

PRESERVING THE PAST, NUTURING THE FUTURE: INORGANIC FERTILIZERS AND THE VITAL ROLE OF PHOSPHORUS AND POTASSIUM IN NATIVE PRAIRIE RESTORATION

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ABSTRACT

Phosphorus (P) and potassium (K) are macronutrients required to sustain plant growth and reproduction. They are commonly applied as inorganic fertilizer by farmers across the world for their crops but these nutrients are also important for the development and sustainment of native grassland systems. Much of the Great Plains region has either been used as farmland or grazing land. These practices can disturb natural nutrient cycling by removing nutrients without adequate replacement. Current literature regarding nitrogen (N) application in rangelands has largely focused on production of biomass and its relation to carbon (C) cycling, but little research exists regarding the application of P and K in rangeland systems. This study evaluates effects of inorganic fertility application on soil and plant communities in the southern great plains region. This experiment was placed on disturbed prairie soils in central Oklahoma. N, P, and K were added as urea, 0-46-0, and 0-0-60 at 67 lbs/ac, 57 lbs/ac, and 57 lbs/ac respectively. Soil sample analysis included macronutrients, micronutrients, texture, pH, and EC. Forage sample analysis looked at nutrient uptake and total N and total C. Currently, ample literature is available for nitrogen application on native grasslands but response to P and K is unclear. This study looks to better understand native prairie responses to immobile nutrients and assist in native prairie restoration in the future.