Single vs. Twin Row

Research Scientist Studies Nitrogen, Seeding Rates In Single, Twin Row Corn

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Single and twin row management of corn was discussed by Dr. Wayne Ebelhar, Research Professor and Agronomist at Mississippi State's Delta Research and Extension Center at Stoneville recently. Ebelhar outlined the research studies that are underway.

"I've completed a project where we've been working on-farm looking at nitrogen and seeding rates for twin-row corn on a large scale operation with George Rea Walker and his son, Martin," Ebelhar said. "We completed that four-year study last year. The first year we were not able to collect any yield data because of Hurricane Katrina so we didn't get any yield data so we ran it for three more years."

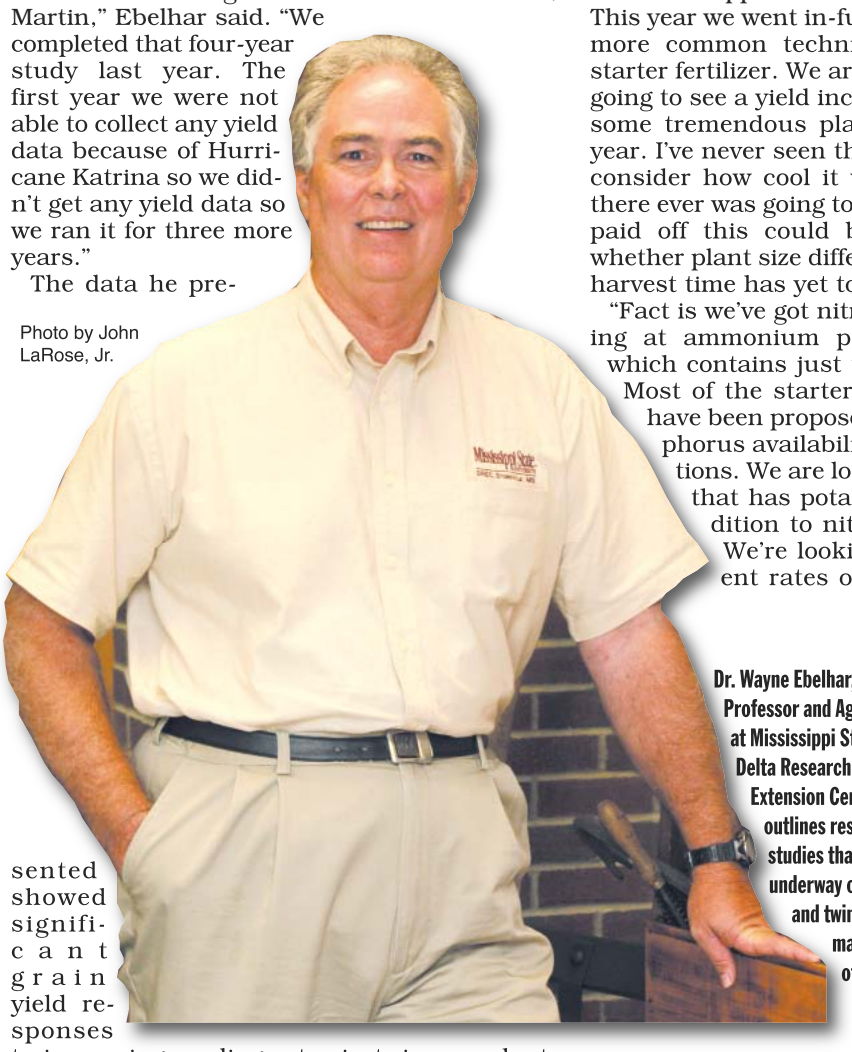

Photo by John LaRose, Jr.

Dr. Wayne Ebelhar, Research Professor and Agronomist at Mississippi State's Delta Research and Extension Center outlines research studies that are underway on single and twin row management of corn.

The data he presented showed significant grain yield responses to increasing seeding rates in twin row planting patterns. There also were significant responses to nitrogen, but increasing nitrogen has not provided enough yield advantage, even though it's statistically significant to offset the cost of nitrogen.

"When nitrogen got up to 75-80 cents to $1 a pound, the yield increase we saw by increasing the total nitrogen rates wouldn't cover the cost of the material nor the application costs," he said. "We saw much more profitable situations by increasing the seeding rates on corn."

Over the years, three different hybrids were used in the study.

"The last year we were using a variety that did not do as well, but we were also growing corn following corn and that's a situation that we wanted to look at because we really recommend rotations," Ebelhar said. "Corn following corn or soybean following soybean, neither does as well in a continuous situation as they do in a rotation situation."

