Soils and Hydrology Along a Wet Meadow Hydrosequence in Western Massachusetts. (S10-blanchet085623-Oral)

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Abstract:

The effects of hydrologic parameters on soil morphological development was studied in a wet meadow located in Western Massachusetts. Seasonal hydrology was examined in 1996, 1998 and 2001, using tensiometers and redox probes installed in triplicate at depths of 30 and 45-cm at eight sites along the hydrosequence. Groundwater levels and hydraulic heads were monitored using observation wells and nested piezometers, respectively. Changes in soil chroma along this transect can be attributed to topographic position and seasonal changes in moisture potential including discharge and recharge. Data indicated that at sites typically undergoing discharging conditions and displaying near saturated moisture potentials, the amount of total Fe and Mn in the soil and soil water was the greatest. A positive test for reduced Fe using alpha-alpha dipyridyl was found at sites with high total Fe levels in the soil water. When water table levels decreased later in the season, this reduced Fe and Mn becomes oxidized and remains in the soil resulting in high chroma soils. This process may prevent formation of a depleted matrix and may complicate the delineation of wetlands using national hydric soil indicators.

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