



**Bayer's Kelly Gillespie shows short corn's late-season access for ground rigs at a field day.**



## THE RISE OF SHORT CORN

Upcoming corn varieties could improve management and increase yields.

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**C**orn “as high as an elephant’s eye” lauded in the opening tune to Rodgers and Hammerstein’s “Oklahoma!” may soon be a thing of the past. Short-stature varieties, with greater standability and increased management flexibility, have garnered interest in recent years.

Corn isn’t the first commodity to see efforts to reduce its height. During the green revolution, shorter wheat varieties allowed for a better standing crop and higher yields.

“This is not a new concept, but it’s an important one,” says Denise Bouvrette, the North America Smart Corn launch lead for Bayer. “It was certainly transformational in the wheat business, and we believe it will be transformational in corn.”

### Reducing Risks

**T**raditionally, corn yields are increased by planting greater plant density, but as farmers have pushed the boundaries, new problems have arisen.

“As you put more plants per acre, they have to compete for more resources, like water, nutrients, and sunlight,” says Sam Eathington, executive vice president, chief technology and digital officer for Corteva. “When plants compete, they tend to grow taller. As plants get taller, the stalk diameter tends to shrink and that creates a risk of plants lodging.”

Stalk lodging and greensnap can make harvest season a headache. Downed corn plants often mean slower harvests, damaged combines, and reduced grain quality.

“We’re really seeing this evolution of reducing the stature of corn so we can put in more plants per acre without the risk of that crop lodging,” Eathington says. “It becomes a tool that lets us increase yield because it takes away the risk of plants going down.”

Research by Bayer has shown its upcoming short-stature corn product can withstand winds up to 50 mph.

“It’s not a silver bullet by any means. If your grain bin or your oak tree is going to be uprooted from wind, your corn probably will too,” says Travis Coffman, a Bayer traits

marketing manager for corn. “But for those growers that have wind damage causing green snap and lodging, the short-stature corn is definitely an opportunity to fix some of that.”

### Flexibility in the Field

**S**horter corn allows for better in-season management, granting farmers’ ground rigs access without damaging the crop.

“For those growers that need to apply fungicide or insecticide in the middle of the season or later, or those that need something like a rescue nitrogen application, short-stature corn gives them all-season access,” Coffman says.

Seed companies have worked to ensure short-stature corn can fit seamlessly into existing management plans. For example, Corteva’s upcoming product stands about 6 feet high, far shorter than many traditional varieties. Care has been taken to guarantee each ear remains at the right height for easy harvest.

Still, the opportunity to experiment is there.

“We think farmers will start to experiment with things like split fertility applications, late-season ground-applied fungicides, and managing those inputs differently,” Bouvrette says. “We truly think this will be an enabler for many sustainable management practices while at the same time helping farmers optimize profit and loss for themselves.”

For farmers with the ability to invest in new equipment, short-stature



Short-stature corn had better standability in the 2021 Midwest derecho.

corn offers the chance to reduce row spacings and increase plant populations.

“They don’t need new equipment. They don’t need to change the row spacing. They don’t have to plant higher populations, but we think more will lean toward that as they get more experience with the technology,” Bouvrette says.

While these new corn varieties will stand shorter than their conventional counterparts, yields are expected to remain the same.

“As we advance things through our pipeline, we’re testing against commercial tall products and only advancing those that yield equally or better than those existing products,” Bouvrette says.

There’s little reason to worry about in-field stressors such as weeds, pests, and diseases either. In early testing, shorter corn varieties have performed similarly to the commercially available tall products.

“We haven’t seen anything that causes us to throw up a red flag,” Coffman says. “The different things that growers have to work on through the season, like diseases and nitrogen management, should be pretty similar. But it will be something new, so they

may look to optimize what they can to get the most out of their crop going forward.”

### Stine Leads the Way

**W**hile Bayer and Corteva aim to release short-stature products by the end of the decade, one company has already made its mark. Stine Seed Co. introduced a shorter corn variety about 10 years ago, an unintended by-product of its breeding program.

“Our breeding program, which started back in the mid-70s, was very different from other corn breeding programs in how it was structured,” says Myron Stine, Stine Seed Co. president. “Due to how it was structured, the program began to select for corn genetics that liked the population and that stood well. So we’ve gone many years with a selection criteria that favors higher populations and shorter plant structures.”

For Stine Seed customers, the short-stature products have allowed for higher management fields and greater yields. Daron Judd, a Lostant, Illinois, farmer, turned to the seed as a way to apply fungicides later in the year with his own ground rig. While he’s since transitioned to aerial applications, Judd has continued to plant short-stature corn on nearly all his acres.

“The standability was much better,” Judd says. “There were stronger stalks due to the reduced height, so they were less likely to break, fall over, or lodge. Even more so, there was less biomass. We’re pushing the population each year and trying to manage that biomass. The short-stature corn really allows us to manage that biomass a lot easier than the taller options.”

Judd slowly adopted short-stature corn, but the benefits have been clear. He favors MX514-20 seed, a 106-day corn that he says responds well to fungicide applications.

“Stine has done a lot of research on this, and they have been kind enough to share that information with me,” Judd says. “They have a lot of data that shows the short corn performs well at higher populations. We’ve also found it has a much larger root structure, so it’s not going to be as susceptible to lodging.”

Since transitioning to shorter varieties, Judd has reduced his row spacing to 15

### Bayer’s Short Corn Program

**W**hen it comes to new corn varieties, every company has a unique path. Bayer is taking three approaches: breeding, gene modification, and gene editing.

The process has been very intentional, looking to creating new hybrids that offer additional benefits. Through breeding, Bayer has been able to change the plant height without changing anything else agronomically.

“This impacts a hormonal pathway that shortens the space between nodes below the ear of the plant,” says Denise Bouvrette, the North America Smart Corn launch lead for Bayer. “That makes the overall architecture of the plant shorter and gives it this inherent standability and resistance to lodging.”

With a 2024 targeted commercial release, these hybrids will be part of Bayer’s Smart Corn System, a full-system approach that helps farmers manage risk while maximizing yield and profitability potential. •

inches. Going into the 2023 growing season, he plans to plant nearly 100% short varieties.

“We were a little hesitant, but they have provided very well for us,” Judd says. “As far as drawbacks go, there’s been absolutely none. It really gave us exactly what we were looking for.” **SF**



Myron Stine