



Row Spacing and Seeding Rate Effects on Short Stature Corn Yields

Trial Objective

- Short stature corn products may have the potential to be planted at greater seeding rates than conventional tall corn products because studies have shown a lower risk of stalk lodging.
- The objective of this study was to determine the effect of two different row spacings and five seeding rates on short statured corn yield potential.

Experiment/Trial Design

Location	Soil Type	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield (bu/acre)	Seeding Rate (seeds/acre)	Row Spacing (in)
Gothenburg, NE	Hord silt loam	Soybean	Strip-Tillage	5/13/22	11/21/22	250	32k, 38k, 44k, 50k, 56k	30-inch, 30-inch Twin Row

- The trial was arranged as a randomized complete block design with four replications and two treatment factors.
- Row Spacing
 - » 30-inch, 30-inch Twin Row (Two rows, eight inches apart on 30-inch centers)
- Seeding Rates
 - » 32,000, 38,000, 44,000, 50,000, and 56,000 seeds/acre
- Corn Product
 - » 112 Relative Maturity (RM) Short Stature Corn Product
- Corn was fully irrigated throughout growing season for a total of nine inches of applied irrigation.
- The trial was strip-tilled on 04/14/2022 and a base fertilizer application of 29 lb of nitrogen (N)/acre, 60 lb of phosphorus (P)/acre, 25 lb of sulfur (S)/acre, and 0.25 lb Zinc (Zn)/acre was strip-till applied.
- Corn was sidedressed with Y-drops on 6/4/2022 with an additional 140 lb of N/acre.
- Weeds were controlled with an herbicide application, but no specialty application was applied.
- Harvest Date
 - » 11/21/2022, a late harvest date to test corn for late season stalk lodging.
- Total weight, test weight, and moisture content were collected with a plot combine to calculate yield per acre.



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Understanding the Results

Row spacing

- Row spacing did not result in a significant increase or decrease in yield (Figure 1).

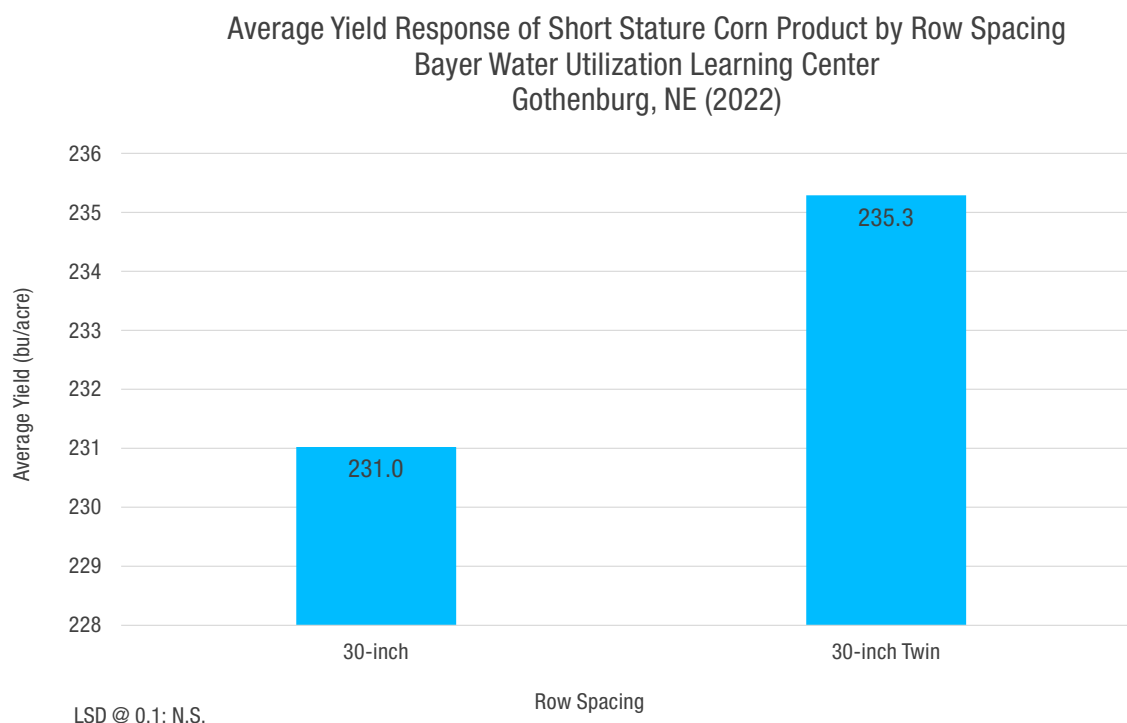


Figure 1. No significant difference in average yield of short stature corn product between 30-inch rows and 30-inch twin rows at the Bayer Water Utilization Learning Center, Gothenburg, NE (2022).

