

**Impact of selected establishment factors and foliar fungicide on soybean production, Carrington, 2013.** (Gregory Endres, Mike Ostlie, Steve Schaubert, and Hans Kandel)

The field study was initiated in 2011 and continued in 2013 at the NDSU Carrington Research Extension Center to examine soybean response to individual and combinations of selected establishment factors and foliar fungicide that may increase net return for producers. Experimental design was a randomized complete block with split-plot arrangement with four replications. Whole plots were planting dates, split plots were tillage systems [conventional till and direct seeded into standing small grain stubble (no-till)], and starter fertilizer (untreated check, broadcast applied, and 0x2-inch band). The study was established on a loam soil with spring wheat as the previous crop. Spring soil analysis: 82 lb/A (0-24") nitrate-N, 7 ppm P, 141 ppm K, 2.0% organic matter, and 8.0 pH. Conventional-till plots were roto-tilled on November 8, 2012 and tilled on May 15, 2013 with a field cultivator plus harrow at a 3-inch depth. Inoculated, fungicide-treated Dairyland Seed 'DSR0747/R2Y' was planted on May 29 and June 12 in 30-inch rows with a John Deere 71 4-row flex planter. Gavilon liquid 6-24-6 was band applied during planting at 8 gpa or broadcast applied immediately after planting at 12 gpa. Fungicide (Priaxor at 4.5 fl oz/A) + NIS (Preference at 0.125% v/v) was applied across 2 of 4 reps on August 12 to R3- to R4-stage soybean. The trial was harvested with a plot combine on October 10.

Soybean planted on May 28 emerged 8 days earlier, flowered 6 days earlier, matured 7 days earlier and had 14 additional days of growth from planting to maturity compared to the June 12 planted soybean (Table 1). Earlier-planted soybean tended to have a higher yield, heavier test weight, larger seed, and higher seed oil and protein. Conventional-till soybean had greater seed yield, larger seed and higher seed protein compared to no-till. Response to fertilizer treatments was similar. Factors statistically significant with the planting date by tillage interactions: flower date, plant and pod height, and yield (Table 2). No factors were significantly significant with the planting date by fertilizer or tillage by fertilizer interactions. Physiological maturity, seed yield, and test weight were similar between fungicide and untreated check (Table 3).

**Table 1. Soybean response to main factors in establishment study, CREC, 2013.**

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Main factor	Description	Plant						Seed				
		Emergence	Stand <sup>a</sup>	Flower	Physio-logical maturity	Plant height	Pod height	Yield	Test weight	Number /lb	Oil <sup>b</sup>	Protein <sup>b</sup>
		Jday	plt/A	Jday	Jday	cm	cm	bu/A	lb/bu			%
Planting date	29-May	163	134,740	<b>196</b>	<b>273</b>	65	<b>2</b>	40.5	<b>57.3</b>	<b>2740</b>	<b>14.8</b>	<b>35.7</b>
	12-Jun	171	129,430	202	280	65	4	39.1	56.8	2850	14.5	35.0
Tillage system	conventional	167	133,360	199	<b>276</b>	<b>68</b>	3	<b>41.9</b>	57.1	<b>2770</b>	14.6	<b>35.6</b>
	no-till	167	130,815	199	277	62	3	37.8	57.0	2820	14.7	35.1
Starter fertilizer placement	untreated check	167	132,805	199	276	66	3	40.4	57.0	2810	14.7	35.4
	broadcast	167	133,055	199	276	64	3	39.1	56.9	2810	14.7	35.2
	band	167	130,400	199	276	65	3	40.0	57.1	2760	14.7	35.4
Mean		167	132,085	199	276	65	3	39.8	57.0	2790	14.7	35.3
CV %		0.2	8.4	0.2	0.5	8.2	32.8	8.4	0.6	2.6	2.2	1.4
LSD (0.05): bold-typed numbers are statistically different for each factor within column.												
<sup>a</sup> Stand counts taken on June 28.												
<sup>b</sup> Values at 13% moisture.												

**Table 2. Soybean response to planting dates by tillage system in establishment study, CREC, 2013.**

Factors <sup>a</sup>	Plant						Seed				
	Emergence	Stand <sup>b</sup>	Flower	Physio-logical maturity	Plant height	Pod height	Yield	Test weight	Number /lb	Oil <sup>c</sup>	Protein <sup>c</sup>
Date x tillage system	Jday	plt/A	Jday	Jday	cm	cm	bu/A	lb/bu		%	
First x conventional till	163	134,245	196	273	65	2	40.7	57.2	2720	14.6	35.9
Second x conventional	171	132,475	202	279	71	4	43.0	56.9	2750	14.9	35.5
First x no-till	163	135,240	196	273	64	2	40.4	57.3	2810	14.5	35.2
Second x no-till	171	126,385	202	280	60	4	35.2	56.7	2890	14.5	34.7
Mean	167	132,085	199	276	65	3	39.8	57.0	2790	14.7	35.3
CV %	0.2	8.4	0.2	0.5	8.2	32.8	8.4	0.6	2.6	2.2	1.4
LSD (0.05)	NS	NS	1	NS	4	1	2.8	NS	NS	NS	NS
<sup>a</sup> Date: First= May 29; Second=June 12.											
<sup>b</sup> Stand counts taken on June 28.											
<sup>c</sup> Value at 13% moisture.											

**Table 3. Soybean response to foliar fungicide, Carrington, 2013.**

Treatment <sup>1</sup>	Physiological maturity	Yield	Test weight
	Jday	bu/A	lb/bu
foliar fungicide	277	38.5	57.0
untreated check	276	41.2	57.0
C.V. (%)	0.7	12.9	0.7
LSD (0.05)	NS	ND	NS
<sup>1</sup> Priaxor = 4.5 fl oz/A + NIS at 0.125% v/v to R3-4 stage soybean.			