Soil Quality and Plant Species Composition of Kansas Native Prairie Sites. (S07-gordon210407-Poster)

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Abstract:

In uncultivated prairies, perennial vegetation contributes to formation of the underlying soil. At the same time, soil properties provide ideal conditions for specific plant species to thrive. This study focuses on the hypothesis that physical and chemical properties of soil have a combined influence on plant species composition in a prairie ecosystem. In a greenhouse study, we compared plant growth and water uptake among seven prairie species grown individually in pots of four different soils from Kansas native prairie sites. Differences were observed among plants of the same species across all four soils. In a subsequent field study, we measured plant percent coverage in twenty-four plots among these four prairie sites. We then measured field bulk density, moisture content, slope, depth of A horizon, and water infiltration at these sites. Soil samples were taken and tested for extractable P (Olsen), K, Mg, and Ca. Nutrient differences were found in sites of highest and lowest legume coverage. To assess total soil quality, further analysis of these samples will include aggregate stability, organic matter content, pH, texture, active C, total C and N, and mineralizeable N.

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