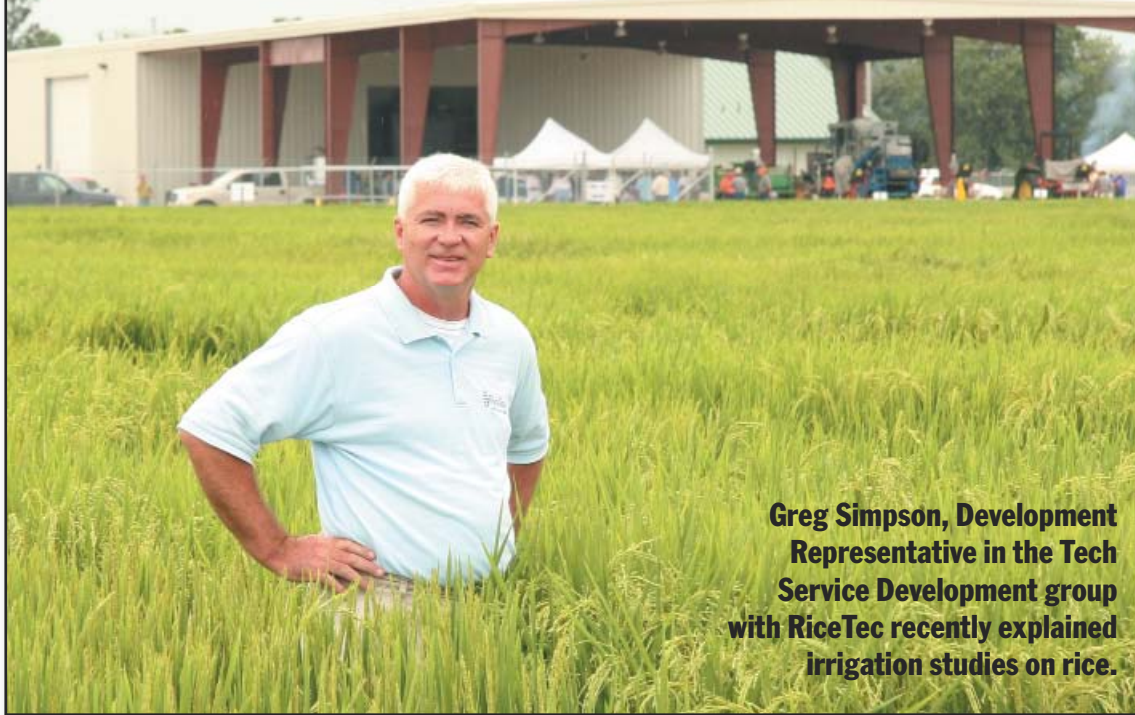


Irrigation Trials

Four Systems By RiceTec Under Study, Two Show Water Savings



Greg Simpson, Development Representative in the Tech Service Development group with RiceTec recently explained irrigation studies on rice.

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Irrigation studies on rice were presented recently by Greg Simpson, Development Representative in the Tech Service Development group with RiceTec located at Jonesboro, Ark.

“We have four main treatments and I want to emphasize the treatments for our irrigation study come from irrigation specialists from every university in the southern rice growing states,” Simpson said. “We took input from everybody. Some of the treatments come from our customers.”

There are four main treatments:

- The standard permanent flood irrigation which means a continuous 2 to 4 inch deep flood across the entire field from the 4 leaf growth stage until grain fill is complete.
- Intermittent flood irrigation which was first documented by Dr. Joe Massey in Mississippi. The intermittent flood method is very similar to standard permanent flood, except that the water is allowed to fluctuate more. Some parts of the field may not maintain a perfect flood.
- Rice under furrow irrigation.

“We tried furrow irrigation for the first time four years ago and we saw a real advantage for hybrid rice with no flood,” he said. “The varieties didn’t have the yield stability that the hybrids did when you lose the flood.”

