

Comparison of Swine Manure and UAN as Nitrogen Sources at Side-dress for Corn Yield

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Objective

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

Background

Crop Year:	2013	Soil Test	pH 6.4
Cooperator:	Jeff Duling		P 41 ppm (82 lb/ac)
County:	Hancock		K 150 ppm (350 lb/ac)
Nearest Town:	McComb		Organic Mater 2.2%
Drainage:	Tile-40 feet spacing	Planting Date:	April 29, 2013
Soil type:	Hoytville Clay	Row Width:	30 inch
Tillage:	No-till	Herbicide:	FulTime NXT 3 qt/ac
Previous Crop:	Soybeans	Insecticide:	N/A
Variety:	Pioneer 33W84	Harvest Date:	October 21, 2013

Methods

A randomized block design with two treatments and four replications was used. Plots were 16 rows (40 feet) wide and 1,150 feet long. Liquid swine manure from a finishing building was applied via incorporation using a 5,250 gallon Balzer tanker equipped with a Dietrich toolbar. The Dietrich toolbar incorporated the swine manure at a depth of five inches using shanks with five inch sweeps.

The swine manure and 28% UAN were applied on the same day while the corn was in the V2 stage. Field conditions were firm at the time of application.

The 28% UAN application rate was 175 units of nitrogen per acre. All swine manure replications received 6,000 gallons per acre. Manure samples indicated 28.4 pounds of available nitrogen per 1,000 gallons. Swine manure treatments received 170 pounds of nitrogen, 61 lb/ac P₂O₅ and 120 lb/ac K₂O per acre.

Swine Finishing Manure Analysis

Nutrient	lbs. per 1,000 Gallons
Nitrogen (available the 1 st year)	28.4
Phosphorus as P ₂ O ₅	10.1
Potassium as K ₂ O	20.0

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

Table 1 Treatment Summary

Treatment	Description
Treatment 1 (T1)	50 gal/ac UAN 28%, 150#/ac of N
Treatment 2 (T2)	6,000 gal/ac incorporated liquid swine manure, 170#/ac of N

Results and Discussion

Table 2 Yield Summary

Treatments	Yield (bu/ac)
28% UAN (T1)	190.0
Incorporated manure (T2)	194.1

LSD (0.05)

The results of this plot indicated no statistically significant difference between the treatments (LSD (0.05) = 7.87, C.V=1.82).

The 28% UAN cost \$0.62 per pound or \$93 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 6,000 gallons per acre as side-dress nitrogen was \$120 per acre.

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