

Seed Rates

Cotton Seeding Rates – Balancing Risks And Rewards

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One way to provide a better return on investment in seed and technology is to refrain from planting more seeds than needed in spring. To help farmers determine the right amount, Dr. Owen Gwathmey, University of Tennessee crop physiologist, and Dr. Larry Steckel, University of Tennessee weed scientist, conducted a three-year trial on cotton seeding rates.

Gwathmey discussed the results at a recent meeting, showing farmers how to make adjustments in their planting method.

“There are three ways to adjust our seeding rate per acre,” he said. “One is the row spacing, another is the seeding rate down the row, and the third is the planting pattern whether it’s solid planted or skip-row cotton. “Our economist colleagues from Knoxville crunched the numbers to determine the optimum return on seed and technology investment, and that is the real critical issue as producers are trying to create crop budgets for the coming year. Cost of seed and tech fees have gotten so high that farmers need to consider planting no more seed than needed for optimum yield, fiber quality and net returns.”

The trial showed that, as these are adjusted, there was an optimal return on investment at about 29,000 to 30,000 seeds per acre, which resulted in 21,000 to 22,000 plants per acre in their plots at the Milan Research and Education Center.

“That’s a little bit lower than typical extension recommendations across the belt, which are generally around 25,000 to 30,000 plants per acre,” Gwathmey said. “How well you can achieve that really depends on many factors, and it’s a game of chicken. But we can stack the odds in our favor, and increase the probability of things turning out well if we’re working with a well tuned planter that’s been calibrated carefully for the cool germ percent of our particular seed lot that we’re planting. We can plant in a well prepared no-till seedbed if we have trash cleaners set properly on the front of our planter.”

The day of planting is also important. Farmers need to check the seven-day forecast and make sure that there are no 40 degree nights in that seven-day forecast; if there are, park the planter.

“If everything else looks good, all the rest of the ducks are in a row, we’re ready to go,” he said.

Farmers also need to consider their own intestinal fortitude as far as taking risks. There is a risk-reward tradeoff here. It is risky to turn down the planter and change to a low density planting system. The risk is a stand failure and having to start over and replant.

“Replanting has a serious impact on budgets and that’s what we want to avoid, and so we’re playing a game of chicken in a way,” Gwathmey said. “Good payoff if we’re right and we do stack the odds in our favor; disaster if we don’t. If we have a stand failure and replant it can just blow

our crop budget for the year and reduce the likelihood of a profitable crop.”

The 29,000 to 30,000 seeds per acre was the top of the bell curve, the best return on investment, particularly in the 30-inch row configuration with two seeds per foot of row in their study.

“What we found is that if we were down to one seed per foot in 30-inch rows, we had too many skips and weeds got into those skips and yields went down, net returns went down,” he added. “So in 30-inch rows we can’t be as aggressive as we can in the 15-inch rows where a skip in one of the rows is compensated by a plant in the adjacent row which will fill that skip with branch growth.

“I think we do need to put together all the el-



Dr. Owen Gwathmey

ements of our seeding rate system to probe the lower end here,” he continued. “We can’t just turn down the planter. If we take our conventional planter and just change the gear ratios in it to turn it down to a lower rate per foot of row, we’ll just have a skippy stand, and nobody likes that. It’s an opportunity for weeds to move in and make a mess of our crop. If it gets too skippy we wind up replanting and that’s not the way to go. We need to take a holistic approach, basically a systems approach, to put together all the elements and to make it work.”

Gwathmey and Steckel conducted their seeding rate study in irrigated and non-irrigated fields.

“We tried to match two sites, an irrigated and non-irrigated site at Milan on the same soil type and the same topography, to produce fairly comparable crops. What we got was considerably different looking cotton, even from the same planting and harvest dates,” he explained. “The irrigated cotton was also conventionally tilled whereas the non-irrigated field was no-tilled, so there was more going on than just the irrigation there. We had about 10 inches of more plant height in our irrigated cotton and close to 1,400 pounds of lint versus 1,000 pounds from our non-irrigated site. That was our three-year average.”

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