Effects of Cattle Grazing on proportions of Fungi and Bacteria in Soil. (S03-kisselle173655-Poster)

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Abstract:

The effects of nutrient inputs and forage utilization on soil carbon stocks and the soil microbial community is important in developing sustainable production systems. In this study, we sampled plots with varying forage utilization that were fertilized with either inorganic N-P-K or high broiler litter. Forage utilization treatments included unharvested, hayed, light and heavy cattle grazing pressure. Previous work found higher values for the rate of increase of soil organic C, soil microbial biomass, and potentially mineralizable C in grazed versus ungrazed plots. Using phospholipid fatty acid (PLFA) biomarkers we found these increases in soil C and microbial biomass has been accompanied by a shift in the composition of the microbial community. Bacterial PLFAs were significantly higher in the low grazing plots than in the hayed or unharvested plots. Conversely, the fungal PLFAs tended to increase in the ungrazed (hayed and unharvested) plots when the fertilizer source was inorganic fertilizer. Results support Bardgett's hypothesis that ungrazed systems favor 'slow cycles' dominated by fungi while grazing leads to 'fast cycles' dominated by bacteria.

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