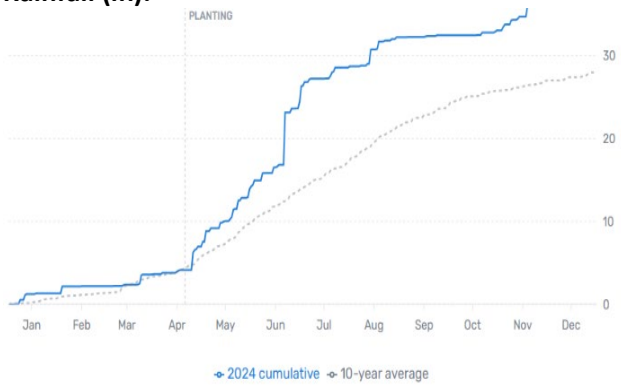
Irrigated Soybean Population Study

Study ID: 1539121202401
County: Merrick
Soil Type: Valentine-Boelus loamy fine sand 3-9% slopes
Planting Date: 4/20/24
Population: Variable
Row Spacing (in): 15”
Variety: Pioneer® P21A53E
Reps: 4
Previous Crop: Corn
Tillage: No-till
Herbicides: ***Post:*** June 1: 24 oz/ac Durango® + 24 oz/ac Enlist® + 4.5 oz/ac Redlock® + 1.5 oz/ac Zidua SC®.
June 28: 64 oz/ac Elevate® + 32 oz/ac Enlist Duo® + 6 oz/ac HiLo® + 32 oz/ac Liberty®+ 3.9 oz/ac RedLock® + 16 oz/ac Roundup PowerMAX®+ 3.9 oz/ac StrikeForce® + 1.5 oz/ac Zidua SC®
Irrigation: Pivot
Rainfall (in):



Introduction: This study utilized variable-rate seeding technology to evaluate four different seeding rates to determine which rate maximized yield and profit. A variable-rate prescription was developed to create randomized and replicated plots that were approximately 285 feet long by 200 feet wide blocks, as illustrated in figure 1. The target seeding rates were 100,000, 120,000, 140,000, and 160,000 seeds per acre. Stand counts were conducted for each seeding rate on May 28, 2024. We evaluated stand counts, yield, and net return. The prescription map was created and remotely uploaded to the tractor by our John Deere® Precision Product Specialist. The project required minimal in-field effort from the farmer as the randomized and replicated plots were established by the planter during seeding, and the combine collected the harvest data while harvesting the field.

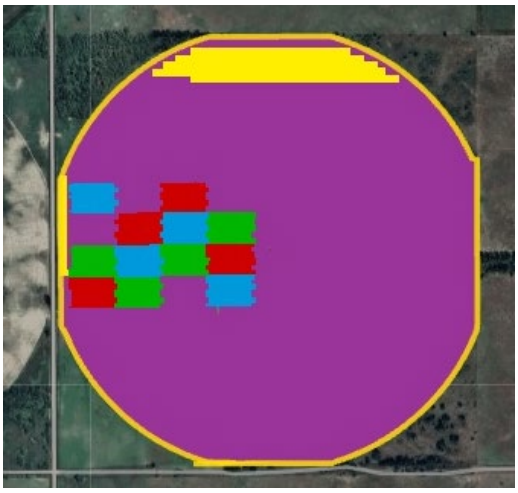


Figure 1: Project Design and Layout

Results:

	Stand Counts (plants/acre)	Moisture (%)	Yield (bu/ac)†	Marginal Net Return‡ ($/ac)
100,000 seeds/ac	66,417 D*	11.8 A	77 A	786 A
120,000 seeds/ac	81,500 C	12.1 A	77 A	776 A
140,000 seeds/ac	100,417 B	12.1 A	79 A	787 A
160,000 seeds/ac	124,417 A	12.0 A	78 A	762 A
P-Value	0.001	0.94	0.98	0.98

*Values with the same letter are not significantly different at a 90% confidence level.
†Bushels per acre corrected to 13% moisture.
‡Marginal net return based on $11/bu soybeans, $59.61/ac 100,000 seeds/ac, $71.53/ac 120,000 seeds/ac, $83.45/ac 140,000 seeds/ac, and $95.38/ac 160,000 seeds/ac.

Summary:

- There were no significant differences between moisture, yield, or marginal net return.
- These results are consistent with previous on-farm research findings.