

Soybean Response to Row Spacing and Planting Rate, 2022

NDSU Langdon Research Extension Center

Bryan Hanson, Lawrence Henry, Rick Duerr

A field trial was conducted at the NDSU Langdon Research Extension Center to examine the response of soybean to row spacing and planting rate in northeast North Dakota. Experimental design was a randomized complete block split plot (whole plots = row spacing, sub-plot = planting rate) with four replications. A RR2X 00.7 maturity variety was planted on May 27 on a conventionally tilled Svea-Barnes loam soil in 24, 12 and 6-inch rows with planting rates of 125,000, 150,000, 175,000 and 200,000 pure live seeds (PLS)/acre. Harvest date was October 11.

There was no significant row spacing by planting rate interactions among the agronomic traits examined. Plant stands were greatest at the 6-inch spacing and highest seeding rate. No meaningful differences were observed for protein, oil or test weight for row spacing or planting rates (Table 1 and 2). Yields were the greatest at the 6- and 12-inch row spacing and the 175,000 and 200,000 planting rates. No visual differences were observed in the trial for lodging or plant maturity.

Previous research on soybean response to planting rates and row spacings across North Dakota (NDSU Extension publication A1961, June 2020) indicated that in eastern North Dakota row spacing of 15 inches or less at a planting rate of about 170,000 PLS/a provided optimum yields. Drier soil conditions at planting in the 2021 study may have increased seedling mortality and resulted in no significant differences in yield among row spacings.

Table 1. Soybean response to row spacing averaged over planting rates.

Row Spacing	Plant Stand	PLSE ¹	Protein	Oil	Test Weight	2021 Yield	2022 Yield
inches	plt/a	%	%	%	lbs/bu	bu/a	bu/a
6	150,099	94	34.4	15.9	56.5	43.1	64.2
12	120,827	75	34.5	15.9	56.6	46.9	61.3
24	137,413	85	34.3	16.0	56.5	44.2	52.3
LSD 5%	8,476	7.4	NS	NS	NS	NS	4.7
C.V. %	10.9	12.4	0.8	1.1	0.6	8.6	6.7

¹Pure live seed emergence

Table 2. Soybean response to planting rate averaged over row spacings.

Planting Rate	Plant Stand	PLSE ¹	Protein	Oil	Test Weight	2021 Yield	2022 Yield
pls/acre	plt/a	%	%	%	lbs/bu	bu/a	bu/a
125,000	110,385	88	34.3	15.9	56.7	42.9	56.7
150,000	123,116	81	34.3	16.0	56.7	44.6	57.8
175,000	145,546	83	34.5	15.9	56.6	43.9	61.6
200,000	165,403	86	34.5	15.9	56.3	47.6	61.3
LSD 5%	12,387	NS	0.2	NS	NS	3.2	3.3

¹Pure live seed emergence