Influence of Microbial Community Composition and Function on Water Quality from Dairy Constructed Wetland Wastewater. (S03-ibekwe185531-Oral)

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Abstract:

The impact of large-scale dairies on recharge water quality is a critical issue in protecting primary drinking water supply. The accumulation of nutrients released from dairy washwater lagoons and nonpoint source runoff degrades the quality of water and affects groundwater basin miles downstream from the dairies. Water quality monitoring was conducted on raw (influent) and final product water (effluent) in addition to various points throughout the wetlands treatment process at sampling ports at one, two and three-foot depths below the surface of the gravel. Samples were analyzed for different nutrients and chemicals. Total bacteria community composition and the diversity of ammonia-oxidizing bacteria were also analyzed. The greatest success in treatment was for BOD, suspended solids, filtered and unfiltered COD and coliforms, with moderate success in the removal of nitrogen and phosphorus. Dominant bands from amoA genes were cloned and sequenced. The majority of retrieved sequences from all sites in the wetlands were Nitrosomonas-like and only few Nitrosospira-like sequences were detected.

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