Seeding rate

- Seeding rate resulted in significant differences in average corn yield (Figure 2).
- The short statured corn product planted in the range of 38,000 to 50,000 seeds/acre provided the highest yields; however, there was no significant difference for the seeding rates of 44,000 and 56,000 seeds/acre (Figure 2).
- The lowest average yields of 223.4 and 228.9 bu/acre for the short statured corn product occurred at 32,000 and 56,000 seeding rates, respectively (Figure 2).
- In comparison, a similar Bayer study conducted in 2022 at 53 locations across seven states (IA, IL, IN, NE, MN, MO, OH) looked at the effect of planting density on 3 different precommercial short statured corn products at each location.
 - » Results were similar in that the short statured corn product planted in the range of 44,000 to 56,000 seeds per acre provided the highest yields. (Figure 3).



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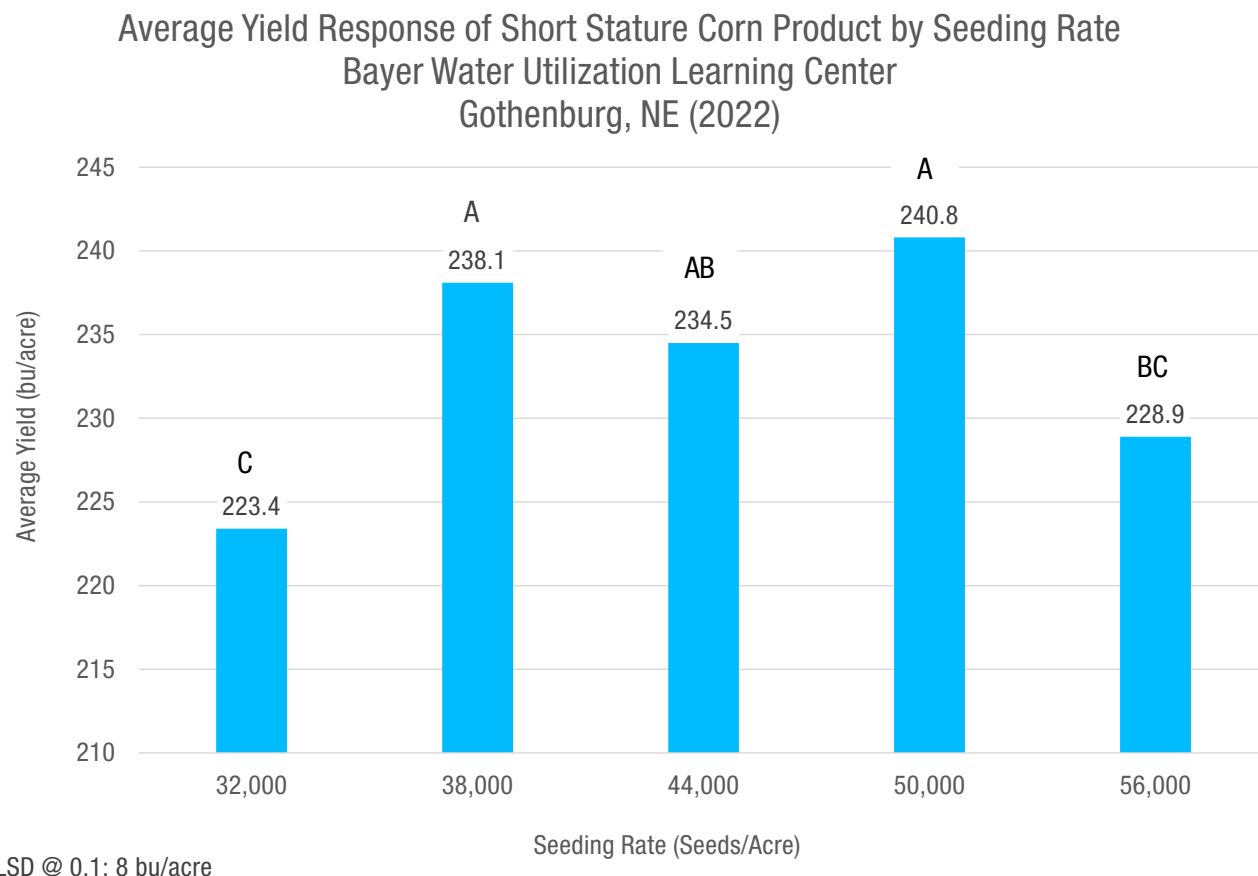


