

Dry bean performance with tillage systems and fertilizer placement, Carrington, 2010.

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A field study was conducted at the NDSU Carrington Research Extension Center to examine the performance of dry bean under several tillage systems and methods of fertilizer placement. Experimental design was a randomized complete block with four replications. The previous crop was wheat and fall standing stubble was 8- to 12-inches tall. The dryland trial was established on a Fram-Wyard loam soil with 3.6% organic matter, 7.6 pH, and phosphorus at 10 ppm (med). Conventional-till plots were roto-tilled at a 3-inch depth on November 5, 2009, tilled on April 27, 2010 using a cultivator plus spring harrow, and cultivated between crop rows on June 23. Fall strip-till treatments were imposed on November 9 using a Yetter strip-till opener with 30-inch row spacing using a 5- to 6-inch tillage depth that established a berm 10-inches wide. 'Lariat' pinto bean was planted with a John Deere 71 4-row flex planter in 30-inch rows on May 26. Liquid 10-34-0 was applied at 4 gal/A during planting. Soil moisture and temperature were measured during early season in the three tillage systems (data not shown). Plants were hand pulled and placed in windrows on September 13, and seed harvested with a plot combine on October 16.

Crop residue levels taken after bean planting using the line-transect method were 74% with no-till (direct seed), 55-63% with strip till, and 23% with conventional till (Table). Plant emergence, stand and development were similar among tillage systems and fertilizer placement methods. Plant stand was low but seed yield averaged 2960 lb/A. Seed yield and size, and test weight were similar among treatments.

Table.

Tillage system/ 10-34-0 band placement	Crop residue %	Plant			Stand (June 14) plt/A	Yield lb/A	Seed	
		Emerge Jday	Flower Jday	PM			Test weight lb/bu	Count no./lb
Conventional/ 2x2 inch	23	158	200	243	33865	2949	59.6	1210
No-till/2x2 inch	74	158	200	243	24901	2824	59.4	1197
Strip till/2x2 inch	63	158	200	245	31541	3069	59.8	1214
Strip till/in-furrow	55	159	200	244	26229	3052	59.8	1229
Strip till/mid row	61	158	200	244	35193	2851	59.5	1186
Strip till	55	158	200	243	24569	3000	59.7	1213
mean	55	158	200	243	29383	2957	59.6	1208
CV (%)	6.5	0.2	0.0	0.8	23.1	8.2	0.6	3.5
LSD (0.05)	5	NS	NS	NS	NS	NS	NS	NS