

Center pivot gives rice new potential

By CECIL H. YANCY JR.

WHEN people in agriculture get on the leading edge of a new activity, apprehension is as apparent as a rainbow in the stream of center-pivot irrigation.

Based on results in a brutal year, however, rice under center-pivot irrigation is performing "beyond expectations." The practice could one day open rice up to a broader spectrum and additional acres, says Fred Ferrell of Mid Valley Irrigation in the Missouri Bootheel.

Ferrell worked with five leading farmers in the nontraditional rice fields as part of a larger project with Valley Irrigation, RiceTec and the Delta Research Center in Portageville, Mo. Yields ranged from 150 bushels per acre to more than 200 bushels per acre using RiceTec hybrids, with envious milling quality. Patrick Hulshof, who farms near Sikeston, Mo., reported yields of 201 bushels per acre.

Valley has reported water savings of 40% to 50% in non-replicated on-farm experiments.

"I think if we can grow rice under pivot in 2010, in one of the most severe droughts on record, then I think we've got it on track," Ferrell says. The five farmers, including Hulshof, were looking at rice as a rotational crop for soybeans and corn.

Just as the move from planting and praying hard for rain to leveling and flooding rice fields likely involved a change of thinking, rice under center pivot requires a different way of looking at production, from weed control to fertility to irrigation scheduling.

Gene Stevens, University of Missouri Extension agronomist in Portageville, says it's a steep learning curve in the first year.

Fertility changes

In rice irrigation, flood culture is the norm. In fertilizing the normal way in a flood, a two-way or three-way split of nitrogen is common. Usually, 90 pounds of nitrogen goes on at first tiller and the remainder at midseason, says Stevens.

"With center pivot, that may not be the best way," Stevens says.

In three years of looking at the fertility requirements of rice under center pivot, Stevens and his colleagues have discovered differences when compared to flood or row irrigation. Because



SCOUT: With rice under center pivot, you have to be out there every day or every other day to stay ahead of weeds, says Jim Heiser of the Delta Research Center.

Key Points

- Rice under center pivot shows promise as a rotational crop.
- A big learning curve exists when converting from flood irrigation.
- Missouri grower reported yield of 201 bushels per acre.

of sand blows from the 1811-12 New Madrid earthquake, these soils tend to leach nitrogen badly under row irrigation and can't hold a flood.

With rice under center pivot, splitting N with fertigation "gives a more consistent yield across the field," Stevens says. "Spoon-feeding seems to be the trick. We're really not using any more nitrogen under center pivot than we are with flood irrigation. A pivot can put on fertilizer, fungicides and herbicides. So, we've got a system set up for that."

In the first year of the three-year experiment, Stevens and colleagues relied on Stam and Facet for weed control and were greeted with a big herbicide bill and pigweed escape.

For the past two years, they've gone to using split applications of Command, activating the chemical with irrigation. One-fourth of the rate of Command is put out preemergence along with Prowl when the rice is "spiking" or emerging, and another application of Command a week later. "We're basically keeping the field clean up to canopy so we don't have to rely on Stam and Facet, putting out a fourth of the rate preemergence. It's a lot cheaper that way," says Stevens.

Under center pivot, rice varieties must be resistant

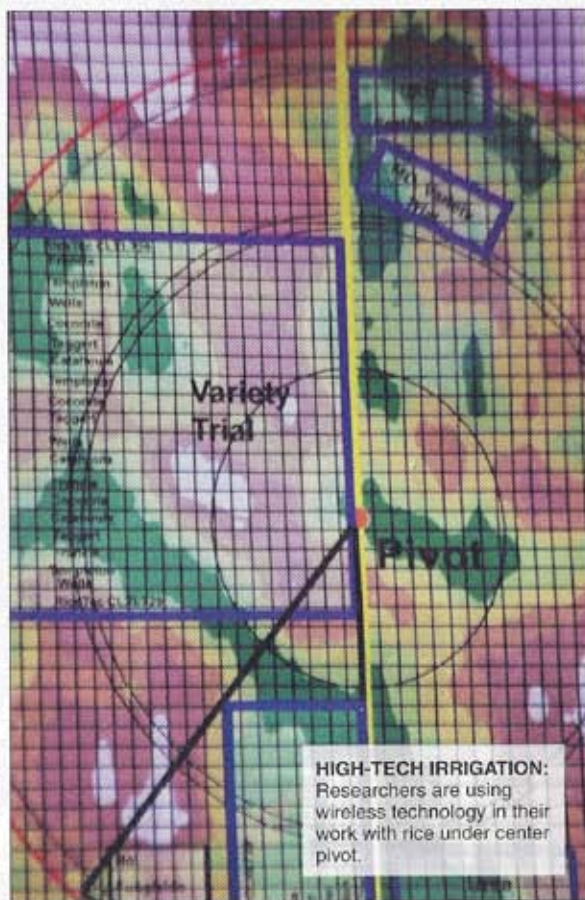
to blast. RiceTec hybrids work well in the system, Stevens says, as does a variety of Arkansas called Templeton. Wells and Francis also do well when managed under chemigation.

Pros and cons

"The only disadvantage about the hybrids is, you're using a lower seeding rate and have more sparse plants," Stevens says. "One of the goals of the herbicide program is to get a canopy as quickly as you can. The good thing about hybrids is that they have a much stronger root system and can stand the stress better."

On the disease front, researchers and farmers alike can use the center pivot to apply fungicides such as Quadris and Headline for late-season blast control.

Timing is essential to application in this system, and so is scouting. "You have to be out there every day, or every other



day, looking at the fields," says Jim Heiser of the Delta Research Center. He scouted fields of the five farmers involved in the study and made weed control recommendations. "It's a little more intensive, scouting-wise," he says. "If you see something, spray it and get it early. One of the biggest problems has been glyphosate-resistant Palmer amaranth, or pigweed."

Scheduling and tracking

"A lot of technology is used with rice under center pivot," Ferrell says.

Researchers Earl Voires of the USDA-Agricultural Research Service in Portageville and Joe Heggeler are looking at wireless irrigation technology that allows growers to use remote sensing to monitor irrigation from a computer, cell phone or smart phone. "You can turn the water on and off and set the speed," Voires says. He's also developing an irrigation scheduling program to keep track of the water in the field, like a checkbook.

Heggeler has sensors in the fields as part of a 42-plot project that could help farmers deter-

mine when the plants actually need water.

On some of the farmer fields, center-pivot rigs have variable-rate nozzles. Some of the tires on which the rigs ride have tracks to avoid getting stuck.

A perfect fit for some

Donnie Deline of Charleston, Mo., found his center pivots operating 36 revolutions by July and using 16 inches of water, less than he'd normally use. He grows rice and cotton in Missouri and Arkansas, and he says he's "slowly converting irrigation to center pivots."

Deline called it a "perfect fit to open up more options for me."

Hulshof agrees, noting that 2010 was the first year he has ever grown rice. "I don't see planting it on a large scale," he says, "but it's profitable between soybeans and corn."

As the totals from the third year of research were tallied, all were "very satisfied" with the results. "When you turn farmers loose with a project, it's all about yield and profit," Ferrell says. "These farmers made it happen for rotational purposes, but they said, 'if we can make 200 bushels of corn, 200 bushels of rice and 70 bushels of soybeans.' We're on track to do that."

Stevens has been awarded an additional three-year grant from the Howard G. Buffett Foundation. He plans to put numbers behind the water use and savings with rice under center pivot.

CHANGE IN THINKING:

Rice under center pivot has a steep learning curve, says Gene Stevens, University of Missouri Extension agronomist.