Use of Coal Combustion By-Products for Minimizing Soil Phosphorus Inputs into Watersheds. (S06-allen143602-Poster)

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Abstract:

Nutrients inputs, especially P and N from intensive agricultural practices are thought to have harmful effects on water quality in watersheds. The objective of this study was to determine the effects of treating soils with fluidized bed combustion fly ash (FBC), flue gas desulfurization (FGD), and anthracite refuse ash (ARA) to control soluble P loss from P-enriched soils treated with poultry litter for about 20 years. Surface runoff levels of P loss was determined by the use of runoff collection devices treated with FBC, FGD, and ARA into the top 5.08 cm of soil at rates of 0, 10, 20 and 40 g/kg. Lysimeters were installed at depths of 30 and 60 cm and treated with FBC, ARA and FGD at the same rates to determine if P leaching was minimized into ground water. Soil and water samples were analyzed for nitrate-N, total-N total-P, available-P, particulate-P and trace metals; Cd, Cu, Cr, Pb, Ni and Zn. Water soluble-P significantly decreased ($p < 0.05$) in soils treated with FGD and FBC with the best results from using FGD. Results from this study will be used to provide farmers with recommendations to improve existing best management practices (BMPs) for minimizing nutrient runoff.

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