



April 24, 2009

NO-TILL SAVES IRRIGATION WATER

Water is the lifeblood of agriculture but increasingly, producers are facing pressures to conserve its use. In Nebraska, some Natural Resource Districts have implemented irrigation water restrictions. Switching to no-till and controlled wheel traffic can conserve groundwater and surface water used for irrigation and reduce irrigation-related costs.

UNL field trials show using center pivot irrigation and no-till practices instead of furrow irrigation and conventional tillage can reduce irrigation need by up to half.

Switching to no-till and center pivot irrigation conserves groundwater and surface water and gives farmers the maximum benefit when they irrigate.

Years ago, farmers were taught that tillage was needed to prepare a seedbed. Today farming practices prove this is a myth. Soils research shows tillage can break down soil structure and cause increased soil crusting and agricultural runoff during irrigation and rainfall events.

With conventional tillage and cultivation, crop residue is destroyed, which leaves soil exposed to wind and water erosion. No-till leaves crop residue on the soil surface, which provides for better water infiltration into the soil and greatly decreases evaporation.

We have an increasing number of farms doing no-till in a crop rotation under irrigation in high yielding environments. The Plymouth area is an excellent example.

Conventional tillage dries the soil before planting to the depth of the tillage layer. Typically one-third to one-fourth inch of moisture is lost per tillage pass. In a no-till system, seeding depth usually can be adjusted so seed is placed into moist soil, thus avoiding an early season irrigation to ensure good germination.

Seasonal crop water use is a combination of evaporation from the soil surface and water transpired through the crop. With a center pivot, soil is constantly wetted at the surface, causing additional evaporation. Leaving crop residue on the soil surface can reduce evaporation significantly.

Past field trials have found that when producers switch from conventional tillage to no-till under center pivot irrigation, they can save 3 to 5 inches of water. Studies of continuous no-till corn by former UNL Extension Engineer Norm Klocke in west central Nebraska have proven a combined growing season and no-growing season savings of 4 to 5 inches. This water savings reduces pumping costs and is a direct savings to the operator. The no-till farmer also saves labor, fuel and farming equipment costs.

For more information about no-till, including tips for adopting no-till and a spreadsheet to calculate cost savings, visit UNL's "Surviving High Input Costs in Crop Production" Web page at <http://cropwatch.unl.edu/survivinghighinputcosts.htm> and click on "No-Till and Controlled Wheel



Traffic Can Save Irrigation Water" and "No-Till Farming in Dryland Cropping Systems."

Randy Pryor, Extension Educator
University of Nebraska-Lincoln Extension in Saline County
306 West 3rd Street, Wilber, NE 68465

Phone (402) 821-2151 • Fax (402) 821-3398 • e-mail: randy.pryor@unl.edu