Alternative Treatment Technologies for Controlling Bioavailable Phosphorus in Animal Manure. (A05-dao171859-Oral)

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Abstract:

Animal manure has long been used as organic plant nutrients and organic matter to improve physical and fertility conditions of agricultural lands. However, repeated applications, at rates designed to meet crop N needs, result in a buildup of soil test phosphorus (STP) beyond sufficient levels for optimal crop yields. Both STP and water-extractable P (WEP) are correlated with P in runoff water and agricultural P presents an added ecological risk in watersheds with impaired water quality. A review of established animal production and manure management approaches indicated that current practices contribute to high levels of WEP in manure. They include dietary inorganic P supplement, low hydrolytic efficiency and utilization of feed phytate-P, amending rations with exogenous phytases, and waste storage conditions conducive to PO4 dissolution and post-excretion dephosphorylation of organic P. Bioavailable P reduction BMPs are grouped and discussed as five broad categories. As the footprint of animal agriculture increases in scope, a combination of cultural, chemical, and BNR approaches may be needed to develop integrated solutions to the problem of excess phosphorus in manure.

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