

WATCHING WATER:

IMPROVING IRRIGATION EFFICIENCY WITH TELEMETRY



Producer Jonathan James controls his center pivot through an application on his phone.

Article by Katherine Drury

There have been many advances in irrigation technology during the past century. Low Energy Precision Application (LEPA) center pivot systems and subsurface drip irrigation have taken the place of furrow irrigation with open, unlined ditches. With irrigation application efficiencies nearing 100 percent, researchers and irrigation equipment manufacturers are turning their attention to improved system monitoring and scheduling.

Telemetry technology, allowing remote monitoring and control of center pivot and subsurface drip irrigation systems, is an emerging trend among producers. The most basic systems allow the producer to remotely monitor an irrigation system and turn it on or off by clicking a button on his phone or computer. The more advanced telemetry systems can incorporate soil moisture information and weather data to help a producer schedule irrigation.

Jonathan James, a cotton and wheat producer in Floyd and Crosby Counties, utilizes monitoring technology on his irrigation systems. He said this equipment has been a valuable addition to his operation. “Mrs. FieldNet,” as James’ wife calls it, frequently sends him text messages about the status of his irrigation systems. This keeps him in the loop, if a system fails.

Earlier this summer, he and his family were about to take a day trip out of town. As always, he checked his irrigation systems that morning before leaving.

“I drove by a system with one of the monitors on it,” James said. “Everything was fine. The monitor said it was fine. Visually, it was running.”

He drove to check on the final center pivot. After ensuring that it was working properly, he turned around to go home before leaving town.

“That one pivot that I had driven by ten minutes earlier texted me that it had shut off,” he said. “I

stopped by and had it fixed in about 30 minutes. If I had been without the monitoring system, the pivot would've sat there for 24 hours before I made it back again."

He estimates that he could have lost upwards of half a million gallons of water down the turn row had he not been immediately notified of the irrigation system malfunction.

James manages 19 center pivots. He drives about three hours every day to check on each of his fields and irrigation systems. He said this telemetry equipment helps him prioritize his route.

"I farm from north of Lorenzo to south of Dougherty. It takes me about three hours to make a circle to see every one of them. I still go to every one every day, but if I get up and see that one is off, I know I'm going there first and then make my circle rather than going around and showing up there at 11 o'clock. That's another four or five hours it might have saved me."

He said irrigation systems can shut down for a variety of reasons, which range from getting stuck in the mud to power surges. He estimates that on average, one of his systems malfunctions every day during the irrigation season. The ability to remotely communicate with his irrigation systems has been invaluable.

"The amount of time that it saves you and the information you collect from it is such a useful tool."

Telemetry allows producers to track when their systems were turned on or off and how long they are in operation. This data can be exported and evaluated with each data point serving as an opportunity to learn and refine the process for next season.

"Efficiency is the name of the game in farming. Every year, we're trying to squeeze just a little more and a little more, and this increases my efficiency of keeping machines running." ■



AIM-ING FOR EFFICIENCY

HPWD has received a total of \$375,000 from the Texas Water Development Board for cost share funding for the Assistance in Irrigation Management (AIM) program since 2017. The first round of funding was claimed in less than two weeks. The second round of funding was gone within three days.

"Based on past producer interest, we knew that these funds would be claimed very quickly," said HPWD General Manager Jason Coleman. "The HPWD Board of Directors commends these producers for their interest in this equipment. Purchasing and installing these devices can help conserve groundwater."

AIM is a voluntary cost share program that helps producers with the purchase price of telemetry-based irrigation monitoring systems used with either a center pivot system or subsurface drip irrigation system. This equipment allows remote monitoring of irrigation systems in order to detect problems or make adjustments during rainfall events.