Figure 2. The average yield of the short stature corn product was significantly impacted by different seeding rates at the Bayer Water Utilization Learning Center at Gothenburg, NE in 2022. Letters indicate mean separation using Fishers Protected LSD at $p \leq 0.10$.

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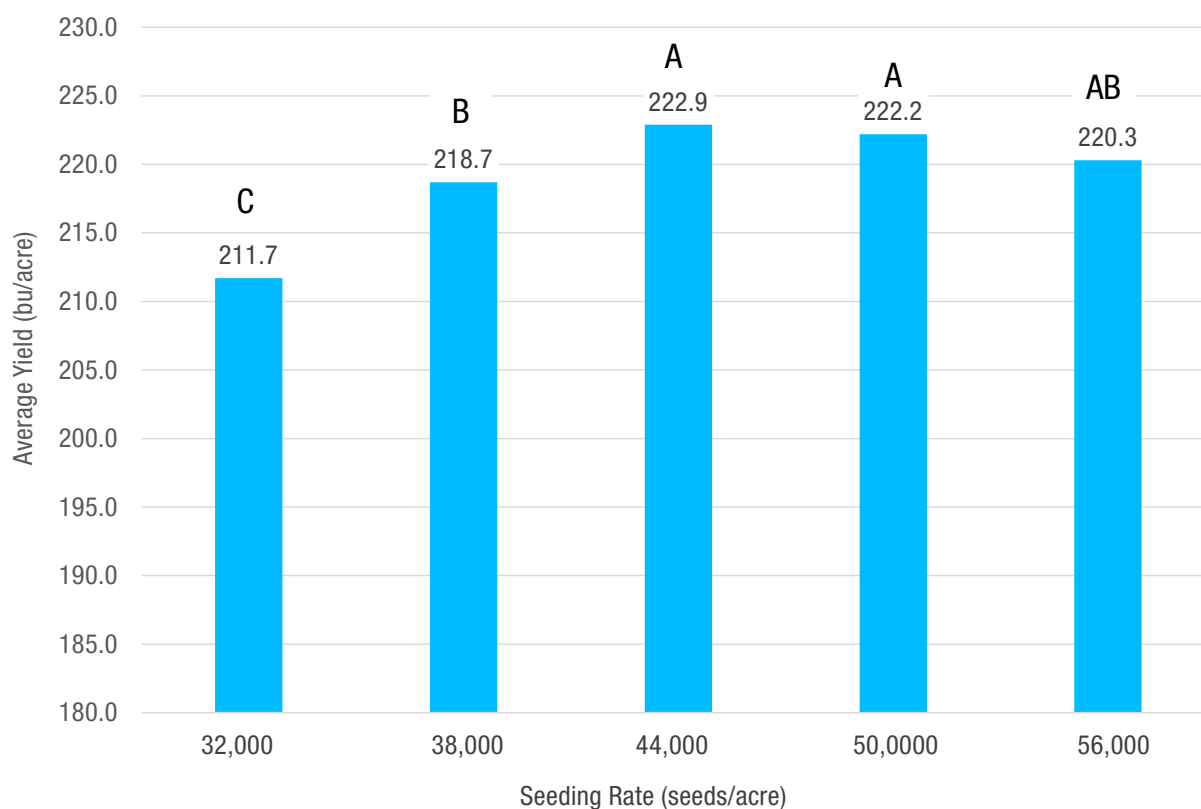


Figure 3. Planting density effect on yield of multiple short stature corn products in 2022.
A Bayer study was conducted at 53 locations across seven states (IA, IL, IN, NE, MN, MO, OH).
Letters indicate mean separation using Fishers Protected LSD at $p \leq 0.0001$.

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- The interaction between row spacing and seeding rate was not significant (Figure 4).

