

# Telemetry Can Boost Yields From Center-Pivot Irrigation

**COLUMBIA, MO.**

**B**etter irrigation management could provide a big boost to yields on fields with center-pivot irrigation, said a University of Missouri Extension irrigation specialist.

Center-pivot irrigation accounts for 40 percent of all irrigated acreage in Missouri, said Joe Henggeler of the MU Extension Commercial Agriculture Program. There are approximately 4,000 pivots in the state.

"Yields on center pivots could be increased 10 to 15 percent with better irrigation management, specifically if irrigation scheduling were employed," Henggeler said. "One scheduling method is the use of soil moisture sensing devices. However, most Missouri farmers are not using SMS."

Henggeler believes that more Missouri irrigators would use SMS technology if the data could be automatically collected and made available to them at a reasonable price. Remote accessing of SMS data is known as telemetric soil moisture sensing (TSMS).

Based on a 10-percent adoption rate and a 10-percent yield increase, Henggeler calculates that TSMS could benefit Missouri irrigators \$2.5 million in gross profits.

The topic will be discussed at the 2009 Bootheel Irrigation Conference, Dec. 9 in Portageville, Mo.

Henggeler proposes that MU Extension's agricultural engineering program and the Commercial Agriculture Program's Agricultural Electronic Bulletin Board (AgEBB) work together to provide standardized technical specifications for TSMS equipment for use in center-pivot fields and make the data available to subscribers over the Internet.

More than 40 percent of the irrigated acres in southeast Missouri are managed by farmers who have fast Internet connections, Henggeler said. Only 10 percent of the irrigated acres are managed by farmers without Internet access.

"Irrigators in Missouri who use irrigation

scheduling out-yield their counterparts who do not schedule," Henggeler said. Averaging all scheduling methods – Arkansas scheduler, Woodruff charts, soil moisture sensors – the yield increase is 13.2 bushels per acre in corn, 91.5 pounds per acre in cotton and 6.9 bushels per acre in soybeans, he said.

"The actual impact will be readily measurable, so the results can be used by the university to document impact of the program," he said.

Correct irrigation timing is especially important where shallow topsoil is perched above an impermeable clay or hard layer. "This is the case in much of the irrigated area in central and southwest Missouri," he said. "The reason these soils are problematic in irrigated culture is that even a little bit of overirrigation will lead to soil waterlogging, affecting final yield."

The Commercial Agricultural team includes irrigation professionals as well as experts in communication hardware from AgEBB, which already uses radio telemetry to run part of a statewide automatic weather network.

"Although the economic investment when evaluated as an annual per-acre cost is very small compared to the potential benefits, there probably are 'glass ceilings' on costs that would deter farmers from getting involved," Henggeler said. "Costs would need to be below \$10 per acre, but they could be as low as \$3 or \$4 per acre."

Managing the costs is the role of the agricultural economist. The easiest way to lower the price tag would be to share hardware costs by tying in more pivots and increasing the communication distance of radios used, he said. More-powerful radios cover greater distances, but also cost more. Optimizing costs to the farmer involves balancing equipment costs against the number of pivots in a locale.

Several equipment companies are interested in the Missouri program, Henggeler said.

For more information, call Henggeler at 573-379-5431. Δ



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