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***SOIL, WATER, AND CLIMATE  
MS DEFENSE SEMINAR***

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***Carbon Sequestration in Restored Prairie Pothole  
Wetlands***

by

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Tuesday, December 2, 2008  
9:00 – 10:00 am  
S415 Soil Science Building

**ABSTRACT:**

Restored wetlands have the potential to sequester atmospheric carbon in the form of soil organic matter. Many of the prairie pothole wetlands of Minnesota were drained for agricultural purposes and the restoration of these wetlands provides an opportunity to sequester soil organic carbon that was lost during decades of cultivation. Twenty-nine wetland basins in Renville County, MN were assessed as part of a chronosequence to determine the capacity of restored wetlands to sequester carbon. Results of this study showed that the rates of carbon sequestration are not uniform throughout wetland zones. We estimated the rate of carbon sequestration in the marsh zone (central and wettest zone) of restored wetlands to be  $195 \text{ g C/m}^2/\text{yr}$  in the upper 25cm of soil. This study was unable to find evidence of significant carbon accumulation in the low prairie (outermost and driest zone) and wet meadow zones (intermediate wetness) of the restored wetlands. Assuming that the marsh zone of newly restored wetlands will reach the carbon content of the marsh zone of reference wetlands given sufficient time, the soil organic carbon content of the marsh zone will nearly double. This is an increase of approximately  $9,000 \text{ g C/m}^2$  in the upper 25cm of soil in the timeframe of a few hundred years.