

Advances in the Characterization of Phosphorus in Organic Wastes. (S11-toor687116-oral)

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Abstract:

There is international interest today in the fate and transformations of phosphorus (P) applied to soils in organic wastes. The growing interest in this topic stems from (i) long-standing agricultural concerns about the most efficient means to beneficially recycle the P in organic wastes as a plant nutrient and (ii) increased regulation of all forms of organic P used as soil amendments in order to prevent nonpoint source pollution of surface and shallow ground waters. The typical approach used by land managers to characterize P in organic wastes is to measure total P. Most recently, there has been growing interest in measuring water soluble P to determine the potential effect of land application of organic wastes on soluble P losses via surface runoff and leaching. Most scientists involved in this research recognize that measuring total or water soluble P will provide only limited information about the fate of P in soils amended with organic wastes. Fortunately, recent research has begun to advance our knowledge of the speciation of P in organic wastes by applying new analytical methodologies to P characterization (e.g., nuclear magnetic resonance (NMR), X-ray absorption near edge structure (XANES) spectroscopy, enzymatic hydrolysis). This paper will discuss using “a case study approach” how the analytical methods such as sequential P extraction, NMR, enzyme hydrolysis and XANES spectroscopy can aid the researchers to advance knowledge of the P speciation in manures.

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