Comparison of Row Spacing by Management Practice

Trial Objective

- Generation of farm revenue requires the optimization of production inputs in a sustainable manner. Over the years, advances in agronomic research, including crop protection, germplasm, nutrition, and equipment technologies, have benefited farmers with more inputs than ever before.
- Deployment of these inputs should be carefully evaluated for each operation to determine their effects on yield, farm revenue, and the environment.
- With the current commodity prices, some farmers contemplate cutting operation costs by eliminating some inputs, while others consider certain inputs to be key to their success if used in an integrated system for the crop.
- The objective of this study was to compare low- and high-input corn management practices in two row-spacing systems.

Research Site Details

Location	Soil Type	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield (bu/acre)	Seeding Rate (seeds/acre)
Huxley, IA	Clay loam	Soybean	Conventional	5/10/2018	10/4/2018	225	33K, 38K

Two management treatments were tested:

1. Standard Management
   - 33,000 seeds/acre seeding rate
   - 140 lb/acre nitrogen pre-planting
2. Premium Management
   - 38,000 seeds/acre seeding rate ($25.50/acre for the additional 5,000 seeds/acre)
   - 140 lb/acre nitrogen pre-planting
   - 40 lb/acre nitrogen side-dressed at the V6 growth stage ($9.20/acre)
   - Delaro™ 325 SC fungicide application at the VT/R1 growth stage ($22/acre)

- The two treatments were tested in both 20-inch and 30-inch row spacing.
- A 113 RM and 114 RM corn product were used for this trial.
- The trial was carried out on 10 ft x 225 ft long plots with two replications.
- 32% UAN was used as the nitrogen source.
- The same pre- and post-emergence weed management program was used in both treatments.

Understanding the Results

- For the standard treatment, the plant population was higher in the 20-inch spacing than in the 30-inch spacing. For the premium treatment, the plant population was higher in the 30-inch spacing (Table 1).
- There were very minor differences in grain moisture content between the treatments in both row spacings (Table 1).

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Table 1. Average agronomic response of the standard and premium management treatments in 20-inch and 30-inch row spacing. Early stand count was taken at the V4 growth stage. Harvest population was taken a few days before harvesting.

Row Spacing (inches)	Management Treatment	Early Stand Count (1000 seeds/acre)	Harvest Population (1000 seeds/acre)	Grain Moisture (%)
20	Standard	33.13	34.75	19.13
	Premium	37.50	37	19.78
30	Standard	32.94	32.75	19.70
	Premium	38.00	39.75	19.45

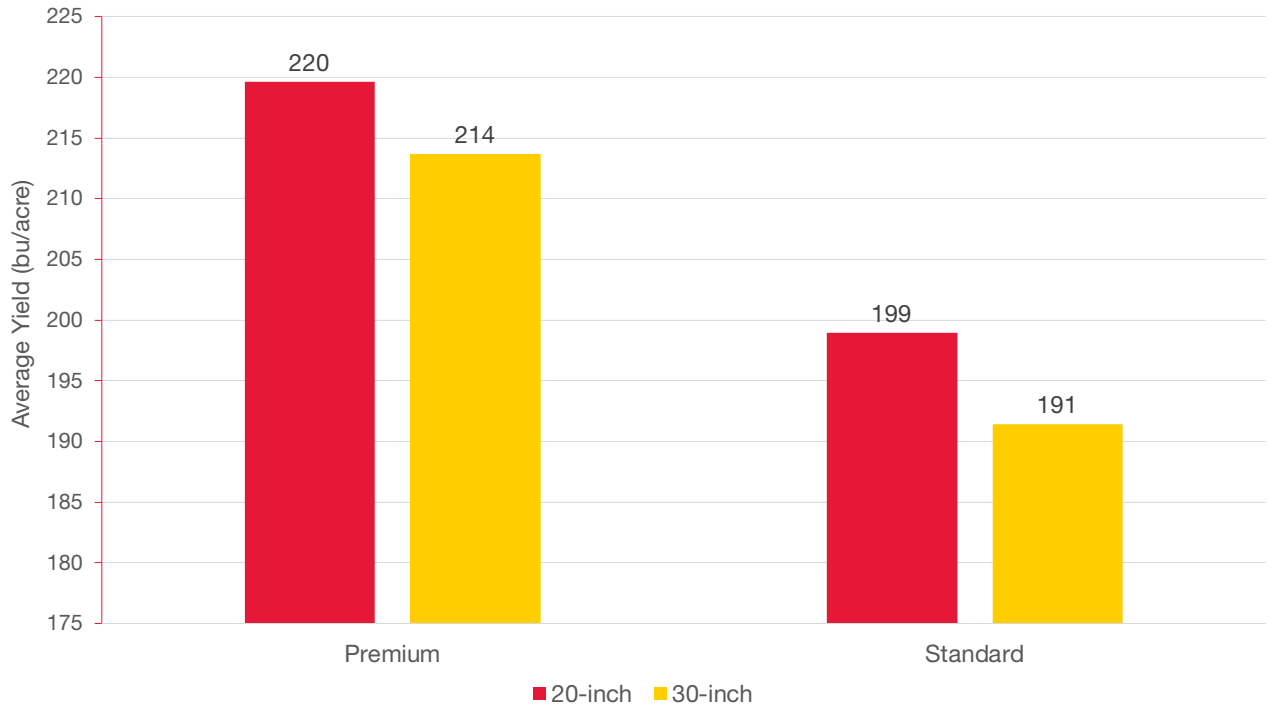

Figure 1. Average yield response of standard and premium management treatments in 20-inch and 30-inch row spacing.

- The premium treatment substantially out-yielded the standard treatment in both row spacings (Figure 1).
- The 20-inch spacing out-performed the 30-inch spacing across all treatments (Figure 1).

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What Does This Mean For Your Farm?

- At most production sites, 20-inch row spacing has been shown to be a better row spacing than 30-inch for corn production. Where equipment is available, 20-inch row spacing is recommended. In this trial, a yield advantage of 6-8 bu/acre was realized.
- In most corn operations, foliar fungicides, additional nitrogen, and a higher seeding rate often result in some form of yield increases. The question most often is whether the yield increases would be adequate to off-set their cost. In this trial, at the current grain price of $3.74/bu, a minimum of 15 bu/acre was required to pay for the additional inputs of the premium treatment. Thus, the premium treatment was profitable in both row spacings, generating 6-8 bu/acre in net gain over the standard treatment (Figure 1).
- Crop yield response to farm inputs can be highly variable, often impacted by the cropping sequence, environmental conditions during the growing season, and the selected germplasm. It is advisable that they be used in an integrated manner to optimize their synergistic effects. In this trial for example, an increased seeding rate would require additional nitrogen to meet the plant demand.

Legal Statements