Water Treatment Residuals as Soil Amendments for Agricultural Buffer Strips: Effects on Plant Growth and Phosphorus Leaching. (S11-sims075612-Poster)

Authors:

- R.A.Eaton - *University of Delaware*
- J.T.Sims - *University of Delaware*

Abstract:

Recent research has shown that saturation of soils with P can not only enhance soluble P losses in runoff but also by leaching into shallow ground waters. Consequently, there is a need to develop and evaluate innovative soil conservation practices that will reduce subsurface P losses. We evaluated the use of water treatment residuals (WTRs) as soil amendments for buffer strips using laboratory and greenhouse studies. Results from lab studies clearly showed that WTRs could stabilize soil P in less soluble forms and also increase the P sorption capacity of high P soils varying in chemical and physical properties. Greenhouse studies showed that a municipal alum WTR and an industrial Fe WTR could reduce P solubility and leaching without negatively affecting the growth of either agronomic crops or plants typically grown in buffer strips. Implications of these results for long-term management strategies needed to achieve the reductions in P loading required by state nutrient management laws and USEPA Total Maximum Daily Load (TMDL) agreements will be discussed.

Corresponding Author Information:

James Sims
University of Delaware
Dept. Plant and Soil Sciences
Newark, DE 19711

phone: 302-831-1389
fax: 302-831-0605
e-mail: jtsims@udel.edu

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