

Pinto Bean Response to Row Spacing and Starter Fertilizer

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Field trials were conducted during 2011-14 at the NDSU Carrington Research Extension Center to examine pinto bean response to several plant establishment factors including row spacing and in-furrow (IF) starter fertilizer. The dryland trials were established in a loam soil with 2.8 to 4 percent organic matter, 6.3 to 8.2 pH, and low phosphorus (5-7 ppm). 'Lariat' was planted with a 4-row planter in 10- by 30-ft plots during late May to early June. At seed maturity, plants were hand-pulled and placed in windrows before seed harvest with plot combine during 2011-12 and 2014, while plants were direct-harvested in 2013.

Table 1 shows seed yield associated with row spacing. Averaged across three years, seed yield increased 645 lb/ac (21%) with 22-inch rows compared to 30-inch rows.

Table 1. Pinto bean yield with row spacing, Carrington, 2011-13.

Row Spacing inch	2011	2012	2013	3-year Average
	lb/ac			
22	1995	3925	3420	3115
30	1825	3120	2460	2470
LSD (0.05)	125	440	260	X

Averaged across three years (Table 2), IF-applied 10-34-0 fertilizer reduced plant stand 5 percent and 13 percent with 2.5 to 3 gallon ac⁻¹ and 5 to 6 gallon ac⁻¹, respectively, compared to the untreated check. Date of canopy closure was similar but physiological maturity was delayed with use of IF fertilizer compared to the untreated check. Seed yield with the low and high IF 10-34-0 rates increased 4 and 3 cwt/ac, respectively, compared to yield with the untreated check. These data indicate a slight stand loss may occur but the highest yield may be achieved with a low rate of IF-applied 10-34-0 compared to the untreated check.

Table 2. Pinto bean response to in-furrow starter fertilizer, Carrington, 2012-14.

In-furrow 10-34-0 Rate gpa	Plant			Seed Yield lb/ac
	Stand plants/ac	Canopy Closure Jday	Maturity Jday	
untreated check	68,830	220	249	2655
2.5 to 3	65,045	220	251	3060
5 to 6	59,795	220	253	2955



Thirty- and 22-inch rows in 2013 pinto bean trial.