Bedding Benefits

Bedding Beans Provides Better Moisture Control, Healthier Plants

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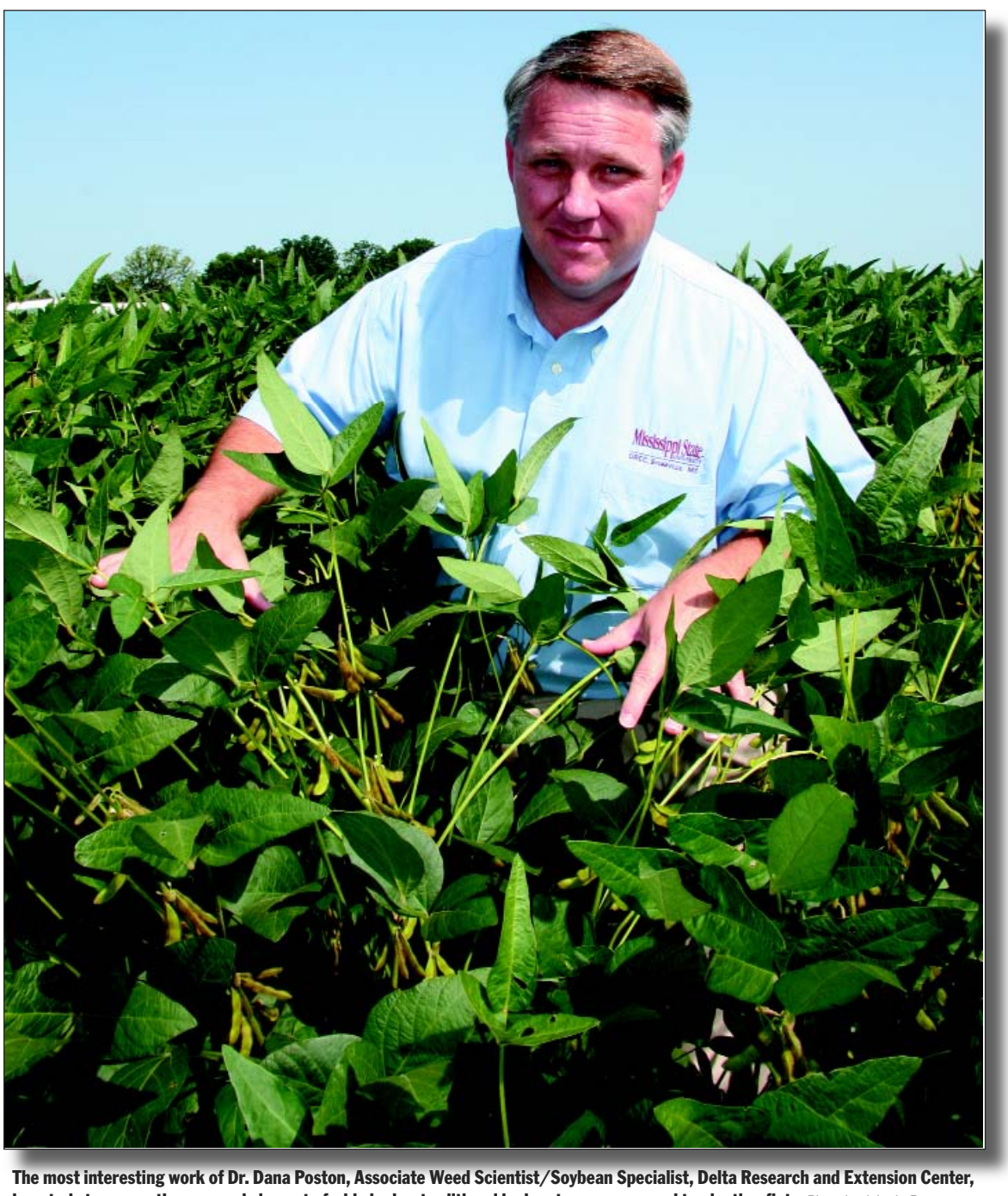
The economic benefit of bedding systems is an issue covered by Dr. Dan Poston, associate weed scientist/soybean specialist, Delta Research and Extension Center.

"I have a 50-50 research and extension split at Stoneville, working almost exclusively with soybeans so we pretty much have a hand in anything that is soybean production related," he said. "We have a fairly diverse program that covers integrated pest management, agronomy weed control, and some fertility aspects, so we have projects going in a lot of arenas."

His most interesting work though is a study to assess the economic impact of wide bed or traditional bed systems as opposed to planting flat.



