

MISSISSIPPI SOYBEAN PROMOTION BOARD

Annual Report

Delta Agricultural Weather, MSPB Project 29-2023

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Agricultural weather data are needed by producers, researchers, and policy makers to make decisions daily. Producers utilize the data for critical management decisions about tillage, planting, crop protection applications, irrigation, fertilization, and harvesting. Researchers require agriculture weather data to analyze test products, verify field data, and compare different data sets to each other. Policy makers use agricultural weather data in reports from county agriculture statistics to worldwide agriculture supply and demand estimates.

Producers and researchers in the intensive agricultural region of the Mississippi Delta have a tremendous need for weather information to develop critical research and management strategies for planting, irrigating, fertilizing, and harvesting as well as the timing of other critical production practices on Soybeans planted in the Delta. This project's goals are to continue data collection and dissemination of pertinent agriculture weather data and products that are required by researchers and farmers and to increase the availability and quality of the data and products available.

Results

Objective 1: Weather data is used for research to indicate the amount of rainfall the crop receives throughout the growing season. This info is beneficial in making management decisions, such as when to schedule irrigations to supplement the lack of rainfall the crop might need to achieve maximum yields. Also, it can be helpful in justifying harvest dates that might be later than the norm, due to heavy rains late in the season that might have delayed harvest. Also, at a location that has both irrigated and non-irrigated tests, this rainfall data is important to show the crops yield potential when compared to one that was only rain-fed vs. rainfall in addition to supplemental irrigations.

Objective 2: To Expand our Weather Network. The Center added 6 new stationary stations to their Weather Network in 2023. These additions gave the Center a total of 41 stationary stations to the network. Three of the five stations are on soybean ground. Each station is equipped with the following

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Instrumentation: Temperature/Humidity, Wind Speed/Wind Direction, Solar Radiation, Soil Temperatures at 2 and 4 inches, and Precipitation. All 6 stations were added to the Centers website and can be viewed in real time every fifteen minutes. Hourly and Daily readings are available for viewing and are also archived on the website.

Objective 3: The website has enhanced agricultural research as well as helping growers make more efficient and timely management decisions.

Data from each soybean variety trial will be available on the center's new website for the 2023 growing season. Each Stationary Weather Station is equipped with a 05103 R.M. Young Wind Monitor. The 05103 Wind Monitor measures wind speed with a helicoid-shaped, four blade propellers. Rotation of the propeller produces a wave that has a frequency directly proportional to wind speed. The ac signal is induced in a transducer coil by a six-pole magnet mounted on the propeller shaft. Wind direction is sensed by the orientation of the fuselage-shaped sensor body, which is connected to an internal potentiometer. The data logger applies a known precision excitation voltage to the potentiometer element. The output is an analog voltage signal directly proportional to the azimuth angle. This ensures that each station is up to date on the latest technology for measuring wind speed and direction. Wind Speed and Direction is available in real time every 15 fifteen minutes along with other weather parameters on the Centers Website. The Center also has an up-to-date soybean planting recommendation map based on frost free dates.

Success Statement: The Center has continued to build its network throughout the state of Mississippi. The Center added 4 full new weather stations to its network. This has increased our network to 41 stationary stations. All data can be viewed every day in real time, hourly and daily readings are archived for past viewing. The Center also continued to aid the Mississippi State University soybean variety trials. The Center put our 9 mobile weather stations equipped with precipitation and temperature gauges for each trial. All data was able to be viewed in real time. The center also was able to fill weather data

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requests for research and growers throughout the state. The was key to able to send archived weather data from the past years for growers for various reasons that benefit them economically. The Center also is key in supplying weather data for the ongoing projects: Title: 13-2023 Row-crop Irrigation Science Extension and Research (RISER) Program Title: 20- 2023 Weed Management Programs for Mississippi Soybean Production. The Center all contributes data to a Smart Irrigation App called Smartirrigation Cropfit. This app is designed to assist cotton, corn, and soybean producers to irrigate more efficiently.