Incorporating Inorganic Fertilizer into Perennial Grasslands. (S06-pote142254-Poster)

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Abstract:

Inorganic fertilizers can greatly increase forage yields where soil is deficient in essential plant nutrients; but the usual practice of surface applying fertilizers on pastures allows nutrients to be transported from fields in runoff, while much of the ammonia-N volatilizes. Incorporating fertilizer into the soil can reduce such problems in tilled systems, but has not previously been used for perennial forage systems. In this study, a knifing technique was used to move fertilizer granules into the forage root zone with minimal disturbance of soil structure, perennial forage crop, and thatch. Objectives were to determine effects of fertilizer incorporation on water, soil, and nutrient losses in runoff, and effects on forage yield. Field plots (silt loam soil) were constructed on well-established bermuda and mixed grass pastures with 8-10% slopes. Each plot had borders and a downslope trough with sampling pit for runoff collection. Homogenized 13-13-13 fertilizer was applied (1340 kg/ha) by one of three methods (surface spreading, incorporation, or surface spreading on soil-aeration cuts), with six replications of each treatment plus three control plots. Fertilizer incorporation significantly decreased nutrient concentrations (usually by more than 80%) in runoff from natural and simulated rainfall, did not affect water and soil losses, and tended to increase forage yield.

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