



# Corn Yield Response to Row Spacing and Seeding Rate

## Trial Objective

- Row spacing is usually a standardized or fixed practice in most operations. Unlike nitrogen and weed management, which can be altered from year to year, most farmers don't vary their row spacing between years. This is due, in part, to high capital investment in farm equipment.
- Proper row spacing allows plants room to explore for nutrients and minimizes the adverse effects of competition from neighboring plants. In Iowa, and in most regions of the Midwest, 20 inches and 30 inches are the most common row spacing configurations.
- Coupled with seeding rate, row spacing impacts canopy closure and weed control, disease development, late-season plant standability, and ultimately yield potential. The objective of this trial was to evaluate the effects of 20- and 30-inch row spacings on corn yield at three different seeding rates.

## Research Site Details

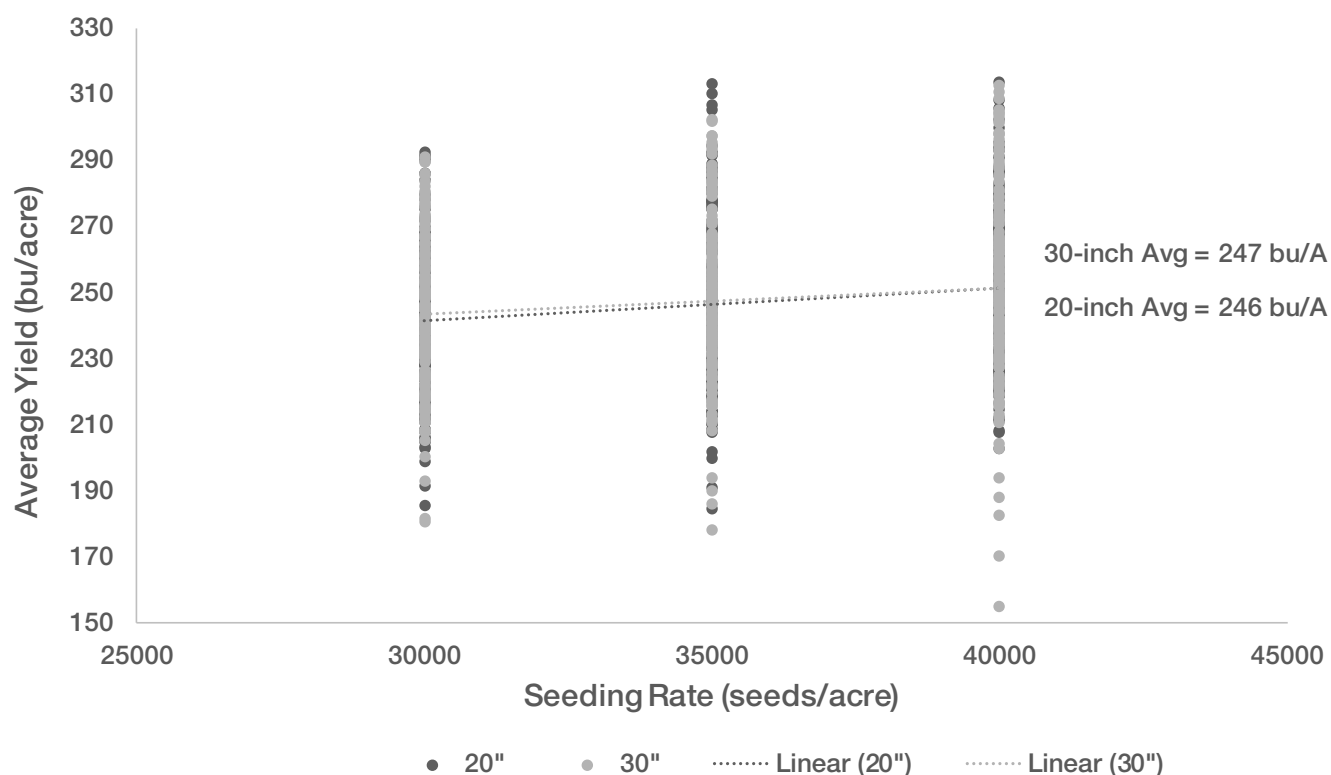
| Location       | Soil Type       | Previous Crop | Tillage Type | Planting Date | Harvest Date | Fungicide Timing | Seeding Rate (seeds/acre) |
|----------------|-----------------|---------------|--------------|---------------|--------------|------------------|---------------------------|
| Atlantic, IA   | Silty clay loam | Soybean       | Minimum      | 4/26/19       | 10/14/19     | 230              | 30K 35K 40K               |
| Huxley, IA     | Clay loam       | Soybean       | Conventional | 5/16/19       | 10/28/19     | 220              | 30K 35K 40K               |
| Storm Lake, IA | Clay loam       | Soybean       | Conventional | 5/3/19        | 10/24/19     | 250+             | 30K 35K 40K               |
| Victor, IA     | Silty clay loam | Soybean       | Conventional | 4/24/19       | 10/16/19     | 250              | 30K 35K 40K               |

