

### **Soybean response to row spacing and plant canopy type, Carrington, 2016.**

(Greg Endres and Mike Ostlie)

The field study was conducted at the NDSU Carrington Research Extension Center with support by the ND Soybean Council to examine soybean response to paired rows and plant canopy types. The study was established on a conventionally-tilled Heimdahl-Emrick loam soil with flax as the previous crop. Experimental design was a randomized complete block with a factorial arrangement and four replications. Row spacing included: a) 7-inch pairs (centered on 28 inches), b) 14 inches, and c) 28 inches; and plant canopy types included: a) intermediate (Peterson Farms Seed 12R05 RR2Y) and b) bushy (PFS 15R05N RR2Y). The varieties have the same maturity group rating; yield potential, plant height and several other agronomic traits are similar. Inoculated seed was planted on May 18. Hail damage occurred on July 9 resulting in an estimated  $\leq 15\text{-}20\%$  leaf loss to plants near or at the first flower (R1) stage of growth. The trial was harvested with a plot combine on September 28.

Averaged across the two varieties, plant development, plant height and lodging, and pod height were similar among row spacing (Table). Early and late season plant stand was similar among row spacing. The late-season stand across row spacing averaged 8% less than the early season stand. Canopy closure on August 15 was nearest to complete with 14-inch rows. At least 90% canopy closure occurred with 14-inch rows 18 days before paired rows (data not shown). Also, 90% canopy closure generally did not occur with 28-inch rows. Seed yield was similar between paired and 14-inch rows, and greater than yield with 28-inch rows (Table).

Averaged across row spacing, the intermediate canopy type variety had a higher early season stand and tended to have a higher late-season stand compared to the bush-type variety stand, likely resulting in similar level of canopy closure. Seed yield was similar between varieties.

Plant flower, physiological maturity and canopy closure %; and seed oil content with the row spacing by plant canopy type interaction were statistically significant (data not shown). Generally, canopy closure on Aug. 15 was similar between the two canopy types with each row spacing.

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Main factor	Description	Plant									Seed		
		Emergence	Stand (June 13)	Flower	Canopy closure (Aug. 15)	Physiological maturity (R8 stage)	Lodge (Sept. 21)	Height (Sept. 21)	Stand (Sept. 21)	Pod height <sup>b</sup> (Sept. 21)	Yield	Oil <sup>c</sup>	Protein <sup>c</sup>
		Jday <sup>a</sup>	plants/A	Jday	%	Jday	(0-9)	cm	plants/A		bu/A	%	
Row spacing	7-inch pairs	151	129,660	188	86	261	1	59	119,880	5	50.7	16.0	34.1
	14 inches	151	133,220	188	92	261	1	57	122,725	3	52.5	16.1	33.9
	28 inches	151	134,820	188	77	260	1	57	122,370	4	44.6	16.1	34.3
LSD (0.05):		NS	NS	NS	4	NS	NS	NS	NS	NS	6.1	NS	0.3
Plant canopy type	intermediate (12R05)	151	141,105	189	85	261	2	57	126,165	4	50.7	16.2	33.4
	bush (15R05N)	151	124,030	187	86	260	1	58	117,150	5	47.8	15.9	34.8
LSD (0.05):		NS	13,156	1	NS	NS	1	NS	NS	NS	NS	0.2	0.2
CV %		0.3	11.4	0.4	4.3	0.5	44.3	8.2	14.3	48.8	11.6	1.3	0.7
<sup>a</sup> JDay: 151=May 31; 188=July 7; 261=September 18.													
<sup>b</sup> Distance from base of pod to soil surface.													
<sup>c</sup> Values at 13% moisture.													