

Pinto bean performance with row spacing and starter fertilizer, Carrington, 2013.
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A field study was conducted at the NDSU Carrington Research Extension Center to examine the performance of pinto bean with row spacing and starter fertilizer. Experimental design was a randomized complete block with split-plot arrangement (whole plot = 2 row widths and sub plot = 5 fertilizer treatments) with four replications. The dryland trial was established on a loam soil with 3.0% organic matter, 8.2 pH, and phosphorus at 5 ppm (low). The trial was strip-tilled on May 9-10 into 4- to 12-inch tall wheat stubble using a Yetter strip-till opener with 22- and 30-inch row spacing at 5- to 6-inch depth that established an 8-inch wide berm. Fungicide-treated 'Lariat' was planted with a John Deere 71 4-row flex planter in 22- and 30-inch rows on June 11. 10-34-0 was applied in-furrow at 2.5 and 5 gpa; in a 2x0-inch band (from seed) at 5 gpa during planting; and PRE broadcast at 8 gpa on June 11. The trial was direct-harvested with a plot combine on September 26.

Averaged across starter fertilizer treatments, dates for plant emergence, first flower and physiological maturity essentially were similar (Table). Canopy closure in 22-inch rows occurred 9 days sooner than with 30-inch rows. Early season plant stand was greater with 22-inch rows versus 30-inch rows. An advantage of 9.6 cwt/A was obtained with 22-inch rows compared to the wider rows. Averaged across row spacings, plant development time and canopy closure generally were similar among 10-34-0 fertilizer treatments. In-furrow fertilizer at 2.5 and 5 gpa decreased plant stand 5% and 8%, respectively, compared to the untreated check stand. Seed yield tended to be higher and seed size tended to be larger with all fertilizer treatments compared to the untreated check. Main factor interactions were not statistically significant among agronomic and seed measurements.

Table. Pinto bean response to row spacing and starter fertilizer, Carrington, 2013.									
Treatment	Plant					Seed			
	Emerge	Flower	Canopy closure	Physiological maturity	Stand (June 28)	Yield	Test weight	Seeds/lb	Seed protein
	Jday				plt/A	lb/A	lb/bu		%
Row spacing (inches):									
22	21	213	226	255	75,410	3420	58.8	1300	20.5
30	26	212	235	254	68,400	2460	58.1	1390	20.8
LSD (0.05)	NS	1	2	1	4,670	260	0.4	NS	0.2
Starter fertilizer (10-34-0):									
untreated check	171	212	231	254	73,200	2650	58.3	1470	20.7
In-furrow at 2.5 gpa	171	213	230	255	69,770	3020	58.4	1340	20.8
In-furrow at 5 gpa	171	213	229	256	67,480	3030	58.5	1360	20.6
2x0" band at 5 gpa	171	212	231	255	74,800	3120	58.5	1290	20.5
PRE broadcast at 8 gpa	171	212	230	254	74,260	2870	58.5	1280	20.5
LSD (0.05)	NS	1	NS	NS	NS	NS	NS	NS	NS
mean	172	212	230	255	71,900	2940	58.5	1350	20.6
CV (%)	0.2	0.3	1.8	0.8	10.0	13.7	1.1	14.1	1.9