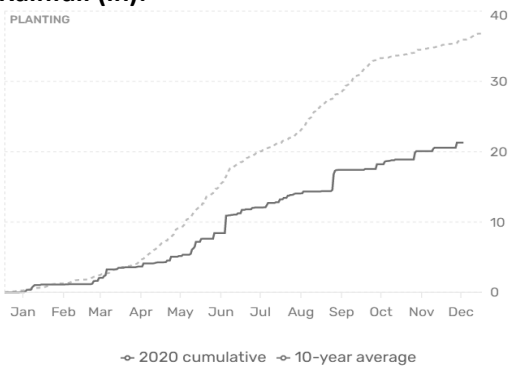
Soybean Benchmarking: Baseline vs Improved Soybean Practices

Study ID: 0572177202001
County: Washington
Soil Type: Marshall silty clay loam 0-2% slope; Marshall silty clay loam 6-11% slopes; Marshall silty clay loam 2-6% slopes
Harvest Date: 10/8/20
Row Spacing (in): 15
Hybrid: Pioneer® P31A22
Reps: 3
Previous Crop: Corn
Tillage: No-Till
Herbicides: 5 oz/ac Sonic®, 22 oz/ac FeXapan®, 32 oz/ac Abundit™ Extra, 7 oz/ac Assure® II
Seed Treatment: LumiGEN®
Fertilizer: Municipal biosolids have been applied to the field several times in the last 25 years.

Irrigation: None
Rainfall (in):



Soil Tests (June 2020 - average of study area)

pH	BpH	CEC	1:1 S Salts	OM	Nitrate-N	K	S	Zn	Fe	Mn	Cu	Ca	Mg	Na	H	K	Ca	Mg	Na	Mehlich P-III
		meq/100g	mmho/cm	%	ppm	ppm									%					ppm
6.8	6.6	17.9	0.13	4.5	34	122	13	5.78	76.7	14.1	3.20	2330	222	7	23	2	65	10	0	89

Introduction: Analysis of producer survey data revealed: (1) an average yield gap of 20-30% between current farmer yield and potential yield as determined by climate, soil, and genetics, and (2) a number of agronomic practices that, for a given soil-climate context, can be fine-tuned to close the gap and improve soybean producer profit. In Nebraska, three practices were identified as being important for improving yield and producer profit. These practices relate to planting date, seeding rate, and the use of foliar fungicides and insecticides. This study collectively tested the "baseline" practices versus the "improved" practices. Across four Nebraska sites in 2019, the improved treatment resulted in an average 8 bu/ac yield increase and $46/ac profit increase compared to the baseline treatment. Soybean cyst nematode tests for this field came back positive, with 40 eggs per 100 cc's of soil (3 oz) low. The field had a cereal rye cover crop that was grazed in the spring and terminated on April 30, 2020. The field was scouted for insects and disease pressure on the application date (July 17, 2020) and very low disease pressure was observed and no evidence of insects.

Baseline: Soybeans planted on May 12, at a rate of 160,000 seeds/ac, with no foliar fungicide or insecticide.

Improved: Soybeans planted on April 27, at a rate of 130,000 seeds/ac with a foliar fungicide (6.8 oz/ac Aproach® Prima) and insecticide (1 oz/ac Lamcap® II) applied on July 17, 2020.

Results:

	Stand Count (plants/ac)	Moisture (%)	Yield (bu/ac)†	Marginal Net Return‡ ($/ac)
Baseline	155,976 A*	8.5 A	56 B	473.20 B
Improved	128,109 A	8.3 A	63 A	535.89 A
P-Value	0.177	0.121	0.005	0.007

*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 $9.50/bu soybean, $50/unit seed ($62.34/ac for baseline and $54.86/ac for improved), $12.69 for fungicide and insecticide for the improved treatment, and $6.94/ac for application of fungicide and insecticide on improved treatment.

Summary:

- According to early season stand counts, there was no statistical difference in plant population between the two treatments.
- In 2020, the improved treatment (lower seeding rate with early planting and fungicide and insecticide application) resulted in a 7 bu/ac increase and $62.70/ac increase in profit.

Sponsored by: University of Nebraska Lincoln

In Partnership with: Nebraska Corn Board; Nebraska Soybean Checkoff; Nebraska Corn Growers Association; Nebraska Dry Bean Commission

This study was conducted in cooperation with a regional study funded by the North Central Region Soybean Research Program.