



Characteristics of Phosphorus in Agricultural Landscapes

Author(s):

Oldham, L.; Cox, M.; Ramirez-Avila, J.; Kingery, W.

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Abstract

Phosphorus (P) management presents a conundrum in the diverse soils of Mississippi. This required plant nutrient is naturally abundant in bioavailable forms in many alluvial plain region soils (Delta), yet native soil P levels restrict productivity in some Coastal Plain region soils. However, some Coastal Plain and Jackson Prairie soils have elevated bioavailable P from past management with copious amounts of animal production by-products. Phosphorus movement from soil to surface waters is implicated in environmental degradation such as Gulf of Mexico hypoxia, yet P fertilizers are not widely used due to high levels of native labile P in the Delta. There exists a need for better understanding P properties and dynamics to improve nutrient and landscape management so the appropriate management practices are targeted to specific, unique regions of Mississippi. In this paper we review, using molecular to landscape scales of reference: P forms found in soils and surface waters, the relevant chemistry, plant uptake mechanisms, and movement in the landscape. The implications for management will be discussed.