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Footprints in the Landscape: Sustainability through Plant and Soil Sciences

[Start](#) [Browse by Division of Interest](#) [Author Index](#) [Help](#) [Search](#)

Response of Native Short Grass Prairie and Conservation Reserve Program Grassland Soil Microbial Communities to Feedyard Cattle Manure Applications.

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Abstracts of the 2009 ASA-CSSA-SSSA Annual Meeting

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This study documents the effect of annual (both fall and spring) applications of three rates of N (50, 125, and 200 kg/ha) in the form of feedyard cattle manure on grassland ecosystems and on soil microbial composition. Replicate treatments (n=4) of feedyard cattle manure N applications plus checks were made to native short grass prairie and old world bluestem grass ecosystems starting in the spring of 2000 and continued until the fall of 2006. A significant increase in biomass in response to N application was first observed in 2004 and continued through the last biomass sampling in 2007. Soil samples for microbial community composition at three depth ranges (0-2.5, 5.0-7.5, and 30.0 to 32.5 cm) were obtained in November of 2008. Microbial composition was investigated using 16S DGGE-PCR and clone library methods that targeted Proteobacteria, Bacteroidetes, and Firmicutes. Differences in microbial community composition were observed between both native range and old world bluestem grass communities and between N applications.

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