Ebelhar also looked at a couple of different varieties at a high seeding rate and a low seeding rate on-farm, with both varieties planted at the same time with the same planter, and he noticed there's very significant differences between varieties regardless of populations.

"One of the things we've done this year, working again on-farm with George Rea and Martin Walker, is looking at three seeding rates and six different varieties to see which lines can take the higher stands," he said. "We've got three Pioneer varieties and three DeKalb varieties. Pioneer has flex ratings on their corn hybrids which is somewhat corn's ability to compensate for stand."

This year the project is studying how some of these varieties are able to take higher stands than others. This research is part of the research being supported by the Mississippi Corn Promotion Board. On the experiment station, Ebelhar is comparing nitrogen rates, seeding rates in both single-row and twin-row planting patterns in the same study.

"The produces want to know, 'I don't have a twin-row planter; can I do this thing, can I increase my rates?' Before, we've always said we couldn't go much higher on seeding rates without affecting standability; now what we're doing is comparing situations in single-row and twin-row situations. The study looks good this year and harvest time will help to answer some questions."

The trial is using a Pioneer variety and evaluates nitrogen rates of 140, 180, 220 and 260 pounds of nitrogen per acre. Seeding rates being studied are 25,000, 30,000, 35,000, and 40,000 seeds per acre. Basically the trial includes four seeding rates, four nitrogen rates and two planting patterns.

"The test looks really good this time," he said. "We got it planted a little later than usual because of weather, and then have had to water it five times already just because that's the kind of year we've had. We had less than a quarter inch of rain in June."

He also discussed evaluating starter fertilizers. This was part of the Corn Promotion Board project last year.

"We had already planted some of the corn before funding announcements were made, so we put some starter fertilizer on the surface," Ebelhar said. "Final yields were not affected by this method of application but we didn't expect it to. This year we went in-furrow which is one of the more common techniques for incorporating starter fertilizer. We are not sure whether we're going to see a yield increase or not, but we saw some tremendous plant size differences this year. I've never seen that before, but when you consider how cool it was, how wet it was, if there ever was going to be a year where starters paid off this could be that year. However, whether plant size differences really show up at harvest time has yet to be seen.

"Fact is we've got nitrogen rates, we are looking at ammonium polyphosphate (10-34-0) which contains just the nitrogen and sulfur. Most of the starter fertilizers in the south have been proposed because of poor phosphorus availability under cool wet conditions. We are looking at another product that has potassium and sulfur in addition to nitrogen and phosphorus. We're looking at a couple of different rates of that material. Our research program is also doing quite a bit of work on nitrogen application rates ad application timing."

No nitrogen at all was put out pre-plant on some plots. Ebelhar waited to sidedress, but doesn't think that was the way to go.

"With the cost of fertilizer as it is, we're looking at efficiencies," he said. "If I put out 25 percent, 50 percent, 75 percent or 100 percent preplant and that's a combination rate study, the question is 'can we get by with a lower rate if we put it out sidedress?' That's what we're looking at on that study. We're doing that here at Stoneville.

"I'm also working with Dr. Normie Buehring up at Verona on the starter fertilizer, and then management studies are also taking place up at Verona, so we have multiple location for those studies," he added.

All of this is funded through the Mississippi Corn Promotion Board, and Ebelhar feels really fortunate to get funding for that.

"You know, the checkoff program for corn in Mississippi is something that's really new and we're taking advantage of that to expand. We're projected at 800,000 acres of corn this year. The more information we can provide for producers the better off we all are."

Concerning plant populations, Ebelhar said the main thing that he's interested in is being able to show what population provides at least one ear on every plant. More and more evidence is being presented that indicates that different varieties have different optimum populations.

"We don't want a plant population where there are barren stalks, as a barren corn plant in the field with no ears is a weed," he said. "That plant is taking up nutrients, it's taking up water and it's taking up sunlight and it's not giving us fruit, it's a weed.

"The other thing that's important here is, as you increase plant populations especially in single rows, you have much more potential for lodging." He explained "you start putting plants closer together and you have less area for the roots to develop. One of the things interesting is that the plant senses early it's plant population. However, when you go to twin rows, those plants aren't as close together, you're still putting them on a twin row bed, you have two rows close together, but by the time the plant senses what the plant population is, it's already a population higher than what it thought so it has already determined ear size. Hopefully that's where our yield advantage is."

Twin-row planting systems on beds are an important component of soybean production. Farmers that made the decision to invest in twin-row planters need additional opportunities to use that equipment.

"Our goal is to make the systems work for them," Ebelhar said. "The more acres a piece of equipment covers, the lower the cost per acre."Δ

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