

Pinto Bean Response to Row Spacing and Plant Population, 2021

NDSU Langdon Research Extension Center

Bryan Hanson, Lawrence Henry and Jewel Faul

A field trial was conducted at the NDSU Langdon Research Extension Center in cooperation with the NDSU Carrington Research Extension Center with support from Northarvest Dry Bean Growers Association to examine the response of pinto bean to row spacing and plant population. Experimental design was a randomized complete block split plot (whole plots = row spacing, sub-plot = plant population) with four replications. 'ND Palomino' was planted on May 26 on a conventionally tilled Svea-Barnes loam soil in 30- and 18-inch rows and 6-inch paired rows (centered at 30 inches) with planting rates of 65,000, 85,000, and 105,000 pure live seeds/acre to establish targeted stands of 50,000, 70,000 and 90,000 plants/acre, respectively. No diseases were observed in the trial during the growing season. The trial was direct harvested with a plot combine on September 23.

There was no significant row spacing by planting rate interactions among the agronomic traits. Averaged across planting rates, plant stand, PLSE and seedling mortality were similar among row spacing (Table 1). Test weight and 100 KWT had small but significant differences between row spacings. The 30-inch row spacing yielded significantly lower than the 18-in or paired 6-inch row spacings.

Ratio of established plants compared to planting rates was 86, 78 and 78 percent, for 65,000, 85,000 and 105,000 planting rates, respectively (Table 2). This lower percentage may have been due to drier seedbed conditions and interplant competition at the higher planting rates. No differences were observed in 100 KWT or test weight among planting rates. Yield increased with increasing planting rates with a significant difference between the 65,000 and 105,000 planting rates. No practical visual differences were observed in the field for lodging, plant height, or days to mature.

Table 1. Pinto Bean response to row spacing averaged over planting rates.

Row Spacing	Plant Stand	PLSE ¹	Seedling Mortality	100 KWT	Test Weight	Yield
inches	plt/a	%	%	g	lbs/bu	lbs/a
30	67,166	80	20	37.9	58.4	983
18	67,588	83	17	38.0	58.2	1638
paired 6	69,528	80	20	36.4	59.3	1421
LSD (0.05)	NS	NS	NS	0.6	0.5	379
CV (%)	7.4	7.4	31.0	4.5	1.2	10.9

¹Pure live seed emergence

Table 2. Pinto Bean response to planting rate averaged over row spacings.

Planting Rate	Plant Stand	PLSE ¹	Seedling Mortality	100 KWT	Test Weight	Yield
pls/acre	plt/a	%	%	g	lb/bu	lbs/a
65,000	55,789	86	14	37.6	58.7	1262
85,000	66,307	78	22	37.6	58.7	1336
105,000	82,186	78	21	37.1	58.6	1444
LSD (0.05)	4344	5.1	5.1	NS	NS	126

¹Pure live seed emergence