

Title

Alum Amendment Effects on Soil Phosphorus Stabilization in Poultry Litter Amended Sandy Soils.

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abstract

Increased poultry production has contributed to excess nutrient (i.e., phosphorus (P)) problems in Atlantic Coastal Plain soils due to land application of poultry litter and manure. The objective of this study was to investigate the alum treatment remediation strategy to reduce P release from long term poultry manure/litter amended Delaware Coastal Plain soils (Rumford loamy sand (Rm) and Pocomoke sandy loam (Pm)) using long term (25d) batch desorption laboratory studies (i.e., replenishment method). Previous field studies showed that alum treatment was somewhat effective in reducing bioavailable P on Arkansas loamy pasture soils. However, the effects on acidic sandy soils are not well understood. P rich Rm and Pm soils (total P: 1244 mg/kg, and 601 mg/kg, respectively) were incubated with aluminum sulfate (0.2g of alum / 50 g soil) at 10% moisture content for 5 d. Compared to soils that had not been reacted with alum, P release was not significantly reduced after 3 d of desorption. However, long term desorption (25d) resulted in approximately 4% (Rm) and 12% (Pm) reductions in total desorbable P compared to the non-alum reacted soils.

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