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Good to the Last Drip

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Good to the LAST DRIP

Researchers are evaluating irrigation technologies to help farmers

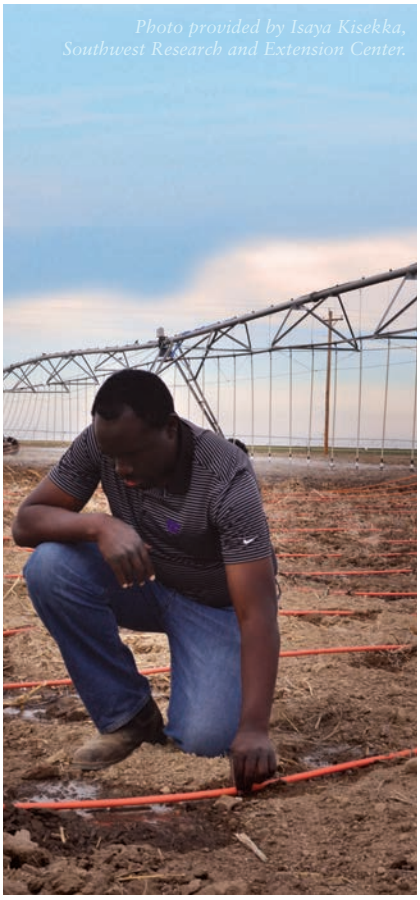

Photo provided by Isaya Kisekka, Southwest Research and Extension Center.

Kansas State University researchers are evaluating different irrigation technologies to help farmers determine the best method for irrigating their cropland under water-limited conditions.

Isaya Kisekka, assistant professor of irrigation and agricultural water management, and her colleagues at the university's Southwest Research and Extension Center in Garden City, Kansas, are researching mobile drip irrigation, or MDI.

Initial work on mobile drip irrigation technology can be traced back to the early 1980s, but it has not gained much in popularity. Continued drought and groundwater depletion along with technological advances in drip line emitters, water filtration and planting equipment — such as tractors with GPS and autosteer for planting crops in circles, which is critical to using mobile drip irrigation — might increase acceptance of the irrigation method among producers.

"Lately there has been a renewed interest in MDI," Kisekka said. "The combination of declining groundwater levels coupled with frequent droughts has many farmers concerned in the south and central High Plains."

The researchers, in collaboration with private industry, the Kansas Water Office and Kansas State University's Global Food System Initiative, are looking at the viability of mobile drip irrigation in comparison to another commonly used technology called low elevation

Photo provided by Isaya Kisekka, Southwest Research and Extension Center.

spray application, or LESA. Both may help farmers save money and conserve water.

"We hope that technologies such as MDI will slow the transition from irrigated agriculture to dryland farming, which would have a significant socio-economic influence on many rural communities and the state as a whole," Kisekka said. "The new version of the technology involves accessories that let the spray and drip line be connected to the same drop hoses, which allows the flexibility to use sprays for enhancing germination and for herbicide incorporation."

Mobile drip irrigation combines the mobility and economic benefits of center pivot irrigation — a large sprinkler system on wheels — and the water conservation benefits of drip irrigation. Low elevation spray application uses a center pivot system with spray nozzles a few feet from the ground.

According to Kisekka, sprays are needed to ensure germination in dry years and for incorporating herbicides and fertilizers. In addition, the drip irrigation can reduce evaporative losses to center sprinklers and is relatively inexpensive to retrofit an old sprinkler system to mobile drip irrigation.

The researchers planted corn in May at the university's Southwest Research and Extension Center. They will be collecting data to compare mobile drip irrigation to low elevation spray application in summer 2015. They will compare yields, water productivity, biomass, evaporation losses and application efficiency, and do an economic analysis.

"The lack of data on the MDI technology is the reason we are conducting this research," Kisekka said. "We can scientifically quantify yield benefits, if any, and potential water saving of this technology compared to LESA."

In addition to Kisekka, the team of researchers includes Jonathan Aguilar, assistant professor and extension water specialist; John Holman, associate professor and cropping systems agronomist; Randall Currie, associate professor of weed science; Bill Golden, research assistant professor of agricultural economics; and Sarah Zukoff, assistant professor of entomology.

By Stephanie Jacques, Communications and Marketing