Phosphorus Dynamics in Soils Receiving Chemically Treated Dairy Manure. (S11-karthikeyan122416-Oral)

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Abstract:

An incubation study was conducted with 3 soils (1, 2 and 3 with 12, 66, and 94 mg/kg Bray-1 P), 4 manure treatments (1 untreated, 3 chemicallytreated with alum, ferric chloride or lime) at 2 rates (25 and 50 kg P/ha). Sub-samples were analyzed for water-soluble and Bray-1 P after 1 d, 1, 2 wk, 1, 3, 6 mo. Increase in water-extractable P was influenced by initial soil P level and the manure application rate. For soil 1, water-extractable P followed the order: Ca-treated>>untreated>Al-treated>Fe-treated>control (no manure). For soils 2 and 3, water-soluble P increased only when they were mixed with untreated or Ca-treated manure. Water-soluble P decreased sharply between 1 d to 1-2 wk and then remained relatively constant or increased slightly up to 6 months. Bray-1 P increased for all the treatments in this order: Ca-treated>Al-treated>=untreated>Fetreated>control. Bray-1 P decreased between 1 d to 1-2 weeks and then increased for up to 3 months (soils 2, 3) or 6 months (soil 1). Addition of Al/Fe treated manure decreases P solubility with the effect more pronounced in soils with high initial P. However, application of Ca-treated manure increases both water-soluble and Bray-1 P.

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