

## ENVIRONMENT

**Title:** Phosphorus Level Loading by Swine Effluent in a Field Injected Laboratory to Examine River Basin and Watershed Water Quality in Surface Water Runoff and Tile Water Discharge – **NPB# 00-053**

**Investigator:** Illinois Pork Producers

**Institution:** Contracted to Arise Research & Discovery, Inc; Martinsville, IL  
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### Abstract:

Phosphorus level loading by multiple application rates of swine effluent has raised concerns over the eutrophication of lakes and rivers in Illinois. The purpose of this project is to assist producers in the dynamics of phosphorus loading in glaciated soils of silty clay loam texture and 1.5 percent organic matter or greater. Drainage effluent collected by a lysimeter well system in a controlled non-altered growth area cell was utilized to measure phosphorus in tile water. Not every rainfall event generated enough superfluous surface water to allow for data collection. Soil phosphorus loading was determined by probe sampling and the P<sub>1</sub> Bray test conducted at A & L Laboratories, Fort Wayne, IN.

Soil testing from injected rates of 6,000 Gallon Per Acre (GPA), 8,000 GPA, 12,000 GPA, and continuous application, not exceeding 24,000 GPA and 0-46-0 did not significantly increase soil P<sub>1</sub> tests the first year of application. In some cases, phosphorus levels declined. Tile water effluent phosphorus levels were acceptable up to the 12,000-gallon and continuous application not exceeding 24,000 gallon rates. Surface water effluent levels were high, and can be correlated to rate per acre injected. Surface water collections, however, were close to application dates giving suspect to influencing the readings.

This project is an actual field environment test and reflects true activity of phosphorus behavior in swine effluent in a silty clay loam soil. Silty clay loams represent 65% of the soil textures in the Midwest. First year data indicates rate structures would be acceptable to producers, the environment, and water quality regulatory agencies.

*These research results were submitted in fulfillment of checkoff funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer reviewed*

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