



Irrigation innovations abound to increase productivity

By DIANNA TROYER
For the Capital Press

At 2:30 a.m., an irrigation software alarm beeped on Kelly Mangum's smart phone at his bedside, alerting him to a problem.

"We had a power outage that affected the pump on one of our pivots," said Mangum, co-manager of Mark Darrington Farm and Marsh Creek Farms near Declo, Idaho.

"I drove out and took care of it," he said. "Nothing melted or burned up. This is our third season to use the software, and it has reduced our workload and improved efficiency incredibly."

The farms' 12 pivots were retrofitted with control modules containing a software program.

"It's a beautiful thing, like having eyes in the field without having to drive there," he said. "We save so much time and have reduced wear on vehicles. We don't have to drive through a field to check the pivots, so we're not ruining part of a crop."

Wherever he is, Mangum can monitor irrigation on fields of potatoes, wheat, barley, corn, hay and sugar beets. With a swipe of his finger on his phone screen, he can stop and start a pivot and control flow rates.

"If it's going to be 100 degrees, I can put more water down. If a crop is ready for harvest, I can turn it off."

The system prevents part of a crop from being damaged when a problem occurs.

"What if a pivot gets stuck in a spot? Before, the crop in that section of a field might have been overwatered and ruined, and you'd have lost revenue. With this program,



University of Idaho

Lowering the sprinklers closer to the crop canopy reduces water loss to wind drift.



Kelly Mangum

we know the second a problem happens and what it might be, whether a gear box or a tire."

Along with the software, the farms' first variable frequency drive pump was installed three years ago.

"We decided to switch

over because in one area we're pumping water more than 3 miles from a creek, feeding a system of five pivots and six pumps. There are so many variables, and the pump automatically adjusts to those."

Mangum said farmers are working in an era of ingenuity with software written to deal with just about anything.

"The innovations in irrigation software have been dramatic," he said.

Innovations abound

During the past few years, innovative approaches to irrigation "have been the most fascinating and productive I've seen since I started my research in Idaho 26 years

ago," said Howard Neibling, water management engineer at the University of Idaho's Kimberly Research and Extension Center.

To select the best irrigation system, he advised farmers to analyze many factors: cost versus benefit, water sources, and the soil types and topography in fields.

He described several innovations.

LESA: LESA is an acronym for Low Elevation Sprinkler Application. Nozzle heads are lowered to just above a crop canopy or slightly into it.

"You're reducing the need for pumping 15 to 20 percent because you're not losing water to wind drift," he said.

Nozzle control: Variable rate irrigation control software will shut off water at nozzles at certain points in a field.

"If you have a big rock pile in one part of your field, you don't want to waste water there or grow weeds. It's effective, too, if you have different soil types in a field that require different amounts of water. If part of a field has runoff or seepage, you can reduce water application there."

Mobile drip irrigation: Instead of sprinklers, drip tubes are used.

"The length of a tube varies outward along the pivot. It might be 3 feet near the pivot point and 100 feet at the outer end. The benefit is an ex-



Dianna Troyer/For the Capital Press
While working at the farm shop, Mangum checks on pivots from his phone. Mangum says the software saves time and wear on vehicles at the farms he co-manages in southeastern Idaho.

tremely high efficiency. However, if you're using surface water and have to filter it, it may be cost prohibitive."

Soil moisture sensors: After inserting soil moisture sensors in a field, farmers can check data from a smart phone to decide irrigation needs.

"I like to dig a hole and push them in sideways at different depths in undisturbed soil," he said.

Free web-based irrigation scheduling: Neibling said Troy Peters, a colleague at Washington State University, developed a free app, Irrigation Scheduler Mobile, available for Android or iPhone at <http://weather.wsu.edu/is>.

"This app uses local AgriMet weather and crop water use information to provide a running estimate of soil water content and degree of plant water stress," he said.

Neibling said with all the innovative irrigation options available, "it comes down to a cost-benefit analysis and what systems will best meet your needs."

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