Determination of Exchangeable Base Cations and Ammonium in Wetland Soils by Ion Chromatography. (S10-noll164747-Poster)

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Abstract:

Cation exchange capacity (CEC) may be determined by the sum of exchangeable bases. In some soil environments such as wetlands, NH4 may contribute to the CEC. The method presented here determines exchangeable bases and NH4 using a single extraction and analysis by ion chromatography (IC). The extraction procedure uses 0.1 M Ba to extract exchangeable cations. Three washings with the extracting solution are completed and combined. Analysis of individual washings found three washings to remove greater than 97% of the exchangeable cations. Analyses were completed using a Dionex DX-600 IC and CS-12A analytical column with methanesulfonic acid as the eluent in a stepped gradient program. Analyses are completed in 22 minutes. Two wetland soil samples were collected to evaluate the efficacy of the method. Individual extractions and cumulative samples were analyzed for Na, K, NH4, Mg and Ca by IC. For comparison, Na, K, Mg and Ca were analyzed by ICP-AES from the same washings, and NH4 was analyzed by ISE from a separate extraction. Results for all exchangeable cations compared well between the two methods with no greater than 7% difference for any individual sample.

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