

Plant *Population Study*

Trials Show Best Economic Plant Stand For Southern Illinois

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A four-year plant population study on corn in Southern Illinois seems to point to a plant stand in the high 20,000s, according to Emerson Nafziger, Extension Agronomist, Crop Production and Professor of Crop Sciences. The small plot studies are hand thinned so populations are exact.

sible outcome for a rough start to the season with a lot of replanting in this area. People ended up with some very good yields.”

The 2008 yields are going to equal or very nearly equal the highest corn yield ever in Illinois which was in 2004 at 180. The latest yield figure last year in Illinois was 179.

“One of the enduring questions with plant populations is ‘should you increase population where you expect yields to be higher?’ I think



Emerson Nafziger, Extension Agronomist, Crop Production and Professor of Crop Sciences discusses a plant population study on corn. Photo by John LaRose, Jr.

“There is always a little concern about whether that represents reality, but I’d say that our results are generally in line with what farmers see in their fields,” he said. “One thing that has really brought the population decision to a head is the very large increases in seed prices that have occurred.”

The past year was very odd yet it turned out to have been a very good year in Southern Illinois. Corn prices were high and it looked like they would remain there. Fertilizer prices were also high, although they’ve come down some.

“I think that most people would acknowledge that the corn price falling from \$5 to \$3.50 means that the seed prices that farmers actually pay may not be as high as they might have been,” Nafziger added. “Nonetheless, along with higher corn prices, farmers over the last five years have seen seed costs go up a lot. Two or three years ago we would have thought it just inconceivable that we would spend \$100 per acre for corn seed. Back when corn was \$2, seed at that price would have been half of our income from that acre. With good yields and good prices, 2008 is going to go down as a very good year for most Illinois farmers, including those in southern Illinois, even if seed costs were high.”

With the data from plant population responses, the study sought to apply economics to determine the ratio of seed cost to corn price, and to use this ratio to calculate the “optimum” plant population, which is the population where the return to seed cost is maximized.

“This allows individual assessment of risk and approach to risk,” he said. “In southern Illinois this past year our studies show that plant population responses in corn were similar to the ones we often see in northern Illinois; in fact yields and response to population actually increased with late planting. It was the best pos-

our data show that, in general, the answer to that question is yes. While there is a lot of variability across locations, high yields often require higher populations in our studies. The problem is that we usually don’t know what yield levels will be at planting time, so can only guess, based on average responses, what population to use,” Nafziger said. All of the data from the study at some 30 sites in Southern Illinois suggests that a 10 bushel yield increase requires about 700 more plants.

“The bottom line in Southern Illinois, given the current prices of corn and soybean seed, is a population in the high 20,000s – 28,000 to 29,000 – in that range is appropriate,” he summed. “Where people have fields where they don’t expect yield to be more than 120 or 130 bushels, it’s certainly OK to back that down some. Even there, we need to recognize that as we saw in 2008, yields in such fields sometimes turn out to be much better than we had hoped for, and in that case lower populations may cost us some yield and income.”

“Getting a good, uniform stand is a primary consideration and we know that’s not always easy,” Nafziger said. “This past year was relatively easy in terms of the replant decision, in that many fields had almost no plants. Then, as I said, late planting actually increased yield. This produced the unusual time when nearly every decision to replant was the right decision. Another year, that might not be the case.”

Nafziger’s final recommendation is to “just put out enough plants, make sure it’s not too low for the conditions you might experience. Almost every field has produced 180 bushel or more at some time over the last three years, no matter where it is in Illinois, so that makes it tough for people to say ‘I can never get 200 bushel, so I don’t need that many plants,’ because so many of them have.” Δ



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