in Agronomy). As the Extension grains agronomist for the University of Georgia I am based out of Tifton while providing support to the State's corn, soybean, and small grains producers.

My prior work experience in these crops has been quite varied over the years. I have worked as a cotton and soybean scout for the University of Arkansas' Extension entomologist in high school. During my undergraduate studies I worked for a small local grower on a 2,500 acre soybean and rice farm. My time on the production farm allowed me to learn exactly what growers face on a daily basis as they attempt to make a successful crop. While at Mississippi State University I was based out of the Delta Research and Extension Center in Stoneville, MS. My research project focused on developing conservation tillage systems that maximized soybean yield and net returns while optimizing irrigation efficiency and runoff water quality. As the majority of the mid-south strictly adheres to the early soybean production system I am well versed in the system and understand the unique challenges it can present.

With regards to soybean production in Georgia, I think there is a great opportunity to further increase yields and profitability. Two of the greatest decisions a soybean producer can make are which maturity group and when to plant. Prior research has shown that these two decisions alone, regardless of other management decisions, have the largest impact on yield and subsequent profitability. Therefore, I plan to continue research that will identify the best maturity group and planting date for Georgia soybean producers. I also see identification of the optimum soybean production system, early or full season, in both dryland and irrigated environments in the different regions of the state. Disparities in rainfall patterns and soils in the different regions of Georgia may dictate utilization of a full season soybean production system under dryland conditions in one region where the ESPS may be optimal under dryland conditions in another region. Other areas I see my program focusing research is on developing agronomic practices to maximize twin-row planting configurations so as to take advantage of the benefits associated with narrow rows without having to make significant investments in new tillage equipment.

Overall though, the goal of my program is to identify areas that may be restricting current soybean yields and then develop solutions that will maximize soybean yield and profitability.

*Regards, Corey Bryant, UGA Extension Grains Agronomist*

## Soybean Commission Project Updates

Each year, the Georgia Soybean Commodity Commission funds various research and extension projects as well as promotional activities. By investing in this way, the Soybean Checkoff helps ensure a sustainable and profitable future for soybean farmers in Georgia and across the nation. Here are some highlights of projects funded in 2019.

### Title: Support of UGA Georgia Weather Network 2019

**Need for research in Georgia:** This is a proposal to request continued funding of the UGA Georgia Weather Network - supporting the 86 automated weather environmental monitoring stations. Weather data gathered and disseminated by the Georgia Weather network provide a valuable resource to soybean producers in the State of Georgia.

**Objectives / Benefits:** Continued funding provides support for travel to weather stations by support personnel, maintenance and repair of sensors, and other tasks such as calibration and replacement of station components. The network provides a highly useful resource to soybean farmers across the State of Georgia. While it is difficult to quantify the benefit in dollars, anecdotal evidence from soybean producers indicates that the network provides information which has a significant positive economic impact through improved management of the crop.

### Title: Georgia Soybean Rust and Fungal Disease Sentinel Plot Monitoring Program

**Need for research in Georgia:** Although Asian soybean rust has not been a serious production problem outside of the southeastern United States, soybean producers in Georgia need to be prepared 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%. As of the conclusion of the 2016 season, national funds, e.g. the United Soybean Board, were no longer available. As funding formerly available from national sources is now gone, funding from the Georgia Commodity Commission for Soybeans has become essential to protect the interests of our soybean producers.

**Objectives / Benefits:** To develop, implement, monitor, and report on the results from a sentinel plot monitoring program for Asian soybean rust and other diseases of soybean. Sentinel plots will have been established across Georgia since 2015 and monitored appropriately throughout the season for the development of Asian soybean rust. 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). 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 season. Weather conditions (extended periods of rain) early in the 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.

## Soybean Commission Project Updates (continued)

**Title:** Continued Evaluation of Agronomic Practices Associated with Early and Ultra-Late Planting Systems in Georgia

### **Objective 1 – Early Soybean Variety Evaluation**

The popularity of the Early Soybean Production System has grown in Georgia. In recent years, yields in excess of 100 bu/ac have been documented in the UGA Soybean Yield Contest with each of these contest entries being MG IV soybeans. Though the Early Soybean Production System has increased in popularity, there is a lack of unbiased variety information in Georgia. Large plot evaluation for Early Soybeans was initiated in 2017 with one location in Midville, Ga and expanded to two locations in 2018 (Midville and Watkinsville, Ga). In 2019, this project will again expand to at least four locations (Midville, Watkinsville, Plains, Ga and Northwest Ga) with the possibility of more trial locations. Varieties will be evaluated for agronomic characteristics and yield.

