

Crop Management Diagnostic Clinics

Gilley

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**Management of Manure for
Agricultural Production and
Water Quality Protection**



Several Management Factors Affect Nutrient
Transport in Runoff

2013CMDG-Gilley (1)







2013CMDG-Gilley (2)

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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- P-based manure application is an agronomic and environmentally sound management system.

Time Since Manure Application

- Concentrations of DP, TP, and $\text{NH}_4\text{-N}$ 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.

2013CMDG-Gilley (3)

Residual Soil Nutrient Content

- On a Aksarben silty clay 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.
- Corresponding reductions in runoff concentrations on the disked plots were 21%, 43%, and 38%, respectively.

2013CMDG-Gilley (4)