

# 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

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Crop Year:	2013	Soil test:	pH 6.3
Cooperator:	Jerry Klopfenstein		P 35 ppm (70 lb./ac)
County:	Paulding		K 155 ppm (310 lb./ac)
Nearest Town:	Paulding		Organic Mater 2.2%
Drainage:	Tile-40 feet spacing	Planting Date:	May 5, 2013
Soil Type:	Paulding Clay	Row Width:	30 inch
Tillage:	No-till	Herbicide:	Stalwart 1.7 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 1,300 feet long. Liquid swine manure from a finishing building was applied via incorporation using a 6,200 gallon Jamesway tanker equipped with a Dietrich 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 dry at the time of application.

The 28% UAN application rate was 150 unites of nitrogen per acre. All swine manure replications received 4,000 gallons per acre. Manure samples indicated 41.4 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 165 pounds of nitrogen, 40 lb/ac  $P_2O_5$  and 163 lb/ac  $K_2O$ .

### Swine Finishing Manure Analysis

Nutrient	lbs. per 1,000 Gallons
Nitrogen (available the 1 <sup>st</sup> year)	41.4
Phosphorus as $P_2O_5$	9.9
Potassium as $K_2O$	40.8

Weather conditions during the time of manure application were sunny with an ambient air temperature of 74 degrees. The plot received adequate rainfall throughout the growing season.

Table 1 Treatment Summary

<b>Treatment</b>	<b>Description</b>
Treatment 1 (T1)	50 gal/ac UAN 28%, 150 #/a nitrogen
Treatment 2 (T2)	4,000 gal/ac incorporated liquid swine manure, 165 #/a nitrogen

## Results and Discussion

Table 2 Yield Summary

<b>Treatments</b>	<b>Yield (bu/ac)</b>
28% UAN (T1)	198.7
Incorporated manure (T2)	197.7

LSD (0.05)

The results of this plot indicated no significant difference between the treatments (LSD (0.05) = 17.31, C.V=3.88).

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 finishing 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 5,000 gallons per acre as side-dress nitrogen was \$100 per acre.

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