

Comparison of Incorporated Swine Finishing Manure, Incorporated Swine Finishing Manure with a Nitrogen Stabilizer, and 28%UAN as Nitrogen Sources at Side-dress for Corn Yield

Glen Arnold, Ohio State University Extension Field Specialist

Objectives

1. To compare corn yield response to nitrogen applied at side-dress as incorporated swine finishing manure and 28%UAN.
2. To compare corn yield response to nitrogen applied at side-dress as incorporated swine finishing manure and incorporated swine finishing manure with a nitrogen stabilizer.

Background

Crop Year:	2012	Tillage:	Conventional
Cooperator:	Bill Schroeder	Soil Test	pH 6.3, P 70 ppm, K 222 ppm
County/Town:	Putnam, Ottawa		OM 2.3%
Soil Type:	Paulding Clay	Planting Date:	April 28, 2012
Drainage:	Tile, systematic	Row Width:	30 inch
Previous Crop:	Soybeans	Herbicide:	Harness Extra 1.75 qts/acre
Corn Hybrid:	Pioneer 33W84	Harvest Date:	October 20, 2012

Methods

A randomized block design with three treatments and four replications was used. Plots were 12 rows (30 feet) wide and 1,120 feet long. Liquid swine manure from a finishing building was applied via incorporation using a 5,250 gallon Balzer tanker equipped with a Peecon toolbar. The 28%UAN was incorporated with a standard toolbar. The Dietrich toolbar incorporated the swine manure at a depth of five inches using shanks with eight inch sweeps.

The swine manure and 28% UAN were applied on the same day while the corn was in the three leaf stage. Field conditions were firm at the time of application.

The 28%UAN application rate was 170 units of nitrogen per acre. All swine manure replications received 5,200 gallons per acre. Manure samples indicated 39.1 pounds of available nitrogen per 1,000 gallons. Swine manure treatments received 203 pounds of nitrogen, 196 lb./ac P₂O₅ and 142 lb./ac K₂O.

Table 1. Swine Finishing Manure Analysis

Nutrient	lbs. per 1,000 Gallons
Nitrogen (available the 1 st year)	39.1
Phosphorus as P ₂ O ₅	37.7
Potassium as K ₂ O	27.4

Weather conditions during the time of manure application were sunny with an ambient air temperature of 75 degrees. The plot received well below normal rainfall for the growing season.

Table 2. Treatment Summary

Treatment	Description
Treatment 1 (T1)	170 #/ac 28%UAN
Treatment 2 (T2)	5,200 gal/ac incorporated manure + Instinct at 24 oz/ac, 203#N/A
Treatment 3 (T3)	5,200 gal/ac incorporated liquid swine manure, 203#N/A

Results and Discussion

Table 3. Yield Summary

Treatments	Yield (bu/ac)
28% UAN (T1)	117.6
Incorporated manure + Instinct at 24 oz/ac (T2)	118.0
Incorporated manure (T3)	117.4

LSD (0.05)

The results of this plot indicated no statistically significant yield differences between any of the treatments (LSD (0.05)=2.25, C.V=1.25). The extreme drought could have masked the effect of the Instinct treatments.

The 28% UAN cost \$0.62 per pound or \$112 per acre plus the cost of application. The manure was available from the farmer's swine finisher building at no cost. The manure application cost, using the Minnesota Manure Distribution Cost Analyzer spreadsheet was calculated at \$20 per 1,000 gallons or \$.02 per gallon. The cost of applying 5,200 gallons per acre as sidedress nitrogen was \$104 per acre.

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For more information, contact:

Glen Arnold

Field Specialist, Manure Nutrient Management Systems

Ohio State University Extension, Hancock County

7868 CR 140, Suite B

Findlay, Ohio 45840

419-422-3851

Arnold.2@osu.edu



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AND ENVIRONMENTAL SCIENCES