

Wide Row Spacing

Row Spacing Research Shows Pros, Cons Of 15-Inch Row Wheat

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PRINCETON, KY.

Work on wheat row spacing has claimed some of the attention of Dr. Jim Herbek, University of Kentucky Extension Grain Crop Specialist located at the Research and Education Center at Princeton, Ky.

One of the factors in wheat production that has garnered much interest recently is switching from the common spacing of seven- to eight-inch rows to 15 inch rows.

"We really don't think a lot about how row spacing affects wheat yields," said Herbek. "However, with the interest in wider rows, Chad Lee, Extension Grain Crops Specialist at Lex-

ington, and I decided to do some work on this.

We've done research for three years – in 2009, 2010 and 2011. We are trying to provide some yield data for farmers since some are considering this and there are some actually seeding wide rows now. Their reasoning behind this is that they could reduce their machinery investment by doing away with the drill and using the planter they use for corn and soybeans, particularly a 15-inch row planter. They could modify it so they could drill wheat and this could be a tremendous benefit to them because if, down the road, they needed a new drill, they could just use the row unit planters in the 15-inch rows and eliminate the investment in a drill."

Some of the older research on wide rows showed a fairly significant yield loss of about 10 percent and sometimes even more by going to the wide row. So economically this probably wasn't reasonable. However, with the interest today, more study was warranted. This research was conducted for three years in two locations, one at Princeton and one at Lexington, for a total of six site years.

"To sum it up, for the three years we've worked with 15-inch rows, these wide rows yielded less than the 7.5-inch rows; however, the amount of yield loss varied among the six site-years," Herbek said. "Of those individual site years, two of them had no yield loss for wide rows. At the other four site-years, the wide rows yielded 6 percent to 10 percent less than 7.5 inch rows with an average yield loss of 9 percent (eight bushels per acre). So when you average it all out over the six site-years, the wide rows had about a 6 percent yield loss. There has been some research done other places and they're showing somewhat similar results."

"With a lot of wheat in the state of Kentucky that's seeded no-till, row unit planters do a better job of seeding than a drill because a drill is less uniform in seed placement, especially when seeding in the residue; but with 15-inch row wheat, planting with row unit planters does a lot better job in no-till so that's another one of the benefits."

Herkbek also said part of the research connected with wide row wheat is centered on seeding rates.

"Can we reduce seeding rates in wide rows? If so, that would reduce the seed cost and would offset some of the yield loss. I think it is reasonable that we can reduce seeding rates. We recommend a seeding rate of 35 seeds per square foot and if you use that in 15-inch rows you're putting a lot more seed into the wider row. For the last two years, we compared a seeding rate of 35 seeds per square foot to a reduced seeding rate of 25 seeds per square foot in 15-inch rows and the yields were equivalent. So that is a reduction in seed costs and also one of the benefits of utilizing wide rows."

Herkbek's research also is centering on ultra-narrow row wheat, a three or four inch row, after a request from a few producers.

"We started the research two years ago and we did it at both of our locations," he said. "The results showed that wheat in 3.75-inch rows

yielded similarly to wheat in 7.5-inch rows. "Looking back at some of the older research work that has been done on these ultra narrow rows shows it's been a mixed bag. You may or may not get a yield increase, in fact there could be a yield loss."

Many years ago Virginia Tech did a lot of work on ultra narrow row wheat and they were showing a positive response of about 5 percent. Herbek's trial last year showed no yield increase; in fact yield was the same.

"The ultra narrow rows may not be real practical because you'll have to buy a whole new drill on this very narrow row set up, and they aren't readily available," he said. "While most of our farmers are looking at the wider row so they

Dr. Jim Herbek, University of Kentucky Extension Grain Crop Specialist located at the Research and Education Center at Princeton, Ky. explains his research on yield data for wide row spacing on wheat. Photo by John LaRose, Jr.



can get rid of a drill, this would cause another investment in a new drill. And it probably would not work very well in no-till because you have such narrow units that residue clearance would be a problem. So overall there probably are a few negatives to using an ultra narrow drill."

Competition between plants on the ultra narrow row could be a concern, but Herbek explained he feels the competition would be less with ultra narrow rows.

"In the ultra narrow row, theoretically you're spacing those plants out a little more within the row," he said. "On 7.5-inch rows and seeding at 35 seeds per square foot, that is about 22 seeds in a linear foot of row. By going to a narrower row, what we're essentially doing is we're splitting the middles of 7.5-inch rows making them 3.75-inch rows, so we're actually only putting 11 seeds down per linear foot. With the more equidistant planting on that, I would think you'd have less competition."

"Talking about that, that's why on the wide row we really believe you can reduce your seeding rate and be better off because there's just too much competition within the row," he continued. "At a seeding rate of 35 seeds per square foot that equals about 44 seeds per linear foot of row in a wide 15-inch row. That's a lot of plants to compete there. A wide distance between the rows allows them to tiller, but within the row you probably have too much plant competition: You may not get a whole lot of tillering within the row, or tillers may never produce heads, or abort because of the high plant density within the row."

"I think we can reduce our seeding rates if farmers go to the wide rows. How much we can reduce it, I don't have that answer yet; but at least we found out we could reduce it from about 1.5 million seeds per acre which is 35 seeds per square foot to about 1 million seeds per acre which is 25 seeds per square foot."

Herkbek estimated a seed saving of about \$10 an acre by reducing seed from 1.5 million to 1 million seeds per acre.

All in all, he believes that wide rows do look more feasible now than they did a few years back. Farmers have to look at the economics of it. Each will have to decide if a likely decrease in yield coupled with some cost reduction meets his expectations.

"There is not a big difference in input costs between 7.5-inch and 15-inch rows, but the wide rows would have a reduction in seed costs, that's definite. Also you wouldn't have the machinery investment in a drill anymore, which can be quite a large investment with the big drills now. However, the yield losses for wide rows would cost you about \$40 per acre under current wheat prices. So, as long as the price of wheat remains high, producers will make more money most years by planting wheat in 7.5-inch rows. If wheat prices drop, planting wheat in 15-inch rows may be more feasible and nearly as profitable as wheat in 7.5-inch rows." Δ

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