Effect of Swine and Dairy Manure Amendments on Microbial Communities in Three Soils. (S03-larkin084417-Poster)

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Abstract:

Understanding the impacts of manure amendments on soil microbial communities can provide valuable insight into nutrient availability and potential crop and environmental effects. Soil microbial community characteristics, including microbial populations and activity, substrate utilization profiles, and fatty acid methyl ester (FAME) profiles, were compared in three soils amended or not amended with dairy or swine manure at two temperatures (18 and 25 C) and at two soil water regimes (constant and fluctuating) in laboratory incubation assays. Both dairy and swine manure amendments increased general bacterial populations in all soils, temperatures, and water regimes. Fungal populations were increased only by swine manure in two Maine soils. Microbial activity was increased by both manures in an Illinois soil, but only by dairy manure in the Maine soils. Substrate utilization and FAME profiles demonstrated distinct differences among soil types, as well as amendment, temperature, and water effects. Soil type was the dominant factor determining microbial community characteristics and resulted in differing effects of manure amendments at different temperatures and water regimes. These results indicate the importance of soil and environmental factors in effects on microbial communities.

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