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## **Nutrient Concentrations of Runoff During the Year Following Manure Application**

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### Abstract:

Little information is currently available concerning temporal changes in nutrient transport following the addition of manure to cropland areas. This study was conducted to measure nutrient transport in runoff as affected by tillage and time following the application of beef cattle or swine manure to a site on which corn [*Zea mays* (L.)] was grown. Rainfall simulation tests were initiated 4, 32, 62, 123, and 354 days following land application. Three 30-min simulated rainfall events, separated by 24-hour intervals, were conducted at an intensity of approximately 70 mm hr<sup>-1</sup>. Dissolved phosphorus (DP), particulate phosphorus (PP), total phosphorus (TP), NO<sub>3</sub>-N, NH<sub>4</sub>-N, total nitrogen (TN), electrical conductivity (EC), and pH were measured from 0.75-m wide by 2-m long plots. Concentrations of DP, TP, and NH<sub>4</sub>-N, in general, declined throughout the year on both the no-till cattle and no-till swine manure treatments. Tillage did not significantly affect concentrations of DP, PP, TP, NH<sub>4</sub>-N or pH on the swine manure treatments, but significant variations in these variables were measured over time. Under no-till and tilled conditions on both the cattle and swine manure treatments, the smallest concentrations of DP, NO<sub>3</sub>-N, NH<sub>4</sub>-N, and TN occurred on the final test date. The increase in pH of runoff during the study is attributed to the addition of CaCO<sub>3</sub> to the rations of beef cattle and swine. Tillage appeared to have less of an impact on runoff nutrient transport from cropland areas than length of time since manure application.

### Impact Statement:

Results of this study were published in *Transactions of the ASABE* 50(6):1987-1999. This manuscript was selected as one of the top 5% of the papers published in the journal in 2007.

Category: Agricultural BMPs

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