

NDSU Tile Drain Field Demonstration

The Situation

Several factors have increased farmers' interest in subsurface drainage in the Northern Plains in recent years. Much of the area has experienced increased precipitation during the past two decades. Increased farm commodity prices has also resulted in higher land values. Many farmers who have installed subsurface drain systems on their land have noted significantly higher crop yields on tilled land. More companies are offering tile drain installation in the region in response to the increased interest.

Coupled with the interest in subsurface drainage have come societal concerns about the impact of subsurface drainage on flooding, runoff water quality and its impact on surface water quality. Neighboring landowners are concerned about possibilities of increased runoff on their land. People are concerned about the impact of more drainage on wetlands and potential corresponding effects on wildlife. Farmers planning to install subsurface drainage who participate in USDA farm programs are required to comply with USDA wetland regulations.

Extension Response

The North Dakota State University Extension Service conducted tile drain field demonstrations at the Big Iron Farm Show in West Fargo on Sept. 13-15 2011. The demonstrations included a comprehensive educational program of tile drainage. Each afternoon an educational presentation was followed by tile drain installation demonstrations. A tent was setup at the edge of the field for related displays

A local tile drainage company demonstrated the installation of tile and associated pumps and control structures. Sections of the 71-acre field were tilled during each afternoon demonstration. The field design included a control structure that will allow the operator to release only the amount of water needed to provide an aerated crop root zone and ensure good traffic conditions for field operations. This design feature also will facilitate future drainage comparisons on sections of the field.

Several topics related to subsurface drainage were discussed by a variety of experts prior to the daily tile installation demonstrations. Presentation topics preceding the demonstrations included tile drainage effects on crop production, design issues, concerns and impact of various types of soil properties on subsurface drainage systems, regulations applicable to subsurface drainage in this region, tile drain water quality research results, tile drain impacts on saline soils, the economics of tile drainage, drainage water management in the Red River Valley, and the potential for using cover crops to remove soil moisture.

Impacts

Approximately 450 participants learned about tile drainage equipment, surface drain design options, and the economics of tile drainage in this region. NDSU researchers and NRCS personnel shared information about wetland determinations and other governmental regulations applicable to tile drainage, which soil types be problematic for subsurface drainage, and potential impacts on saline soils. This information will guide their future decisions whether subsurface drainage is appropriate for their farm. Many of these individuals will seek additional information at other Extension hosted workshops.

Contact

John Nowatzki
Ag Machine Systems Specialist
NDSU Extension Ag & Biosystems Engineering
Dept 7620, Box 6050
Fargo, ND 58108-6050
701-231-8213
John.Nowatzki@ndsu.edu

Thomas Scherer
Irrigation and Drainage Specialist
NDSU Extension Ag & Biosystems Engineering
Dept 7620, Box 6050
Fargo, ND 58108-6050
701-231-7239
Thomas.Scherer@ndsu.edu