

Sunflower performance with tillage systems and fertilizer placement, Carrington, 2008.

(Greg Endres and Paul Hendrickson)

A field study was conducted at the NDSU Carrington Research Extension Center to examine the performance of sunflower under several tillage systems and fertilizer placement options. 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 2.6% organic matter and 6.3 pH. The fall strip-till treatments were applied on October 23 using a Yetter strip-till opener with 30-inch row spacing using a 6- to 7-inch tillage depth that established a berm 10- to 12-inches wide. Conventional-till plots were tilled on October 26, 2007 using a roto-tiller at a 3-inch depth and twice at a 2- to 3-inch depth using a field cultivator plus spring harrow on May 2, 2008. Mycogen '8N358CL' oil sunflower was planted with a John Deere 71 4-row flex planter in 30-inch rows on May 14. 10-34-0 was applied at 5 gal/A. Plant stand counts were taken on June 9. Conventional-till plots were cultivated between crop rows on July 1. The seed was harvested with a plot combine on October 27.

Plant development and stand, and seed yield and quality were similar among treatments (Table). Lack of crop response to fertilizer was likely due to very high soil phosphorus (20 ppm).

Table.								
Tillage system/ fertilizer placement	Plant emerge	Bloom	PM ¹	Stand	Yield	Test weight	Seed moisture	Seed oil
	Jday			plt/A	lb/A	lb/bu	%	%
Conventional/ band	150	218	266	24,570	1173	31.8	8.9	44.2
No-till/band	150	217	266	21,915	1253	31.7	8.7	43.9
Strip till	150	216	265	25,235	1259	31.2	8.8	43.1
Strip till/fall band	150	216	266	24,570	1457	31.4	8.9	43.4
Strip till/band	150	217	266	22,575	1501	31.7	8.4	43.3
Strip till/in-furrow	151	217	266	24,570	1520	31.9	8.3	42.9
mean	150	216	266	23,335	1351	31.6	8.8	43.5
CV (%)	0	0.4	0.1	16	21.2	1.6	7.6	1.9
LSD (0.05)	NS							
¹ PM=Physiological maturity.								