

Phosphorus Loss in Tile Drainage Systems

November 2016



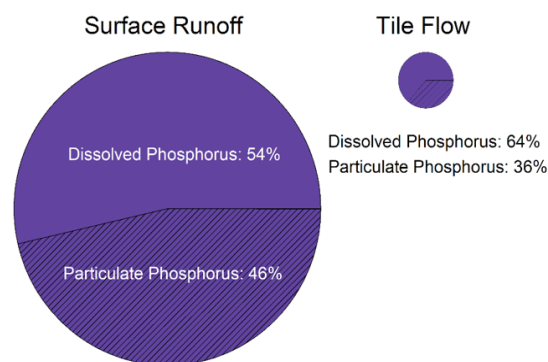
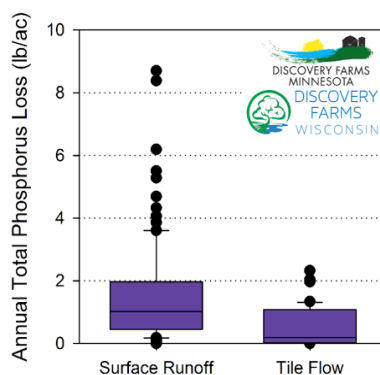
Discovery Farms programs in Minnesota and Wisconsin have collected edge-of-field water quality information from 24 farms and 45 fields starting in 2002. A total of 112 site years of surface runoff data and 47 site years of tile flow have been collected at the various locations. This large dataset allows for review and analysis of important water quality topics. This fact sheet examines the factors that impact phosphorus loss in tile systems.

Phosphorus loss is mainly transported by surface runoff, however, there are a few tile sites with higher losses.

Median annual total phosphorus loss from surface runoff was 1.00 lb/ac with a typical range from 0.45 to 1.88 lb/ac.

Median annual total phosphorus loss from tile flow was 0.20 lb/ac with a typical range from 0.05 to 1.18 lb/ac.

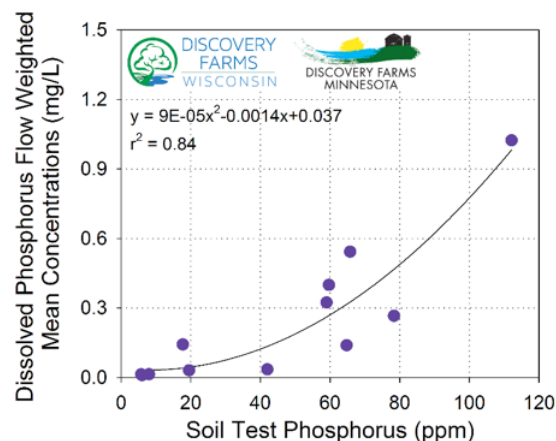
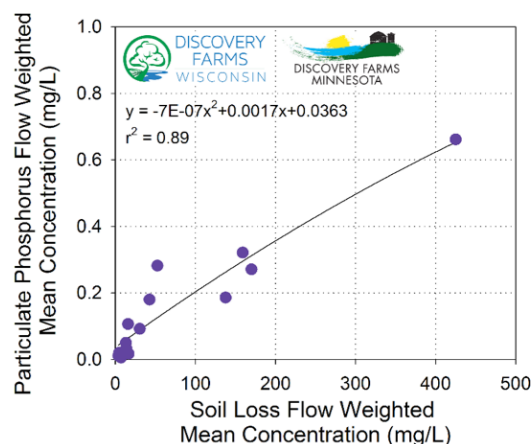
64% of the total phosphorus that moved through tile systems was in the dissolved form compared to 54% in surface runoff.



To reduce phosphorus loss in tile drainage systems:

1. Manage soil test phosphorus levels.

Dissolved phosphorus concentrations increased as soil test phosphorus levels increased at Discovery Farm locations. Routine soil testing and following University recommendations for phosphorus fertilizer applications will effectively manage soil test phosphorus levels and reduce dissolved phosphorus losses.



2. Prevent soil from entering tile lines.

Particulate phosphorus concentrations increased as soil loss concentrations increased. Updating and maintaining tile drainage systems will decrease the amount of soil loss and subsequently particulate phosphorus loss. For more information on updating and maintaining tile drainage systems visit <http://bit.ly/2fqc22J> and read more about Soil Loss in Tile Drainage Systems at <http://bit.ly/2fVEBGm>.