

CATTANACH, NORMAN R.^{1*} and LAURA F. OVERSTREET², ¹Soil Science, North Dakota State University, Department 7680, P. O. Box 6050, Fargo, ND 58108-6050 and ²Department of Crop Sciences, University of Illinois, 314 ERML MC-051, 1201 W. Gregory Drive, Urbana, IL 61801. **Four years of strip tillage in a wheat-beet-soybean-corn rotation in ND and MN.**

This is the longest-running project examining effects of strip tillage on three major row crops at multiple locations in the Red River Valley region. The study was replicated at two locations: the Prosper research station in ND and a grower-cooperator's farm near Moorhead, MN. Both sites are relatively well-drained and located on regionally representative soil types with no history of major disease. The study was designed as a randomized complete split plot with two whole plot treatment factors: strip tillage vs. conventional chisel plow tillage. Split plot treatment factors are each of the four crops used in the rotation (i.e. wheat, sugarbeet, soybean, and corn); each crop is present in each year of the study. The data produced from this study proves that strip-tillage can produce sugarbeet, soybean, and corn yields that equal or exceed those obtained using conventional tillage. Although sugarbeet root yield was the same for both tillage treatments, reduced sugar and greater loss to molasses was consistently observed in strip tillage systems. These issues can be largely overcome with appropriate management practices. During the 4 years of this study, corn consistently (6 out of 8 site-years) produced higher yields with strip tillage than conventional tillage. Averaged over all site-years, soybean produced statistically equal yields under the two tillage systems. Based on results of this study, we do not recommend spring strip tillage for sugarbeet production on moderate- to poorly-drained soils in the Red River Valley. Otherwise, strip tillage is an effective, productive, and cost-saving tillage alternative to conventional full-width tillage for sugarbeet, corn, and soybean production in the Red River Valley.