

# Comparison of Swine Manure and 28% UAN as Nitrogen Sources at Side-dress for Corn Yield

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## Objectives

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

## Background

Crop Year:	2012	Tillage:	Fall Chisel and soil finisher
Cooperator:	Jason Kalb	Soil Test	pH 6.3, P 54 ppm, K 160 ppm OM 2.4%
County/Town:	Seneca, Attica	Planting Date:	April 18, 2012
Soil Type:	Tiro silt loam	Row Width:	30 inch
Drainage:	Tile, systematic	Herbicide:	Keystone 2.4 qts/acre
Previous Crop:	Soybeans	Harvest Date:	October 19, 2012
Corn Hybrid:	DK 570		

## Methods

A randomized block design with two treatments and four replications was used. Plots were 12 rows (30 feet) wide and 1,150 feet long. Liquid swine manure from a finishing building was incorporated as a sidedress to corn using a 5,000 gallon Kuhn tanker equipped with a Yetter toolbar with closing wheels. Manure was incorporated to a depth of approximately 6 inches and soil opening covered with dirt.

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.

Stand counts taken at the V3 stage indicated highly variable stands of 22,400 plants per acre across both treatments. Starter fertilizer was applied at planting at 80 pounds of 29-46-0-11 per acre.

The 28%UAN rate was 160 units of nitrogen per acre. All swine manure replications received 4,400 gallons per acre. Manure samples indicated 34.9 pounds of available nitrogen per 1,000 gallons. Available nitrogen is the ammonia portion of the nitrogen in the swine manure and approximately one-half of the organic portion. Swine manure treatments received 168 pounds of nitrogen, 54 lb./ac P<sub>2</sub>O<sub>5</sub> and 134 lb./ac K<sub>2</sub>O.

**Table 1. Swine Finishing Manure Analysis (average of two samples)**

Nutrient	lbs. per 1,000 Gallons
Nitrogen (available the 1 <sup>st</sup> year)	34.9
Phosphorus as P <sub>2</sub> O <sub>5</sub>	11.3
Potassium as K <sub>2</sub> O	27.9

Weather conditions during the time of manure application were sunny with an ambient air temperature of 75 degrees. The plot received approximately nine inches of rain during the growing season with most of this occurring very late in the growing season.

**Table 2. Treatment Summary**

Treatment	Description
Treatment 1 (T1)	150 pounds per acre of nitrogen as 28% UAN
Treatment 2 (T2)	4,400 gal/ac incorporated liquid swine finishing manure, 168 # /a N

## Results and Discussion

**Table 3. Yield Summary**

Treatments	Yield (bu/ac)
28% UAN (T1)	129.6 <sub>a</sub>
Incorporated manure (T2)	139.0 <sub>b</sub>

LSD (0.05)

The results of this plot indicated yield differences between the treatments were statistically significant (LSD (0.05) = 5.52, C.V=1.76). The manure treatments were a darker green during the growing season. More rainfall earlier in the growing season might have helped the 28% UAN reps obtain higher yields.

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. 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 4,400 gallons per acre as sidedress nitrogen was \$88 per acre.

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For more information, contact:

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