Data Intensive Farm Management: Soybean Seeding Rate

Study ID: 0546155201801
County: Saunders
Soil Type: Yutan silty clay loam 2-6% slopes, eroded; Nodaway silt loam occasionally flooded; Filbert silt loam 0-1% slope; Tomek silt loam 0-2% slope
Planting Date: 5/9/18
Harvest Date: 9/27/18
Row Spacing (in): 15
Variety: Asgrow® AG29X8
Reps: 9
Previous Crop: Corn
Tillage: No-Till

Herbicides: ***Pre:*** Zidua® Pro ***Post:*** Flexstar® GT, Warrant® and Select®
Foliar Fungicides: Priaxor® sprayed at R3
Irrigation: Pivot, Total: 1.5"
Rainfall (in):

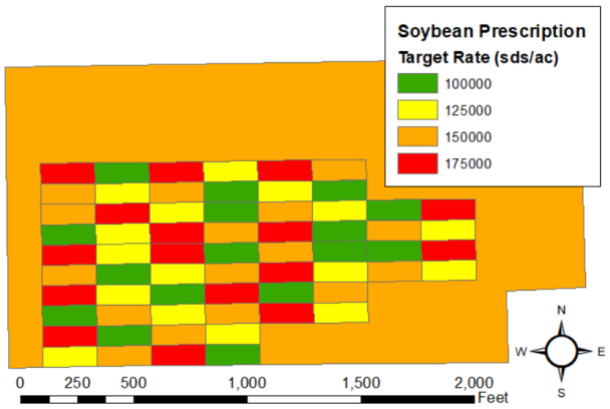

Figure 1. Soybean seeding rate prescription map.

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 across the entire field. 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; 9 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.

Results:

	Moisture (%)	Yield† (bu/ac)	Marginal Net Return‡ ($/ac)
100,000 seeds/acre	10.8 A*	65 A	441.78 A
125,000 seeds/acre	10.8 A	64 AB	425.51 A
150,000 seeds/acre	10.9 A	62 B	398.85 B
175,000 seeds/acre	10.9 A	63 AB	395.54 B
P-Value	0.612	0.067	0.0001

*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:

- The 100,000 seeds/ac treatment was higher yielding than the 150,000 seeds/ac treatment. There were no differences among yields of other seeding rates.
- There were no grain moisture differences among the seeding rates tested.
- Similar to other on-farm research studies on soybean seeding rate, the lower seeding rates had higher profitability. The 100,000 and 125,000 seeds/ac rates had significantly higher net return than the 150,000 and 175,000 seeds/ac treatments.
- We plan to conduct further analyses on this study to examine seeding rate response as related to soil characteristics.

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