



USDA-CSREES 2006 National Water Quality Conference

[The Impact of Subsurface Drainage Design on Water Quality](#)

The effects of subsurface drainage depth on hydrology and nitrate-nitrogen loss were examined over five years in a field experiment at the University of Minnesota Southern Research and Outreach Center—Waseca, MN. During 2001 to 2005, subsurface drainage flow and nitrate nitrogen were continuously monitored on nine small watersheds, ranging in size from 0.8 to 2.5 ha. Drainage depths of 90 and 120 cm were evaluated. Drainage flow measurements were made with tipping buckets. Nitrate-nitrogen concentration was measured with nitrate probes and with flow-weighted water sample analysis. The shallow (90-cm) drainage depth reduced average annual drainage volume up to from eight to 25 percent and annual nitrate-nitrogen losses from -6 (increase) to 30 percent.

Author: Gary Sands

Coauthor(s): Inhong Song, Lowell Busman