Soybean response to tillage systems, Carrington, 2006. (Greg Endres and Paul Hendrickson)

A field study was conducted at the NDSU Carrington Research Extension Center to examine the performance of soybean under several tillage systems. Experimental design was a randomized complete block with four replications. The previous crop was wheat. The dryland trial was established on a Heimdal loam soil with 3.1% organic matter and 6.8 pH. Conventional-till plots were tilled on September 29 using a roto-tiller at a 3- to 4-inch tillage depth. The fall strip-till treatment was applied on October 13 using a Yetter strip-till opener with 30-inch row spacing using a 3- to 4-inch tillage depth that established a berm 12-inches wide. The spring strip-till treatment was applied on April 19 at a 2-to 4-inch tillage depth. Conventional-till plots were tilled twice on May 16 using a field cultivator plus spring harrow. Innoculated 'RG600NRR' soybean was planted with a John Deere Max-Emerge II row crop planter in 30-inch rows at 185,000 pls/acre at a depth of 1.75- to 2-inches on May 18. Conventional-till plots were cultivated between crop rows on June 21. The trial was harvested with a plot combine on September 12.

Plant development and growth generally were similar among tillage systems (Table). An optimum soybean stand was established in all tillage systems, with stands tending to be highest with conventional till. Seed yield tended to be greater with reduced-till treatments compared to yield with conventional till. This likely was due to soil moisture conservation with reduced tillage. Seed quality was similar among treatments.

Table.										
				Days						
	Plant	Plant	Plant	to		Seed	Test			
Treatment	emerge	stand	height	flower	PM	yield	weight	Seeds/lb	Oil	Protein
	Jday	plt/A	inches	Jday	Jday	bu/A	lb/bu		%	%
conventional till	149	190243	19.1	180.8	240	16.16	57.3	3538	19.5	36.6
no-till	149	184931	20.3	180.3	240	18.08	56.9	3563	19.5	36.1
strip till - fall	148	181279	20.4	180.3	240	18.42	57.2	3494	19.5	36.4
strip till - spring	149	179951	20.8	180	240	18.42	57.3	3414	19.6	36.3
mean	149	184100	20.1	180	240	17.8	57.2	3502	19.5	36.3
CV (%)	0.3	10.3	6.9	0.3	0.1	9.4	0.6	3.3	1.2	1.3
LSD (0.05)	1	NS	NS	NS	NS	NS	NS	NS	NS	NS