

Pinto Bean Response to Row Spacing and Plant Population, 2020

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The 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 29 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 60,000, 85,000, and 105,000 pure live seeds/acre to establish targeted stands of 50,000, 70,000 and 90,000 plants/acre, respectively. The trial was sprayed for white mold, none was observed in the trial. After maturity, plants were knifed into windrows and seed was harvested with a plot combine on September 29.

There was no significant row spacing x plant population interactions among the agronomic traits. The paired 6-inch rows had greater plant stands compared to the other row spacings. The 30-inch spacing matured four days earlier compared to the 18-inch and paired rows. Test weight, seed count, and yield were similar among row types.

Ratio of established plants compared to seeding rates was 62, 61 and 59%, for 60, 85 and 105K planting rates, respectively. This low percentage may have been due to drier and slightly lumpy seedbed conditions at planting and possibly lower seed vigor. There was no significant difference between test weight, seed count, or yield between plant populations although the yield did trend up as planting rate increased.

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

Row Spacing	Plant Stand	Flower	Full Maturity ²	Plant Height	Test Weight	Seed Count	Yield
inches	plt/a	DOY ¹	DOY	inches	lbs/bu	seeds/lb	lbs/a
30	45,592	198	254	13.9	58.9	1266	3319
18	49,791	197	258	14.3	59.2	1243	3423
paired 6	55,772	198	258	14.9	59.1	1227	3326
C.V. %	14.5	0.2	0.4	6.1	0.5	2.4	10.5
LSD 10%	4,498	NS	2	NS	NS	NS	NS

Pinto Bean response to plant population averaged over row spacing.

Planting Rate	Plant Stand	Flower	Full Maturity ²	Plant Height	Test Weight	Seed Count	Yield
pls/acre	plt/a	DOY ¹	DOY	inches	lbs/bu	seeds/lb	lbs/a
60,000	37,486	198	256	14.4	59.1	1232	3251
85,000	51,796	198	257	14.3	59.1	1247	3346
105,000	61,814	197	257	14.4	59.0	1256	3470
LSD 10%	5,159	0.2	NS	NS	NS	NS	NS

¹DOY (day of year): 197=July 18; 254=September 11.

²R9 - at least 80% of pods ripening, 30% of leaves still green.