The Impact of Electron Donor Type on Denitrifying Microbial Community Structure. (S11-carlson170433-Oral)

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Abstract:

This study was the first phase in a long-term research project aimed at enhancing engineered bank stabilization structures to imitate natural riparian conditions. The objective was the identification and characterization of readily available, economically viable organic matter sources for these modified bank stabilization structures. Experiments were conducted at two levels: continuous flow-through columns and lab-scale batch reactors. Experiments indicated an acceptable correlation between the flow through and batch bioreactors. The good correlation between these approaches allows the simpler batch approach to be used to determine denitrifying activity with different organic matter sources and varying inert material/OM ratios. Media samples were taken and subjected to molecular microbial community structure analysis (microscopy as well as in situ probe hybridization for SSU rRNA). These results allow comparison of the microbial community at different scales and under different conditions providing insight on the important variables for sustainable denitrification. These results will allow the design of a full-scale bank stabilization-denitrification structure.

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