



Mississippi Corn Promotion Board 2024 Progress Report

Project Title:

Row Crop Irrigation Science Extension & Research (RISER)

Program

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Project Summary (Issue/Response)



Our research program has identified several technologies and irrigation water management (IWM) practices that can reduce the overdraft on the Mississippi Alluvial Aquifer while maintaining or increasing yield, increasing net returns, and ensuring that corn, cotton, soybean, and rice producers do not exceed permitted irrigation limits. However, the adoption of proven irrigation water management practices by Mississippi producers has been minimal. This project will have a two-pronged approach:

- 1) Identify, evaluate, and demonstrate new irrigation automation technologies in furrow irrigation;
- 2) Conduct hands-on training and learning opportunities with producers that have yet to adopt proven irrigation water management practices.

This project will evaluate whether or not the addition of automation and/or other new technology to furrow irrigation practices would promote better management of those practices and, thereby, enable farmers to increase yields using less labor, water, and energy

Additionally, to encourage adoption, growers will receive assistance with design, installation of proven IWM practices on their farm, and irrigation timing decisions. This hands-on learning approach alongside the producer will provide maximum learning opportunities and remove possible barriers to technology adoption.



Project Results/Outcomes

Automation evaluation: The project participants did not grow corn on the automation sites from the past year, but will have additional corn sites for automation in 2025. The past cumulative yield and water use results are: **Overall results for the 2021 -2023 seasons:**

	Yield (bu/ac)	Water Use (acre-	Water use efficiency (yield/irrigation)
Automated Fields	222.6	6.98	41.01
Non-automated Fields	221.36	10.14	24.71

Another new technology: The project evaluated a polypipe blowout detector from a new company. The sensors would alert if the polypipe became deflated, but did not have good connectivity and will work with developer to fix the issues.

Pipe Planner programs for over **11,330** acres were designed together with growers. Flow rates and elevations were taken by the MSU irrigation team and county Extension Agents to develop the computerized hole selection plans for producers.

Project Results

Outcomes: Some program participants were convinced of sensors' usefulness so quickly that they bought soil moisture monitoring systems before the first year was over. Some participants ignored the sensors during the first year and were shocked to discover at their end-of-season meeting how much they had overirrigated. This realization motivated them to pay closer attention to the sensors during the second year. Post-training evaluation data indicates **100%** of participants increased their knowledge and trust in soil moisture sensors. All (**100%**) also intend to adopt soil moisture sensors into their operation, while around **30%** adopted them prior to the completion of the program. The program aims to help growers use less water and spend less money irrigating and to understand their role in protecting their water supply and groundwater resources

Through support of this project, we developed a hands-on technical training focused on irrigation water management strategies, named the Mississippi Master Irrigator.

<https://www.ncaar.msstate.edu/outreach/master/index.php> The program consists of online modules, classroom trainings, peer-to-peer exchange among participants and instructors, and field demonstrations. The online modules and classroom trainings are conducted by MSU Extension specialists and other individuals with specialized experience in each of the topics. At the conclusion of the in-person meetings, those completing this advanced training course in sustainable irrigation techniques will receive Mississippi Master Irrigator certification.

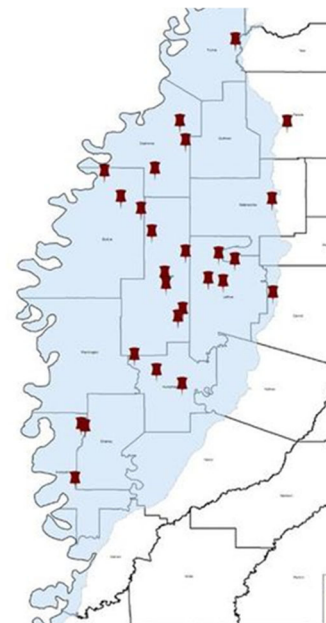


Figure 1. 2024 soil moisture sensor sites in this statewide Extension program

Project Impacts/Benefits

In its inaugural year (2024), the MMI program engaged over **50** farmers, Extension agents, and agricultural professionals through online modules and in-person workshops. The curriculum covered various topics, including sustainable irrigation water management practices (IWM), crop water requirements, soil health/conservation, different types of irrigation systems, equipment maintenance, and policy and management. Participants gained hands-on experience with tools and techniques that enable more precise water application, reducing waste and lowering costs. **Pre- and post-program surveys** revealed that participants demonstrated a **45%** percentage point increase in their understanding of various irrigation management practices from the beginning to the end of the course. Additionally, **100%** of participants reported that the program exceeded expectations and that they are more able to make informed irrigation decisions because of this program.

Project Deliverables

Mississippi Irrigation Manual. Mississippi State University Extension Service Publication 3951. https://extension.msstate.edu/sites/default/files/publications/publications/P3951_web.pdf

5 field days

3 county Extension agent trainings

14 presentations to growers, consultants, and/or researchers

2 podcasts, 3 blog posts



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