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## Land application of spent gypsum from ditch filters: phosphorus source or sink?

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### ABSTRACT

Agricultural drainage ditches can provide a direct connection between fields and surface waters, and some have been shown to deliver high loads of phosphorus (P) to sensitive water bodies. A potential way to reduce nutrient loads in drainage ditches is to install filter structures containing P sorbing materials (PSMs) such as gypsum to remove P from ditch flow. The objective of this study was to determine the effect of land-application of gypsum removed from such filters on soil P forms and concentrations. Gypsum was saturated at two levels on a mass basis of P and applied to two soils of contrasting texture, a silt loam and a sandy loam and applied at both a high and low rate. The treated soils were incubated in the laboratory at 25°C, and samples were collected at 1, 7, and 119 days after initiation. Soil type, time after application, gypsum rate, and P saturation level all had a significant impact on soil P forms and concentrations. However, it appears that land application of spent filter gypsum at realistic rates would have little effect on soluble P concentrations in amended soils.

### KEYWORDS

Phosphorus Sorbing Materials; Gypsum, Ditch Filter

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