

SOIL PHOSPHORUS SPATIAL DISTRIBUTION IN PASTURES RECEIVING POULTRY LITTER APPLICATIONS

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Abstract

Environmentally-based P management strategies could be improved by delineating management zones incorporating the effects of landscape position on soil morphology, hydrology, and soil P distribution. Three farm pasture sites in SW Missouri receiving long-term poultry litter applications were sampled by landscape position (summit, shoulder, upper backslope, middle backslope, lower backslope, footslope, drain) for soil P (Bray 1 P, CaCl₂ P, total P) at two depths (0-5 cm, 5-15 cm). Low landscape positions (drain, footslope) at Sites 1 and 2 had significantly ($p < 0.05$) lower P concentrations compared to high positions (summit, shoulder, upper backslope, middle backslope, lower backslope) for both soil depths. Conversely, Site 3 had higher soil P concentrations in lower landscape positions (footslope, lower backslope, middle backslope) compared to higher positions (upper backslope, shoulder, summit), although not always significant for each position at each depth. Differences in P distribution among sites may be due to differences in litter management practices and the significantly higher soil P and more dissected, complex topography at Site 3 compared to Sites 1 and 2.

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