

Corn response to tillage systems, Carrington, 2007.

(Greg Endres and Paul Hendrickson)

A field study was conducted at the NDSU Carrington Research Extension Center to examine the performance of corn 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 3.2% organic matter and 6.9 pH. Conventional-till plots were tilled on October 16, 2006 using a roto-tiller at a 2-inch tillage depth. The fall strip-till treatment was applied on October 16 using a Yetter strip-till opener with 30-inch row spacing using a 4- to 5-inch tillage depth that established a berm about 10-inches wide. The spring strip-till treatment was applied on April 23, 2007 at a 5-inch tillage depth that established a berm about 12-inches wide. Conventional-till plots were tilled twice at a 3-inch depth using a field cultivator plus spring harrow on May 8. ‘DKC35-51’ was planted with a John Deere Max-Emerge II row crop planter in 30-inch rows on May 10. Conventional-till plots were cultivated between crop rows on June 22. The seed was harvested with a plot combine on November 2.

Plant emergence from planting was delayed 1 to 3 days and days to silk were delayed 2 to 3 days with no-till compared to other tillage systems (Table). Plant stand was similar among treatments. Seed yield was similar among tillage systems, but tended to be lower with no-till and higher with strip till. Test weight, seed moisture and protein were similar among treatments, but moisture tended to be highest with no-till. Seed starch with no-till was greater compared to strip till.

| Table. | | | | | | | | |
|---------------------|-----------------|-------------|--------------|------------|-------------|---------------|--------------|-------------|
| Tillage treatment | Corn | | | | | | | |
| | Plant emergence | Plant stand | Days to silk | Seed yield | Test weight | Seed moisture | Seed protein | Seed starch |
| | Jday | plt/A | Jday | bu/A | lb/bu | % | | |
| conventional | 143 | 35857 | 207 | 155.8 | 58.0 | 18.2 | 9.6 | 67.9 |
| no-till | 144 | 32537 | 210 | 140.1 | 58.3 | 19.7 | 9.0 | 68.4 |
| strip till - fall | 141 | 33644 | 208 | 160.8 | 58.3 | 18.0 | 9.4 | 67.4 |
| strip till - spring | 143 | 33201 | 207 | 166.9 | 58.9 | 18.5 | 9.3 | 67.3 |
| mean | 143 | 33810 | 208 | 156 | 58.4 | 19 | 9.3 | 67.8 |
| CV (%) | 0.3 | 4.4 | 0.3 | 10.3 | 2.9 | 5.5 | 5.7 | 0.6 |
| LSD (0.05) | 1 | NS | 1 | NS | NS | NS | NS | 0.8 |