- Forty-five corn products were chosen to represent the northern, central, and southern corn-growing regions of Iowa. Products were planted at 30,000 (30K), 35,000 (35K), and 40,000 (40K) seeds/acre seeding rates in both 20- and 30-inch row spacings.
- Tillage, weed management, and nitrogen management were the same for all products at the respective locations.
- The trial was conducted in 10-ft by 30-ft plots with two replications at each location.



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## Understanding the Results



**Figure 1. Effects of row spacing and seeding rate on the yield of corn products. Data represent 45 products from five growing regions in Iowa. The average yield represents the overall average across locations, products, and seeding rates.**

| Table 1. Summary of corn product performance due to row spacing and seeding rate. |                         |     |     |                            |      |      |
|-----------------------------------------------------------------------------------|-------------------------|-----|-----|----------------------------|------|------|
| Row Spacing                                                                       | Average Yield (bu/acre) |     |     | Grain Moisture Content (%) |      |      |
|                                                                                   | 30K                     | 35K | 40K | 30K                        | 35K  | 40K  |
| 20 inches                                                                         | 241                     | 248 | 251 | 19.8                       | 19.7 | 19.6 |
| 30 inches                                                                         | 243                     | 248 | 251 | 19.9                       | 19.8 | 19.8 |
| Average                                                                           | 242                     | 248 | 251 | 19.9                       | 19.8 | 19.7 |

- There was a wide range of yield responses to seeding rate at each row spacing for the various products (Figure 1).
- In general, the average yield increased as the seeding rate increased in both row spacings. However, the two row spacings yielded nearly the same at each seeding rate, with an overall yield difference of just 1 bu/acre between them.
- Neither seeding rate nor row spacing had an impact on grain moisture content.
- In this trial, 58% of the products yielded higher in 30-inch row spacing than in 20-inch spacing at both the 30K and 35K seeding rates; whereas at the 40K seeding rate, 64% of the products yielded higher in 30-inch spacing than in 20-inch spacing.



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## Key Learnings

- In the past, each trial location has carried out several row spacing trials in which 20-inch row spacing consistently out-yielded 30-inch row spacing. However, those trials usually consisted of a limited number of products and that may, in part, be the reason for the different outcome of this study year.
- By virtue of plant configuration, 20-inches is expected to perform better than 30-inches, especially at higher seeding rates. It should be mentioned that with a few products, 20-inch row spacing out-yielded 30-inch row spacing at all seeding rates.
- Crop yield response to farm operations can be highly variable, often impacted by the environmental conditions during the growing season. Growers should make it a habit of testing new products/concepts on a small scale on their farm to see how it fits in their operation.
- Growers are also advised to consult their trusted agronomists and dealers in choosing the best products for their operation.

## Legal Statements

The information discussed in this report is from a multiple site, replicated demonstration. 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.

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. All other trademarks are the property of their respective owners.  
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