In furrow irrigation, low flat beds are built about a month before seeding with 30-inch spacing. The beds are 30 inches wide with a small furrow between them.

“The point of the very small furrow is to be sure the top of that bed is wet all the way across the field,” Simpson said. “On a field of steep slope or a field with very large furrows or very tall beds in the hot summer the top of the bed won’t be wet all the way across. The water goes down the furrow but it doesn’t become wet on top of the bed. It’s really important that whatever you do you must get the top of that bed wet every time.”

The furrow itself is no more than 6 inches deep. It’s a shallow, small bed and the water just saturates the soil.

“The timing that we’re doing with furrow irrigation right now that seems to work on these flat silt loam fields is five day intervals unless it’s interrupted by more than an inch of rain. Fields with steep slope may require more frequent timing,” he continued. “We’ll skip an irrigation if we get an inch of rain, otherwise we stay with the 5-day interval schedule. That got us some really good yields the last two years. We don’t claim to make the same yield with furrow irrigation as we make with flood irrigation, but we come close and we reduce input cost and water use.”

The fourth treatment is not being done on station because the equipment is not available there.

“We’re doing rice under center pivot sprinkler irrigation,” Simpson said. “That is the newest and we have the least information about it. So far so good.”

This is the first year for using the center pivot.

“We have had customers do it for years with good results and I can go back for at least 20 or 30 years and I’ve heard anecdotal stories from

different rice growers all over the midsouth about rice varieties under pivot and they didn’t have a good experience,” he said. “But we have RiceTec hybrid rice seed customers who, though we didn’t ask them to do it, tried to grow hybrid rice under a center pivot sprinkler and got very good yields with low input cost.”

All trials but the center pivot are into the second year. The center pivot trial is in the first year.

We have found no difference in yield with either the standard permanent flood and the intermittent flood irrigation method. Simpson noted there’s a savings in water use with intermittent flood and multiple inlet irrigation.

“With the intermittent flood we see a 10 percent or 15 percent reduction in water use,” he said. “I heard about multiple inlet irrigation many years ago from Dr Bobby Wells at the University of Arkansas. We learned about multiple inlet rice irrigation using poly pipe from Dr. Phil Tacker at the University of Arkansas and Dr. Earl Vories who is now an Agricultural Engineer with USDA-ARS at the UM Portageville Delta Center.

“If you use multiple inlet rice irrigation and do intermittent flood management you can save 20 percent of the water use as compared to standard permanent flood where you flow the water over the spills,” Simpson said. “We have seen no difference in yield in the two flood treatments. The other advantages to using multiple inlet rice irrigation are reduced irrigation labor time and expense and less time to achieve a permanent flood. Timeliness in applying the water after permanent flood fertilizer application is crucial for maximizing yield potential.

“With the furrow irrigation we see an average of about a 40 percent reduction in water use, which sounds really good, but we’ve not been able to get 100 percent of the yield of flooded rice,” Simpson said. “We’re experiencing a 15 percent to 20 percent yield loss, but we feel we can make some of that up by refining and improving the management.”

He noted that with low fuel, fertilizer and grain prices, the yield losses might never be considered.

“With high fuel prices, with high grain prices, with limited water availability in some places in the south, Texas west of Houston or the Grand Prairie in Arkansas – some places where water is becoming an issue – this could be something,” he added. “We didn’t think of this, these ideas come from our customers and extension engineers in Arkansas and Mississippi.”

Since it’s the first year for the sprinkler system trial, Simpson expects a similar experience as with furrow irrigation as far as water use and grain yields. There is an added risk with the sprinkler on rice, because the sprinkler works like rain. In the early growth stages splash can cause blast infection.

“But we believe hybrid rice will work for that system because there are blast genes there for extra blast resistance that a lot of the varieties don’t have,” he said. “Some varieties do have blast resistance and to do a center pivot sprinkler irrigation if you’re not going to use hybrid rice, definitely pick a rice variety with blast genes.” Δ