

Center-Pivot Rice System

Rice Grown Under Center Pivots Can Be Profitable Alternative

BETTY VALLE GEGG-NAEGER
MidAmerica Farmer Grower

OSCEOLA, ARK.

In a cooperating project at McCarty Farms in Osceola, Ark., Lindsay Corporation demonstrated growing rice using center pivot irrigation. Andy Murdock, regional manager of Lindsay, explained the process.

"Most all rice is grown in a paddy culture which uses flood irrigation and this is a demonstration with McCarty Farms and some other partners who have an interest in the project to demonstrate that using center pivot is a profitable alternative to flood irrigation culture in growing rice," Murdock said.

Visually, the results look very good. There's also a comparison of the variable and fixed costs between pivot irrigated rice and rice grown under a flood culture.

"Of course the flood culture will take into account land planing, diking, those types of costs which are probably fixed costs," he continued. "We don't have those costs with this."

"However, we saved a lot of water and of course pumping costs," he added. "Whether you're using diesel or electric to pump, there have been efficiencies there. Of course I've mentioned efficiencies in the area of applying nitrogen fertilization and the incorporation of the herbicides with the pivot. Also, this particular pivot has some additional equipment added to it that help it make it in this type of a situation where we're keeping the ground really wet. We have some tracking options, including three wheel drive tubes, high flotation tires, a set of tracks on the end tower and all this is to prevent rutting in the field because of the wet conditions. Also it helps to keep the pivot from getting stuck. It's very important that the pivot make it around in a timely application and keep the ground wet. If the pivot gets stuck and you go a couple of days the ground dries out, you're going to loose yield.

"Another feature we have on this pivot is a product called FieldNET™," he said. "It's actually a cellular device that allows the operator to



Andy Murdock, Regional Manager of Lindsay Corporation, explained the process of using center pivot irrigation.

Photo by John LaRose, Jr.

The field shown was in beans last year, and field preparation for the pivot rice included only two passes with a disc harrow before the rice was drilled. No leveling or other tillage took place, so no costs were figured for that.

"Then we used the pivot to germinate the rice and incorporate the early preemergent herbicides and the initial applications of urea," Murdock continued. "The pivot allows for precise incorporation of the herbicides which are very important in growing rice outside of the flood culture, because the flood is a primary tool in weed control which we don't have in this particular case."

There's no flooding at all in this system. About seven-tenths of an inch of water is put on later in the season every other day. It took the pivot 18 hours to apply .75 inch of water every other day.

"We're keeping it moist which also allows us to spoon feed nitrogen through the pivot through a chemical inject unit," he said.

Researchers at the University of Missouri Research Station at Portageville have shown that to be a very, very good application. It just provides the amount of nitrogen that the rice needs at that particular time so no nitrogen is lost to leeching in the soil and through the anaerobic, aerobic conditions of flood and the drying out of the land.

"So the pivot allows us to put out nitrogen when we need it in a very precise way and we've actually used a little bit less nitrogen fertilization in this particular case, compared to the other flood field that this farm is using," Murdock said. However, total fertilization per acre per year was similar for both cultures.

This is the first year Murdock and his associates have been involved in this system. Growing rice with a pivot is not new or a novel situation.

"It's been tried in the past several times," he explained. "There are some limitations, one of which is weed control. We have some newer herbicides now and we have some rice hybrid varieties that fit better than the conventional varieties that they may have been using some 10 or 15 years ago. So the variety selection that we have and the herbicide packages that are available is allowing us to do this in a way that will be profitable to the farmer."

The rice variety was RiceTec hybrid, Clearfield XL 745.

Information on this project is available on the Zimmatic website at <www.zimmaticrice.com>. The website includes pictures and some information about the project. Results for the pivot rice were 192.5 bu/acre (dry) and the comparable paddy culture field yielded 200 bu/acre (dry).

"When we take yield and compare the cost of a flooded culture field to this field where we used the pivot, growers can get a good comparison on cost and returns," Murdock said.

Already there has been a huge savings in water. While water is plentiful in the Delta at this time, there may come a time when water is more limited from an access type of situation.

remotely control the pivot and to receive updates as to whether it's running, stopped, started if it got stuck and got safetied out. FieldNET™ would send you a text message and you could immediately come to the field to see what problems are occurring. You don't have to monitor it at an eye level standpoint, and it also gives you a record of your irrigation activities for the season: The amount of time it took it to go around, how much water you put out on what date and that type of thing; so it's a great record keeping tool as well as a remote management tool."

The demonstration was on a half circle of a 70-acre field, with the other half circle 70 acres in beans. The center pivot was easily able to manage in this field size.

"The whole key is making sure your well and pump have the capacity to put out at least seven-tenths water every other day," he cautioned. "We're putting out 1,200 gallons a minute, that is our flow rate; and we're making this pivot come around in about 18 hours while applying .75 inch of water every other day. So we made sure we had the amount of water available and the ability to keep this wet before we chose this field. We wanted to make sure that the well, the pump and the pivot would give us that capability."

Murdock's take-home message is to plan to apply a little more management to the field and that you or a consultant can follow the crop closely.

"It will require some increased scouting for weeds and diseases than you would not have in a flood culture," he said. "So it's going to take a little more time, a little more management, a little more up-front planning to make sure you're selecting a good rice variety that will give you disease resistance and yield potential. You also have to make sure that your well pump and pivot are outfitted to allow the application of water on a consistent basis to keep it wet."

Zimmatic dealers in the field have the expertise that's needed and are available for advice when a problem arises.

"Sure, you can go to <www.zimmatic.com> and click on dealer locator for assistance," Murdock said. "Our dealers are listed there and they are well trained to help you determine if you have the capability to do what you need or what upgrades or changes may be needed if you're interested."

Murdock added that the center pivot system allows a lot of flexibility for growers in their rotation.

"They can rotate beans, cotton, corn with rice, all the crops they grow here in the Delta," he said. "It's particularly nice to rotate beans with rice because of the nitrogen fixation that the legume, soybeans, provide in the soil for the following crop year. So it's another option and we wanted to look at it on a large field and with some growers that were dedicated to working through this to make sure that it is a viable option and I think we've demonstrated that." Δ

BETTY VALLE GEGG-NAEGER: Senior Staff Writer, MidAmerica Farmer Grower