Soil denitrification and microbial biomass under riparian pastures, forests and cropland in NE missouri. (S11-nelson231815-Oral)

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Abstract:

In many riparian areas, denitrification is thought to be the major sink for off-site nitrogen moving through the buffer zone. We compared potential denitrification in three NE Missouri watersheds of the Mark Twain Reservoir, a major municipal drinking water source. Denitrification enzyme activity (DEA) was significantly greater in riparian forest and pasture soils than in annually harvested row crop soils. Rates of DEA in the top 15 cm in crop field soils ranged up to 3500 ng N/g soil/day in 2000; rates in forest and pasture soils ranged from 1500 to 12,000 ng N/g soil/day. Seasonally, DEA varied in response to moisture conditions, with spring having moderate rates, summer relatively low rates, and fall having the highest rates for 2000. In 2001, summer rates were comparable to the fall, likely due to an unseasonably wet summer. One creek site had significantly higher sand content, and generally showed lower rates of potential denitrification throughout the course of the study. Microbial biomass exhibited many of the same patterns as potential denitrification.

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