**GOOD STANDS:** At 60 feet wide with 60 row units on the toolbar, this custom-built Deere planter planted corn in 12-inch row spacing this past spring. "We also planted with a Great Plains planter we modified for 12-inch rows, and both of the planters worked well," says Fred Eby, farm manager for Stine Seed at Adel.

**CROP RESIDUE:** The narrow-row planter is set up for no-till and can handle crop residue even when planting corn on corn or soybeans into cornstalks. "The press wheels are 2 inches wide instead of a normal 4 inches to allow row units to fit close together and plant in 12-inch rows," notes Fred Eby.

# Narrow-minded corn planting

By **ROD SWOBODA**

**Key Points**

- Farmer interest is growing in the potential to produce corn in narrow rows.
- Some believe the future of higher yields will come from more plants per acre.
- To accommodate high populations, narrow rows are needed to maximize yield.

THE first two articles in our series on narrow-row corn appeared in the October and November issues of *Wallaces Farmer*, prompting questions from readers. This third article addresses them. The first article featured a special-built corn head used to harvest corn in a 12-inch row width this fall on land farmed by Stine Seed Co. at Adel in central Iowa. The second article looked at selecting hybrids to plant that are adapted to high-population, narrow-row production.

Walking through fields of the ultra-narrow row corn last May with Fred Eby, farm manager for Stine Seed, was a peek into the future of the American farmer's effort to increase yields. One corn plant grew every 10 inches within the rows, and the rows were 12 inches apart. Eby and his crew planted 2,300 acres of corn in 12-inch rows in 2012. In a large field near Perry in central Iowa, the corn averaged 243 bushels per acre despite one of the driest summers in more than 50 years in Iowa.

They planted 51,000 kernels per acre in a 12-inch row width, ending up with a final stand of 49,000 plants at harvest. Corn in Iowa is commonly planted in 30-inch rows at 35,000 to 36,000 plants per acre, and in a good year it can yield 200 bushels per acre. But looking to the future of corn production, if you want to consistently get 300 bushels or more per acre, you have to push the population up to higher levels, researchers say. To make that work, you have to plant corn in narrow rows such as 20, 15 or 12 inches wide, notes Myron Stine, vice president of sales for Stine. His father, Harry Stine, began breeding corn 15 years ago to develop hybrids adapted to high populations and narrow rows.

Myron and Harry emphasize you can't plant just any hybrid in narrow rows and get a yield response compared to 30-inch rows. The Stine breeding program has developed corn plants that have a narrow architecture, with very upright leaves. It's a shorter plant than most of today's hybrids, and the leaves grow right up to the tassel. The tassel is smaller than you'll find on most corn hybrids. All of this allows the plant to gather a maximum amount of sunshine falling on the field.

## Equidistant plant spacing

With the equidistant spacing of plants, there is also more efficient use of soil moisture and nutrients available, and the plants aren't crowded within the row. If you try to squeeze 49,000 or 50,000 plants per acre into 30-inch rows, the plants would be only 3 to 4 inches apart and would compete against each other. "If we want populations per acre that are substantially higher than what farmers are planting today, we're going to have to plant corn in narrow rows to get as close to equidistant spacing as we can on each acre," says Myron.

"We've done that," he notes. "Now, we're focusing on 12-inch rows because we are convinced the future of high corn yields will come from more plants per acre. And we're continuing to develop hybrids that perform well in high populations."

Seed companies and universities have done a lot of research on row width and spacing of corn plants. Studies show equidistant spacing is essential to maximize performance of hybrid corn. "We're convinced this is what it's going to take to consistently produce yields in the 300-bushel-per-acre range," adds Myron.

Stine Seed used two planters to plant corn in a 12-inch row width last spring. One is a Great Plains planter, which Stine mechanics at Adel modified to plant 60 rows at a time. The other is a Deere planter custom-built for Stine by Vaughn Bauer at Paton, who builds special-order, super-large planters for John Deere.

"We bought a used Great Plains planter set up for 48 rows on a 60-foot toolbar," says Eby. "The guys in our shop added more row units so we could plant 60 rows at a time in 12-inch width. Of course, that was a bigger project than just moving row units closer together. For example, we had to add the electronics, connect the drives, etc. It was a very interesting challenge."

The Deere planter custom-built by Bauer is also 60 feet wide with 60 rows, with staggered row units similar to a twin-row planter. "That's how you get the rows so close together," notes Eby. The middle part of each planter unit is a standard Deere seed meter and plate for air vacuum. But the depth wheels are narrower. They are a 2-inch-wide wheel instead of a 4-inch wheel. "The frame is the same as a standard Deere unit; the depth wheels on each unit are 2 inches instead of a normal 4-inch width; and the parallel linkage arms are narrower than normal," says Eby.

Both planters worked well. "We had good emergence and good seed spacing," says Eby. "In 2013 we will use three Deere planters and the Great Plains planter to plant all our corn and soybean acres in 12-inch rows." That includes seed production as well as commercial fields — about 14,000 acres in total.

Until 2012, Stine Seed had been planting both corn and soybeans in 22.5-inch rows for a number of years. In 2013 they'll go to 12-inch rows on about every planted acre, except for some soybean research acres that will remain in 20-inch rows. "We sold our wide-row equipment," says Eby. "We believe in the future of the narrow-row system for both corn and soybeans. We're committed to making it work."

## Quicker canopy helps weed control

HOW do you control weeds in ultra-narrow-row corn? The corn forms a canopy quicker than in 30-inch rows, which helps. "In the 12-inch row corn we planted last year here in Dallas County, we applied a preemergence herbicide right after planting in mid-April," says Fred Eby, farm manager for Stine Seed at Adel.

It was all Roundup Ready corn so he could have followed up with a postemergence application of Roundup. But he didn't have to. The corn received a timely rain right after planting to activate the soil-applied herbicide, which was Corvus.

On May 18 the field was still clean, and the canopy would close over the rows in a week or two. "You could go out and drive sideways over the field and spray postemergence," he notes. "But with no weeds present, there's no need to do it."

Eby adds, "In 12-inch rows the canopy develops fast and can soon shade out weeds that may come. If you can get your preemergence herbicide to hold until the canopy forms, you've got weed control whipped. But you do have the option of spraying postemergence if needed. You can drive over small corn with flotation tires, going across the rows instead of driving down the rows, and not hurt corn yield potential as much as it would hurt yield if you left the weeds there." A burndown application can help. If a preemergence herbicide is used early, usually weeds aren't out yet, so burndown isn't needed. "But some of the later-planted fields may have a few weeds, and you may have to put a touch of Roundup in the mix when you apply the preemergence herbicide to kill any emerged weeds."