Fertilization of Tallgrass Prairie in Eastern Oklahoma Following Long-Term Hay Management. (C06-redfearn075347-Poster)

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Abstract:

Fertilization of prairie sites has resulted in small yield increases, but this has been based only on observations from grazed prairie sites. A study was conducted at two sites in Oklahoma from 1998-2001 to evaluate supplemental fertilization on herbage yield. Nitrogen, P, and K, including a 0-0-0 control, 100-40-0, 100-0-60, 0-40-60, 50-40-60, and 100-40-60, were applied yearly to sites that had been in continuous hay production for 50 or more years. Yield response to fertility treatment was similar at both sites. Yield was greater when combinations of N, P, and K were applied than when combinations of any two additional nutrients were applied, even when applied in greater amounts. Yield was 3941 kg per ha for the 100-0-60 treatment compared with 5556 kg per ha for the 50-40-60 treatment. Herbage yield at the site with lower productivity potential increased only 784 kg per ha per yr, whereas yield at the site with greater productivity potential increased 1680 kg per ha per yr. This study suggests that prairie sites historically managed for hay production require balanced N, P, and K which may be more important than any single nutrient alone. Recovery appears to be a long-term process, but factors other than low fertility could limit productivity.

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