Management of Manure for Agricultural Production and Water Quality Protection

Several Management Factors Affect Nutrient Transport in Runoff

Manure Application Rate
- The DP concentration of runoff following N-based manure application can be an environmental concern when applied under no-till conditions without incorporation.
- P-based manure application is an agronomic and environmentally sound management system.

Incorporation
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Time Since Manure Application
- Concentrations of DP, TP, and NH₃-N declined throughout the year on the no-till cattle and no-till swine manure treatments.
- After approximately one month, runoff concentrations of DP and TP did not change significantly on sites where beef cattle manure was applied and then incorporated by disking.

Residual Soil Nutrient Content
- On a Larson silt loam soil near Lincoln, Nebraska, DP concentrations of runoff increased in an exponential fashion from 0.18 to 3.37 mg/L as Bray-1 P soil content varied from 50 to 300 mg/kg.
- DP concentrations were < 1 mg/L for Bray-1 P soil values < 145 mg/kg.

Conservation Practices
- A single 0.75 m wide grass ledge reduced runoff concentrations of DP, PP, and TP from no-till plots on which beef cattle manure was recently applied by 47%, 38%, and 54%, respectively.
- Corresponding reductions in runoff concentrations on the disked plots were 21%, 43%, and 38%, respectively.

Remediation Efforts
- A single 0.75 m wide grass ledge reduced runoff concentrations of DP, PP, and TP from no-till plots on which beef cattle manure was recently applied by 47%, 38%, and 54%, respectively.
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