

**Pinto bean response to early season applied liquid fertilizer, Carrington, 2015.**  
(Greg Endres and Mike Ostlie)

A field study was conducted at the NDSU Carrington Research Extension Center with support from Northarvest Dry Bean Growers Association to examine the performance of pinto bean primarily with early season application of fertilizer. Experimental design was a randomized complete block with four replications. The dryland trial was established on a conventional-tilled loam soil with 3.3% organic matter, 8.0 pH (0-6 inch depth), 33 lb/A nitrate-N, 5 ppm (low) phosphorus, 174 ppm (high) potassium and 0.43 ppm (low) zinc. Fungicide-treated 'Lariat' was planted with a 4-row planter in 30-inch rows on May 29. Fertilizer treatments included: 1) untreated check; 2) 10-34-0 preplant applied at 4.5 gpa and incorporated with a field cultivator plus harrow on May 27; 3) 10-34-0 preplant incorporated at 4.5 gpa followed by 2- by 0-inch band applied at planting at 3 gpa; 4) 10-34-0 band applied at 3 gpa; 5) 10-34-0 in-furrow (IF) applied at 3 gpa; 6) 10-34-0 IF applied at 3 gpa followed by Ascend (Winfield) applied at 4.5 fl oz/A plus MAX-IN Ultra ZMB (Winfield; 3.6% S, 0.1% B, 3% Mn and 4% Zn) at 38 fl oz/A at R2-5 plant stages on July 29; and 7) 6-24-6 (Gavilon) IF applied at 4.5 gpa. Plants were hand-pulled for field drying on September 14, and seed harvested with a plot combine on September 16.

Days from planting to selected plant development stages were statistically similar among treatments (Table). Early season plant stand was similar among treatments including stand with IF applied fertilizer. Canopy closure (75 percent or greater of plot area covered by soybean foliage) was similar among treatments. Plant lodging was minimal and appeared similar among treatments (data not recorded). Seed yield was similar among treatments but band- or IF-applied fertilizer tended to increase yield compared to the untreated check and broadcast-applied 10-34-0.

**Table. Pinto bean response to starter fertilizer, Carrington, 2015.**

Fertilizer treatment	Plant <sup>1</sup>					Seed		
	Emerge	Stand (23-Jun)	Flower	Canopy closure	Physiological	Yield	Test weight	Seeds/lb
	Jday	plt/A	Jday			lb/A	lb/bu	
untreated check	160	63,750	198	213	240	2360	58.2	1340
10-34-0 PPI broadcast at 4.5 gpa	160	59,100	198	213	240	2260	58.3	1310
10-34-0 PPI broadcast at 4.5 gpa/band at 3 gpa	160	65,740	199	217	240	2640	58.7	1290
10-34-0 band at 3 gpa	160	62,090	198	216	240	2710	58.6	1300
10-34-0 IF at 3 gpa	160	58,770	198	212	240	2590	58.7	1300
10-34-0 IF at 3 gpa /Post Ascend at 4.5 fl oz/A + MAX-IN at 38 fl oz/A	161	61,750	199	215	240	2600	58.0	1320
6-24-6 IF at 4.5 gpa	161	60,100	198	216	241	2550	58.7	1280
mean	160	61,610	198	214	240	2530	58.4	1310
CV (%)	0.3	10.0	0.2	2.2	0.3	9.7	0.7	4.4
LSD (0.05)	NS	NS	NS	NS	NS	NS	NS	NS

<sup>1</sup>Jday: 160=June 9; 198=July 17; 214=August 2; 240=August 28. Stand: Plant counts taken at 1-2 trifoliolate growth stage. Canopy closure: Date recorded with plot at  $\geq$ 75%.