

Pinto Bean Performance with Tillage Systems and Fertilizer Placement, Carrington, 2009

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A field trial was conducted at the NDSU Carrington Research Extension Center to examine the performance of pinto bean under several tillage systems and fertilizer placement options. Experimental design was a randomized complete block with four replications. The previous crop was wheat and fall standing stubble was 9- to 12-inches tall. The dryland trial was established on a Heimdal-Emrick loam soil with 3.6% organic matter, 6.3 pH, and phosphorus at 9 ppm (medium). Fall strip-till treatments were imposed on October 31, 2008, using a Yetter strip-till opener with 30-inch row spacing using a 5- to 6-inch tillage depth that established a berm 8- to 10-inches wide. Conventional-till plots were tilled on October 30, 2008, using a cultivator plus spring harrow and roto-tilled on May 11, 2009, at a 4-inch depth. 'Lariat' was planted with a John Deere 71 4-row flex planter in 30-inch rows on May 22. 10-34-0 was applied at 6 gal/A as in-furrow, 2x2- inch, or mid-row bands during planting. Crop residue was measured using the line transect method after planting. Plant stand counts were taken on June 10. Conventional-till plots were cultivated between crop rows on July 3. Plants were pulled and windrowed on September 18, and seed harvested with a plot combine on September 29.

Crop residue averaged 83% with no-till, 63 to 68% with strip till, and 8% with conventional till (table). Plant development generally was similar among treatments. Plant density was reduced with in-furrow compared to other fertilizer application methods and the untreated check. Among tillage treatments with 2x2-banded fertilizer, seed yield with conventional till was greater than no-till. Among strip-till treatments, yield with 2x2-banded and in-furrow application of fertilizer was greater than yield with mid-row banded fertilizer and the untreated check. Test weight was similar among treatments.

Table. Pinto Bean Performance with Tillage and Fertilizer Placement.

Tillage system/ 10-34-0 band placement	Crop residue %	Plant				Seed	
		Emerge	Flower	PM	Stand	Yield	Test weight
		Jday			plt/A	lb/A	lb/bu
Conventional/ 2x2 inch	8	155	202	249	55114	2533	61.9
No-till/2x2 inch	83	156	202	250	51794	2074	61.8
Strip till/2x2 inch	63	155	201	250	50466	2286	61.6
Strip till/mid-row	64	155	201	249	55114	1901	61.3
Strip till/in-furrow	65	156	203	250	36521	2245	62.0
Strip till	68	155	201	249	49138	1824	61.7
mean	58	155	202	249	49691	2143	61.7
CV (%)	7.1	0.1	0.4	0.1	16.1	9.3	0.8
LSD (0.05)	6	1	NS	NS	12087	306	NS