

# Comparison of Swine Manure and 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, surface applied swine finishing manure, and incorporated UAN 28%.

## Background

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Crop Year:	2010	Variety:	Pioneer 33W84
County:	Putnam	Soil Test:	pH 6.8, P 65 ppm, K 208 ppm, OM 1.7%
County/Town:	Gilboa, OH	Planting Date:	April 18, 2010
Soil Type:	Lenawee Silty Clay Loam	Row Width:	30 inch
Drainage:	Tile-40 ft spacing	Herbicide:	Cinch
Previous Crop:	Wheat	Harvest Date:	October 15, 2010
Tillage:	Conventional tillage		

## Methods

A randomized block design with three treatments and four replications was used. Plots were 16 rows (40 feet) wide and 1,180 feet long. Liquid swine manure from a finishing building was applied via incorporation using a 4,500 gallon Kuhn tanker equipped with a Detrick toolbar. The surface treatments were also applied in the same fashion by raising the toolbar.

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

The 28% UAN application rate was 150 units of nitrogen per acre. All swine manure replications received 4,200 gallons per acre. Manure samples indicated 40.5 pounds of available nitrogen per 1,000 gallons. Swine manure treatments received 170.1 pounds of nitrogen, 110.9 lb/ac P<sub>2</sub>O<sub>5</sub> and 156.2 lb/ac K<sub>2</sub>O.

### Swine Finishing Manure Analysis

Nutrient	lbs. per 1,000 Gallons
Nitrogen (available the 1 <sup>st</sup> year)	40.5
Phosphorus as P <sub>2</sub> O <sub>5</sub>	26.4
Potassium as K <sub>2</sub> O	37.2

Weather conditions during the time of manure application were sunny and ambient air temperature of 75 degrees. The plot received well above average rainfall for the first half of the growing season and very little rainfall during the second half of the growing season.

**Table 1 Treatment Summary**

Treatment	Description
Treatment 1 (T1)	50 gal/ac UAN 28%
Treatment 2 (T2)	4,200 gal/ac surface applied liquid swine manure
Treatment 3 (T3)	4,200 gal/ac incorporated liquid swine manure

## Results and Discussion

**Table 2 Yield Summary**

Treatments	Yield (bu/ac)
Average of four 28% UAN reps (T1)	217.5 b
Average of four surface manure reps (T2)	212.6 b
Average of four incorporated manure reps (T3)	229.3 a

The results of this plot indicate the incorporated manure treatments were statistically significant over the surface treatments and the 28% UAN treatments (LSD (0.05) = 11.86). It should be noted, however, the swine manure treatments received approximately 20 more pounds of nitrogen per acre than the 28% UAN treatments. There was no statistical difference between the 28% UAN treatments and the surface applied manure treatments.

The 28% UAN cost \$0.62 per pound or \$93 per acre (\$0.62 x 150 units) plus the cost of application. The manure was available from the farmer's swine finisher building at no cost. Application costs for the manure would vary depending on the farm's equipment and labor costs.

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