RESEARCH ABSTRACT

ENVIRONMENT

Title: Evaluation of Nutrient Availability from Swine Manure – **NPB# 99-166**

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Abstract

To utilize swine manure nitrogen (N) to meet the needs of crops and protect water quality it is critical that we can confidently estimate the availability of the N. While total nutrient content of manure is easily determined using routine procedures in many labs, estimating the availability of these nutrients both to plants and to the environment is more difficult because of the complex makeup of manure. The availablity of manure N is sensitive to soil and climatic factors that affect microbial mineralization of the compounds that contain much of the N in manure. For this reason it is not possible to confidently use availability factors derived under conditions different from Pennsylvania. This project used experiments on swine farms in Pennsylvania to determine the N availability of swine manure under our conditions.

Several real world issues affected the results of this research. On many farms with a history of manure applications it is difficult to find fields that will respond to N application either from manure or fertilizer because of the residual effects of past manure applications. Also, we experienced the familiar difficulty in collecting representative manure samples. We observed large differences between the farmer's average analysis and the analysis of the manure that we actually applied in our plots. While neither of these issues was the focus of this research it provided good on-farm evidence that confirmed the need for better manure analysis programs and the need for using tools like the Presidedress Soil Nitrate Test (PSNT) or Chlorophyll Meter Test to evaluate the residual benefits from past manure applications when developing manure nutrient management plans. Seven of our on-farm locations yielded limited useful data on manure N availability because of these two problems. Our results showed that swine manure N availability averaged 49%. Note however that the range was 40 to 76%. With out incorporation the average was 16%. This last number is based on very limited data. With these results we greater confidence in the availability factors used in Pennsylvania to develop nutrient management plans.