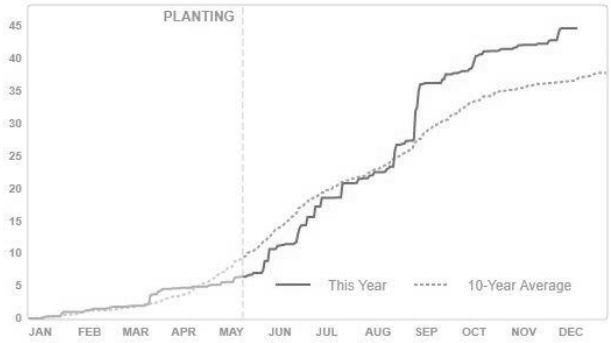
Data Intensive Farm Management: Soybean Seeding Rate

Study ID: 0816025201801
County: Cass
Soil Type: Wymore silty clay loam 0-2% slope; Wymore silty clay loam 3-6% slopes, eroded; Colo-Nodaway complex frequently flooded; Judson silt loam 2-6% slopes
Planting Date: 5/16/18
Harvest Date: 10/29/18
Row Spacing (in): 30
Variety: CX3622N
Reps: 8
Previous Crop: Corn
Tillage: No-Till
Herbicides: ***Pre:*** 5/7/18 ***Post:*** 6/30/18

Seed Treatment: CruiserMaxx® Vibrance®
Foliar Fungicides: None
Irrigation: Pivot, Total: 0
Rainfall (in):



Introduction: This project is part of the Data Intensive Farm Management project, a multi-university collaboration led by the University of Illinois at Urbana Champaign. The goal of these research studies is to utilize precision agriculture technology for conducting on-farm research. This study tested four soybean seeding rates: 100,000, 125,000, 150,000, and 175,000 seeds/ac. Treatments were randomized and replicated in 90' wide by 240' long blocks. The research study was implemented by developing a prescription map for the seeding rate blocks (Figure 1) and uploading it to the in-cab monitor. Geospatial yield monitor data were collected at the end of the growing season and post-processed to remove errors with Yield Editor Software from the USDA. As-planted data was also evaluated and blocks which did not achieve target treatment rates were not used in yield analysis; 8 of the 16 originally planned blocks shown in Figure 1 were used in the analysis. Previous on-farm research has demonstrated that soybean planting rates of 80,000 to 120,000 seeds/ac resulted in the highest profitability.

Figure 1. Soybean seeding rate prescription map.

Results:

	Yield† (bu/ac)	Marginal Net Return‡ ($/ac)
100,000 seeds/acre	51 A*	340.56 AB
125,000 seeds/acre	54 A	346.52 A
150,000 seeds/acre	53 A	331.10 AB
175,000 seeds/acre	52 A	318.60 B
P-Value	0.403	0.033

*Values with the same letter are not significantly different at a 90% confidence level
†Yield values are from cleaned yield monitor data. Bushels per acre corrected to 13% moisture.
‡Marginal net return based on $7.40/bu soybean and $55/unit of soybean seed.

Summary:

- There were no yield differences among the four seeding rates tested.
- The 100,000, 125,000, and 150,000 seed/ac treatments were not different in yield. The 175,000 seeds/ac treatment had statistically lower net return than the 125,000 seeds/ac treatment. These results are consistent with previous on-farm research results.
- We plan to conduct further analyses on this study to examine seeding rate response as related to soil characteristics.

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