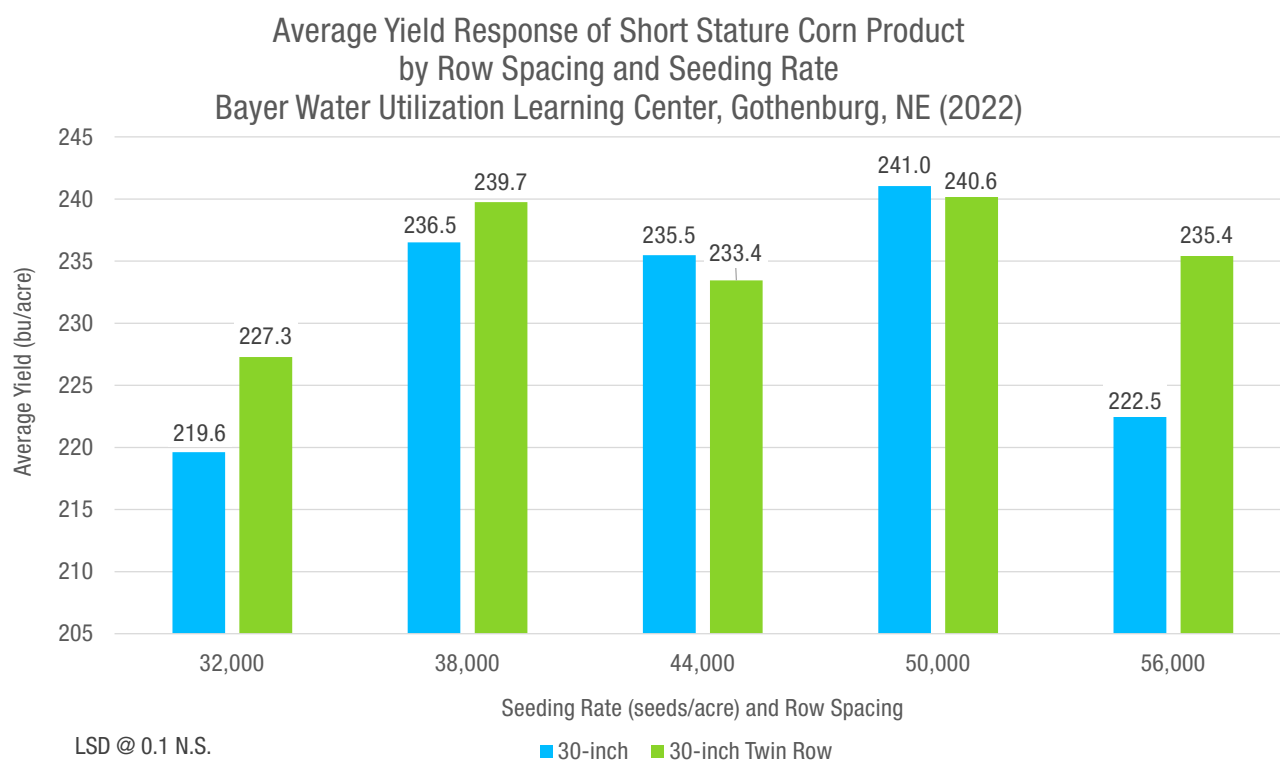


Figure 4. Average corn yields of short stature corn product as impacted by row spacing and seeding rate at the Bayer Water Utilization Learning Center, Gothenburg, NE (2022).

Key Learnings

- Changing seeding rates resulted in significant differences in average corn yield but utilizing either 30-inch or Twin-Row 30-inch row spacings did not influence yield.
- In this trial, the average yields of the irrigated, short statured corn product planted at 38,000, 44,000, and 50,000 seeds/acre were similar.
- Planting the short statured corn product at greater seeding rates, such as 50,000 seeds/acre, delivered higher average yields, but going beyond that led to lower average yields.
- Stalk lodging was not observed in any of the treatments in this trial even at the late harvest date and highest densities.

Legal Statements

The information discussed in this report is from a single site, replicated trial. This informational piece is designed to report the results of this demonstration and is not intended to infer any confirmed trends. Please use this information accordingly.

The Smart Corn System including short stature corn developed through traditional breeding is expected to be available, subject to final commercialization decisions, for planting in the 2024 growing season. *This product is not currently available for commercial sale or commercial planting. Commercialization is dependent on multiple factors, including successful conclusion of the regulatory process. The information presented herein is provided for educational purposes only, and is not and shall not be construed as an offer to sell.

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields.

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