Pinto Bean Response to Starter Fertilizer, Carrington

Greg Endres, Justin Berg 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 with planting time application of fertilizer. Experimental design was a randomized complete block with four replications. The dryland trial was established on a conventionally-tilled loam soil with 2.8% organic matter, 7.6 pH and phosphorus at 5 ppm (low). Fungicide-treated 'Lariat' was planted with a 4-row planter in 30-inch rows on May 28. Fertilizer treatments included: 1) untreated check; 2) 10-34-0 preplant applied at 9 gpa and incorporated with a field cultivator plus harrow on May 22; 3 and 4)10-34-0 in-furrow (IF) applied at 3 and 6 gpa on May 28; 5) 6-24-6 (Gavilon) IF applied at 4.5 gpa on May 28; and 6) 10-34-0 IF applied at 3 gpa on May 28 followed by MAX-IN Ultra ZMB (Winfield; 3.6% S, 0.1% B, 3% Mn and 4% Zn) at 32 fl oz/A plus Ascend (Winfield) applied at 4.5 fl oz/A at R2-3 plant stage on July 28. Plants were hand-pulled and placed in windrows on September 15, and seed harvested with a plot combine on September 18.

Days from planting to selected plant development stages were similar among treatments (Table). Early season plant stand was statistically similar among treatments but tended to be highest with the untreated check and lowest with 10-34-0 IF applied at 6 gpa. Canopy closure (percent of plot area covered by soybean foliage) visually evaluated on August 15 was highest with IF applied fertilizer. Plant lodging (0 = none and 9 = all plants lodged) at maturity was similar among treatments. Seed yield generally increased with IF applied fertilizer compared to the untreated check. Yield with broadcast-applied 10-34-0 tended to be less than IF applied fertilizer and was less than yield with 10-34-0 at 6 gpa and 6-24-6.

Table. Pinto Bean Response to Starter Fertilizer, Carrington

	Plant						Seed		
Fertilizer Treatment	Emerge Jday	Stand (June 28) plt/A	Flower Jday	Canopy Closure (Aug 15) %	Physiological Maturity Jday	Lodge (Sept 8) 0-9	Yield lb/A	Test Weight lb/bu	Seeds/lb
untreated check	158	72,379	201	24	242	1.5	1925	59.3	1680
10-34-0 PPI broadcast at 9 gpa	158	69,391	201	27	242	1.5	2096	58.3	1635
10-34-0 IF at 3 gpa	159	66,402	201	31	242	1.5	2387	59.3	1590
10-34-0 IF at 6 gpa	159	64,078	202	38	243	3.0	2680	60.2	1542
6-24-6 IF at 4.5 gpa	159	67,730	201	38	242	2.5	2647	59.8	1550
10-34-0 IF at 3 gpa/Ascend at 4.5 fl oz/A + Max-IN at 32 fl oz/A	158	71,715	201	37	242	1.5	2523	59.4	1625
LSD (0.10)	NS	NS	NS	9	NS	NS	477	NS	NS
C.V. %	0.4	7.5	0.3	23.2	0.4	54.2	16.2	1.4	5.0