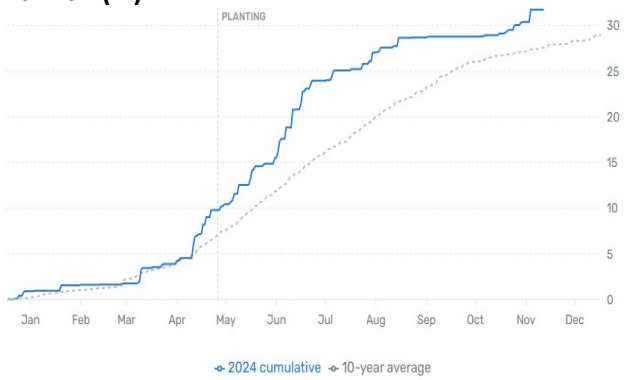
Irrigated Soybean Population Study

Study ID: 1528011202401
County: Boone
Soil Type: Hall silt loam 0-1% slope
Planting Date: 5/10/24
Harvest Date: 10/10/24
Population: Variable
Row Spacing (in): 30”
Variety: Asgrow® AG27XF3
Reps: 6
Previous Crop: Corn
Tillage: No-till
Herbicides: ***Pre:*** 8.5 oz/ac Authority Supreme® + 12 oz/ac Sterling Blue® ***Post:*** 1.3 pt/ac Charger Basic® + 42 oz/ac Liberty® + 30 oz/ac Roundup PowerMAX® + 12 oz/ac Section 3®
Foliar Insecticides: 2.8 oz/ac Leverage 360®
Foliar Fungicides: 8 oz/ac Delaro®

Fertilizer: 100 lb/ac 11-52-0 + 100 lb/ac MESZ (12-40-10-1) + 5 lb/ac 15% Boron

Irrigation: Pivot
Rainfall (in):



Introduction: Previous on-farm research in Nebraska has demonstrated that soybean planting rates of 80,000 to 120,000 seeds/ac resulted in the highest profitability. In 2023, this producer investigated the impact of reducing his main rate (140,000 seeds/ac) to a lower rate (115,000 seeds/ac), and observed that the reduced rate did not influence soybean yield, therefore profitability increased. In 2024, the same grower wanted to expand the trial and tried multiple rates. His goal was to determine the lowest seeding rate that will return the maximum profitability. Treatments were seeding rates of 60,000, 80,000, 100,000, and 120,000 seeds/ac.

Results:

	Moisture (%)	Yield (bu/ac)†	Marginal Net Return‡ ($/ac)
60,000 seeds/ac	8.1 A*	82 A	868 A
80,000 seeds/ac	7.9 A	81 A	844 AB
100,000 seeds/ac	8.1 A	81 A	835 AB
120,000 seeds/ac	8.0 A	80 A	814 B
P-Value	0.19	0.49	0.04

*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, $38.6/ac for cost of 60,000 seeds/ac, $47.4/ac cost of 80,000 seeds/ac, $59.3/ac cost of 100,000 seeds/ac, and $71.1/ac cost of 120,000 seeds/ac.

Summary:

- No significant differences were found in moisture or yield between the four target populations.
- Planting a target population of 60,000 seeds/ac resulted in a higher marginal net return ($868/ac) than 120,000 seeds/ac ($814/ac).