### **Objective 2 – Evaluating Tillage Strategies for Ultra-Late Soybeans in South Georgia**

The Ultra-Late Soybean cropping system is one that is unique to Georgia. The climate in the Southern growing regions of the state allow for soybeans to be planted in late July and early August after corn harvest has been completed. Soybean yields in this system have reached into the 50 bu/ac range. Research has been conducted to evaluate planting dates, seeding rates, cultivar selection, and fertility. In 2018, experiments were implemented in multiple locations. In 2019, this trial will be repeated in 2019 in additional locations to further assess the impact that tillage has in the ultra-late soybean production system.

### **Objective 3 – Soybean Management Strategies Following Auxin Herbicide Injury**

The extreme sensitivity of soybeans to the auxin herbicide dicamba is well documented. With the release of dicamba tolerant cotton and soybean varieties and the subsequent label changes allowing for in-crop use in 2017, many soybean growing regions of the United States saw a dramatic increase in off target movement of dicamba to many crops but most notably soybeans. In 2018 & 2019, a small plot experiment was conducted in two locations in Georgia (Midville, Ga and Tifton, Ga) to evaluate possible management strategies that would help mitigate the negative yield effect of dicamba drift on soybeans.

**Title:** Developing Irrigation Management Strategies for Soybean Production in the Southern US

**Need for research in Georgia:** Soybeans are becoming an increasingly important crop in Georgia where potential for yields and profitability is high. Because of our sandy soils and periodic droughts, to consistently achieve high yields soybean growers must use irrigation. Sound irrigation scheduling strategies and appropriate irrigation scheduling tools are needed to address the timing and amount of irrigation needed during the growing season. Irrigation scheduling has not been widely adopted by Georgia soybean producers because reliable and easy-to-use scheduling tools are not available.

**Objectives / Benefits:** The long-term goal of this project is to develop an interactive evapotranspiration (ET) -based irrigation scheduling tool for soybeans which operates on a smartphone platform and that can be used to implement both conventional and precision irrigation. At completion of the project, the Soybean SmartIrrigation App will have a Georgia footprint but will be easily expandable to a regional or national footprint. The objectives for 2019 are:

1. Incorporate different crop coefficient curves for maturity groups 4, 5, 6, and 7 into the Soybean App.
2. Incorporate the ability to read grower-owned automated rain gages.
3. Publicly release the Soybean App by 01 April 2019.
4. Conduct additional on-farm and plot-scale evaluations of the Soybean App.

## Soybean Commission Project Updates (continued)

**Title:** Development of High Yielding Soybean Cultivars with Enhanced Seed Composition and Pest and Pathogen Resistance for Georgia Growers

**Need for research in Georgia:** Soybeans are the world's largest source of animal protein feed and the second largest source of vegetable oil. The United States is the leading soybean producer and exporter. The soybean production regions in the southern USA favor enhanced protein, providing farmers with the opportunity to produce high protein soybeans. Increasing yield and reducing the cost of production is imperative to increase soybean production in the Southeast. The most effective strategy to accomplish these goals is to develop high yielding, multiple-disease and pest resistant cultivars with value-enhanced traits.

**Objectives / Benefits:** Develop high-yielding soybean varieties adapted to Georgia with enhanced seed composition, and pest and pathogen resistance. Georgia soybean growers will be the primary beneficiaries of this research through their reduced production costs and higher seed yields of second generation glyphosate or glufosinate tolerant and nematode resistant soybean varieties that are of greater value to the poultry and swine industries. Weeds are a major production problem and development of herbicide tolerance cultivars will help farms control weeds.

Since 2008, UGA has had access to Monsanto (Bayer now) second generation glyphosate tolerance technology—Roundup Ready 2 Yield® that has been reported to provide increased yield of soybean. With GACC's support, we have developed strong pipeline materials of soybean using this new RR2Y technology. Three RR2Y cultivars were released in 2014 and one RR2Y cultivar released in 2016. In 2010, UGA obtained access to Bayer's (BASF now) LibertyLink which provides tolerance to glufosinate herbicide for better weed control as an alternative weed control platform. This has provided Georgia soybean growers with the opportunity to select the efficient and cost effective herbicide technology against glyphosate-tolerant weeds. With GACC support, we also have had strong pipeline materials of soybean using this new technology. Two LibertyLink cultivars were released in 2016 and licensed to two seed companies for commercialization in 2017.

