Phosphorus Extraction Methods Evaluation from Animal Manure Application Fields. (S08-jacoby162010-Oral)

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Abstract:

Eutrophication of surface water is believed to be caused primarily by P transported from fields that have manure land applied. Nutrient management programs used to rank sites vulnerable to P losses emphasize soil test P (STP) levels from techniques developed to correlate plant available P to crop growth and which differ across testing labs. The trends and reproducibility of seven P-extractable methods were analyzed using ICP techniques. Surface soils (15cm) that had different animal manures (poultry, swine, dairy and feedlot) applied for a number of years (up to 50 years) were collected from seven states ranging in soil pH (5.4 -8.5) and texture. Mehlich 3, Bray 1, Olsen, acidic ammonium acetate-EDTA (NH4OAc-EDTA) -deionized water (DI), and dilute salt solutions (CaCl2 or KCl) were used. Manure sources did not affect extractable P trends for any of the methods. Analysis was highly reproducible for all methods except Bray 1, which was highly variable as soil pH values above 7.6. Extracting efficiency in decreasing order was Mehlich 3, Bray 1, Olsen, NH4OAc-EDTA, DI, KCl and CaCl2. However, Bray 1 concentrations resembled those of dilute salt extractions when above pH 7.6.

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