



## USDA-CSREES 2007 National Water Quality Conference

### Conservation tillage on-farm research and demonstrations in Minnesota

In glacial till derived soils of Minnesota, no-till planting of corn into soybean residue increases the risk of reduced yields compared with more aggressive tillage. Lower temperatures and higher moisture under high residue early in the season delay planting and reduce growth rates. On-station experiments indicate that strip-tillage can maintain yields, while leaving sufficient residue to protect soil from wind and water erosion. Adoption of strip-till has been slow in Minnesota, so a two-year on-farm research/demonstration trial was launched to compare reduced tillage systems with chisel-plow. Tillage systems, applied in replicated field-sized strips, were compared at 10 farm-sites in 2004 and 9 sites in 2005. Sites were managed in partnership with the UM Extension Service and Monsanto Corporation. Averaged across 12 site-years where similar tillage treatments were compared, corn grain yields were 11.4, 11.7, 11.5, and 11.7 Mg ha<sup>-1</sup> for no-till, strip-till, one-pass (spring field cultivate), and chisel plow, respectively. These results parallel long-term average yields for these treatments on the research station at Waseca, MN. At 6 other site-years where only strip-till and chisel plow were compared, chisel plow tillage yielded 0.5 Mg ha<sup>-1</sup> greater than strip-till, with all of the difference due to the 3 site years of 2004, a colder, wetter growing season. Summer field days to demonstrate equipment and provide tillage management information were held, with 780 attendees at 9 locations in 2004, 350 at 4 locations in 2005, and 600 at 2 large "Strip-Tillage Expos" (field demonstrations with inside presentations) in 2006. On-site questionnaires/evaluations by field day participants indicated that many came to explore strip-tillage for their farms but expressed concerns about management for reduced tillage, especially fertilizer application methods and rates, drainage requirements, and cost of equipment.

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