

SPRING PLANTING 2023

SHORT STATURE CORN OFFERS IMPROVED STANDABILITY

New hybrids boast inherent resistance to lodging and green snap, offer opportunity to plant at higher populations.

By Frank Holdmeyer

Iowa farmers have not forgotten the devastating derecho of August 2020. That storm, with wind speeds topping 140 miles per hour and significant precipitation in many areas of the state, flattened or severely damaged millions of acres of corn and soybeans. The 2020 derecho and other more frequent, more intense storms that cause lodging and green snap have kick-started a growing interest in short stature corn plants.

Called an evolution in corn breeding, short stature corn hybrids are developed to be shorter than standard-height hybrids — approximately one-third shorter, in fact. These hybrids, with an inherent resistance to lodging and green snap, are the result of decades of genetic testing and selection for specific traits.

Stine Seed and Bayer Crop Science are two companies at the forefront of this technology.

“We did not intentionally set out to make short stature hybrids and not all of our hybrids are short,” says Myron Stine, president of Stine Seed. “But decades of breeding selection for standability, harvestability and yield has led us to develop genetics that produce shorter, more efficient, and high yielding genetics that thrive in higher populations,” explains Stine.



Stine

He says about a third of the hybrids Stine sells would be considered short stature hybrids. Stine has been selling these hybrids commercially for more than a decade.

Besides the inherent advantages of standability and harvestability, Stine says their short stature hybrids have more upright leaves than traditional plants and the tassels are lower and smaller on the plant. “That means the leaves have the potential to harvest more sunlight.”

Stine says the short stature hybrids offer a potential 10% yield boost at higher plant populations.

“Just because it is a short stature hybrid doesn’t mean it has to be planted at higher populations,” he notes. “But our hybrids tend to like higher populations — 42,000 plants per acre (on productive soils) is not out of the question.

“But growers must make sure their inputs match up with that. Theoretically, individual plants are not using the same



One takeaway that Stine Seed garnered from the 2020 derecho is that short-stature corn stood its ground. Pictured are side-by-side comparisons of Stine short-stature hybrids, left, next to regular-statured plants following the storm. PHOTO COURTESY OF STINE SEED

nutrients as a taller, more robust plants. But nutrient requirements will be higher because of more plants per acre.”

Another advantage of short stature corn, according to Stine, is the flexibility to use traditional ground equipment later in the season for side dressing nitrogen and application of herbicides and fungicides.

GAME CHANGER

“We think short stature corn is going to be a game changer and drive the next evolution of corn production,” declares Denise Bouvrette, Bayer Crop Science corn launch lead.

“We have been working on this for some time,” begins Bouvrette. “The initial varieties were developed with the intentional purpose of being shorter by our breeders in Mexico as early as 2007, and having the opportunity to enable growers to manage as a system,” she explains. The company is working on three different approaches to delivering short stature hybrids — breeding, biotech and gene editing.

“These hybrids are about 30% shorter than traditional varieties in the market-

place. Because of that short architecture they have an inherent resistance to lodging and green snap. We see incredible standability, even in winds in excess of 50 mph.”

Bayer had some of the hybrids in plots in Iowa in 2020 when the derecho struck in August. “Some of those plots withstood winds up to 75 mph.”

Bouvrette says short stature hybrids have the same agronomic variations across genetics and have the same growth stages and development as traditional taller hybrids.

“They still have the same number of nodes and leaves, although some varieties have more floppy leaves, others more upright — the same variations you see in taller varieties,” she notes.

“Differences really start to show up about the V8 to V10 growth stage. That’s when traditional varieties start elongating in the stalk.

“Our target height for our short stature corn is between 5 and 7 feet,” she continues. “That places the ear about 24 inches or higher.”

Bouvrette also believes because of the inherent standability trait, growers will be able to experiment with higher plant populations in 30- or 20-inch rows. “Producers can apply more on the same acre with less risk.

“We encourage farmers to try different fertility applications because they now have the flexibility to apply at times when the plant is most likely to uptake more of that nitrogen. These plants utilize nitrogen the same as taller plants but the opportunity comes with the flexibility of the timing of that input to get the best return.”

Bayer research has also uncovered some interesting below ground traits of the short stature hybrids in terms of root phenotypes. “At the V8 to V10 stage, we are noting earlier and more massed soil exploration and depth in the roots.

“We hypothesize this is happening because the short stature hybrids are not putting energy into elongating stalks at that time so it goes to the roots. We are still evaluating this and trying to understand it across various genetics and different environments to see what the potential implications are.

“We engaged about 200 farmer cooperators in 2022 to try these early hybrids on their farm and consider different fertility treatments, population comparisons, fungicide applications, etc.”

Bayer will expand that in 2023 to include 286 growers and 30,000 acres. Commercial introduction is planned for market year 2024, depending on results and final decisions this fall, notes Bouvrette.

Holdmeyer is a freelance writer from Colfax.



A Bayer test plot in Iowa demonstrated differences in standability after the 2020 derecho. Short stature corn hybrid plots are highlighted. PHOTO COURTESY OF BAYER CROP SCIENCE