The most interesting work of Dr. Dana Poston, Associate Weed Scientist/Soybean Specialist, Delta Research and Extension Center, is a study to assess the economic impact of wide bed or traditional bed systems as opposed to planting flat. Photo by John LaRose

"2007 was the second year in a row that we had a spring that has been extremely dry," he explained. "We needed to water extremely early in the year and the last couple of years we tried to get some of our producers, especially our rice producers, to go to some sort of wide bed or traditional bed system so that if they get in a situation where they have to water young beans early they can do that without hurting the beans. We spent a lot of time the last couple of years in grower locations and small plot replicated research trying to assess the economic value of bedding systems to our producers."

The beds he is studying are 40 inch beds with a traditional, either single or twin row. He has also looked at 80 inch beds.

"From a producer standpoint, on the 80-inch beds, you are generally looking at three or four rows, depending on the farmer's planter set up," Poston explained. "It varies between the closest and furthest."

Normal spacing for twin rows is 7.5 to 10 inches apart on a single 38-40 inch bed. With the wide row systems, most farmers use the 15-20-inch spacing range.

"We have a site at a grower location that developed some drainage problems," he explained. "Even though the land had a two-tenths slope, he was still having problems getting water on and off. So we established some bedding systems in that location and after it was all said and done, beds improved yields nearly 10 bushels per acre and net returns above all of our costs nearly $40 per acre in 2006. That return was over planting flat on a two-tenths slope."

Those effects could easily be magnified when land has a half-tenth to a tenth slope on some of the rice fields or in years where escessive rainfall occurs.

"The value that we saw in 2006 was in a situation where we controlled all of the water," Poston said. "Basically all was watered by irrigation, there was no rainfall."

Last year was extremely different. There was extensive rainfall in July, 10-20 inches in some areas. Bolivar county, Mississippi's biggest soybean growing county, had extensive water problems.

"I saw a lot of flat plan-tings, so the value of that system may be even larger last year than it was in 2006," Poston said. "Now it is beginning to show up visually in the field. The flat planted beans are much, much shorter, they don't have the growth and development that the tall ones do, and they are also terribly infested with late season annual grasses because they never canopied. The middles of the rowed up beans are exactly the opposite. They completely shaded the middles and are very healthy despite the rainfall with no late season grass."

Poston harvested last year's research plots and recorded a 17.7 bu/a advantage for raised beds over flat planted plots. These results will be presented in winter meetings.

"As far as the public is concerned, their first access will be when they start calling us in mid-September and get the information verbally," he said.

Most farmers in the Mississippi Delta are either on a one year rice, one year soybeans rotation; or a two year soybean to one year rice rotation, depending on their operation and commodity market prices.

"Where we are getting into problems, especially with our early planted beans, is the need to water early and that is extremely difficult to do on flat planted ground," Poston said. "So we are trying to encourage farmers from a yield stability standpoint to get some of these beans up on a row or bed so they can water early and basically increase yields and yield stability."

The biggest challenge in adopting this technology is it may require farmers to buy some new equipment so they can transition those rice fields into beds for beans.

"Farmers are a little resistant to do this and they tend to stick to the traditional cascade type flood watering situation which is almost impossible on very young beans," he said.

However, eventually the economics may convince them, as the return on one 35-acre site was $40 an acre above cost in 2006, and also is expected to exceed $60 per acre in 2007 when all calculations are completed.

Poston also is working on ways to manage soybean rust.

"One of the concerns we have within my program is whether to manage indeterminate soybeans differently from determinate soybeans from a rust standpoint," he said. "The question really is how early should one spray.

"If you take an indeterminate soybean it may have 30 percent to 40 percent of its vegetative growth on when it actually begins flowering," Poston continued. "You compare that to a determinate soybean, which may have 90 or more percent of its vegetative growth on before it ever flowers. So if you spray that determinate you have protected most of the foliage.

"That is not true with the indeterminate. The problem we may run into is that most of the rust recommendations from around the world come from research on determinate germplasm. The United States is overwhelmingly an indeterminate germplasm country. In Mississippi where we used to grow all determinates, now we grow 60 percent to 70 percent indeterminates, so we need to get a handle on how to manage those differently."

In Poston's research, he is manually defoliating soybeans at different growth stages to look at the impact on indeterminate and determinate beans.

"What we are finding is that with early defoliation, applications at R1 or beginning flower are more detrimental on the determinate germplasm which has most of its foliage," he said. "We feel that it is more critical to protect them early than it would be the indeterminates."

The opposite seems to be true with late applications where indeterminates don't have as much overall leaf area as the determinates. If you remove foliage from them late in the season, you more detrimentally affect the rest of pod fill.

"So our gut feeling is it's probably more important to protect the determinates early and the indeterminates late," Poston said.

2007 was the second year for this study. Some information from this was released in 2006 at the Southern Soybean Disease Workers Conference. Δ