**Title:** Race structure and fungicide sensitivity of *Cercospora sojina* in Georgia

**Need for research in Georgia:** Frog eye leaf spot (FLS) is caused by the fungus *Cercospora sojina*. The disease is common in most soybean growing regions of the world and was abundant in the UGA state variety trial plots 2018. The most successful method for controlling FLS involves the use of resistant soybean cultivars. Elite germplasm from the UGA breeding program are screened for frog-eye resistance annually by my program. However, it is unknown what races of *C. sojina* are established in Georgia. In addition, isolates of *C. sojina* resistant to QoI fungicides, such as pyraclostrobin, have been reported in the U.S.

**Objectives / Benefits:** Information on the race structure of *C. sojina* will be used to update frog-eye screening in cooperation with the UGA breeding program. Information on QoI sensitivity will be used by UGA extension to provide timely fungicide recommendations for growers.

## Soybean Commission Project Updates (continued)

### Title: Identifying Superior High Yielding Soybean Varieties Adapted for Dryland and Ultra-Late Production in Georgia

**Need for research in Georgia:** Proper cultivar selection remains one of the most important management decisions a farmer makes. Newly developed cultivars of soybeans are continuously being released by universities, USDA-ARS and commercial companies. In 2018 the Georgia Statewide Variety Testing (SWVT) program evaluated 100 unique varieties, in six different tests, comprising different planting dates and geographic locations. These tests are conducted under irrigated conditions, to help identify maximum yield potential and reduce experimental variability. This allows us to more precisely determine rankings of varieties. However, there is need for evaluation under less-than-optimum conditions, including dryland and ultra-late plantings.

**Objectives / Benefits:** Dryland production systems offer lower production costs and the ability to increase production acreage in response to market prices. The ultra-late production system offers the ability to generate additional revenue following corn on irrigated land, utilizing the remainder of the growing season. Both systems can be profitable options for Georgia farmers, assuming correct varietal selection. Specific objectives include:

1. Evaluate the agronomic performance and adaptability of soybean cultivars grown in dryland environments in Georgia and compare performance to irrigated situations.
2. Evaluate the agronomic performance and adaptability of soybean cultivars grown in ultra-late environments in Georgia
3. Disseminate findings to producers as part of the 2019 Soybean, Sorghum Grain and Silage, and Summer Annual Forages Performance Tests report, available on the SWVT website.

### Title: Soybean Improvement with Insect Resistance

**Need for research in Georgia:** Soybean production in the South faces many challenges: disease and weed pressures are high, and there is a wide-ranging suite of insect pests. Over 20 species of insects challenge Georgia soybean growers, who incur costs from scouting and insecticide applications in the best years and are robbed of yield in the worst years. Insects such as the lesser cornstalk borer (LCB) can infest fields overnight and cause up to 80% yield loss, negating scouting and chemical control efforts. Certain insects readily develop resistance to insecticides, making control costlier. In particular, soybean looper (SBL) populations across the South are quickly becoming resistant to pyrethroid insecticides, with extension agents as far north as North Carolina prescribing a shift to additional control measures. However, these additional measures do not need to be in the form of new insecticide chemistries, but can include cultural controls, including the use of resistant soybean varieties.

**Objectives / Benefits:** The UGA soybean breeding program meets the Georgia farmer's demand for high-yielding cultivars with value-added traits such as weed management options and pathogen and nematode resistance. Insect-resistant cultivars will fill the need for new modes of insect control while reducing the costs associated with insecticide application. Insect-resistant cultivars will be an efficient and less costly form of control for pyrethroid-resistant SBL. The main objective is to identify the best genetics for resistance to pest insects in Georgia and use these genetics to breed insect resistant varieties. The highest yielding selections of the first population of 12 lines in advanced yield testing in 2018 will enter preliminary uniform trials in 2019. The highest yielding selections from the second population of 54 lines in preliminary yield trials in 2018 will enter advanced yield trials in 2019. *The goal is to amass the data needed by 2021 and release a variety by 2022.*

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**Georgia  
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*Putting Soybean Checkoff Dollars to Work*

The soy checkoff empowers U.S. soybean farmers with tools that will help them maximize their profitability. Whether it's a database of high-protein-and-oil soy varieties, the results of soy-checkoff-funded research or interviews with experts, the checkoff spreads the word about cutting-edge tips and tricks you can put to use on your farm.

For more information, check out USB farmers resources online at:

[www.unitedsoybean.org/farmer-resources/tools/](http://www.unitedsoybean.org/farmer-resources/tools/)

[www.unitedsoybean.org/farmer-resources/beyond-the-bean/](http://www.unitedsoybean.org/farmer-resources/beyond-the-bean/)

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