

# Comparison of Swine Manure and UAN as Nitrogen Sources at Side-dress for Corn Yield Using a Drag Hose Application System

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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:	2014	Soil test:	pH 6.2 P 85 ppm (170 lb/ac) K 184 ppm (368 lb/ac)
Cooperator:	Tom Harrod	Organic Mater	3.2%
County:	Darke	Planting Date:	May 13, 2014
Nearest Town:	Ansonia	Row Width:	30 inch
Drainage:	Tile-40 feet spacing	Herbicide:	Surestart 1 qt/ac
Soil type:	Blount-Pewamo	Insecticide:	N/A
Tillage:	No-till	Harvest Date:	October 21, 2014
Previous Crop:	Soybeans		

## Methods

A randomized block design with two treatments and three 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 a drag hose system and incorporated between the rows a using Vertical Tillage Injector (VIT) toolbar. The VIT unit has a rippled coulter on the front that tilled the soil to a depth of five inches. Manure was applied to the tilled soil and a pair of closing wheels covered the manure. The drag hose was six inches in diameter and manure was being applied to seven rows during each pass across the field. The manure application rate was 700 gallons per minute and the manure application amount was 5,500 gallons per acre.

The corn was in the V1 stage of growth at the time of application. Field conditions were wet at the time of application. There was damage to the corn stand from the drag hose. Stand counts indicated a stand reduction of approximately 2,000 plants per acre, mostly in the corn row immediately beside the drag hose.

The 28% UAN application rate was 150 units of nitrogen per acre. Manure samples indicated 35.9 pounds of available nitrogen per 1,000 gallons. Swine manure treatments received 197.5 pounds of nitrogen, 52.5lb./ac P<sub>2</sub>O<sub>5</sub> and 152.9 lb./ac K<sub>2</sub>O.

**Table 1. Swine Finishing Manure Analysis**

Nutrient	lbs. per 1,000 Gallons
Nitrogen (available the 1 <sup>st</sup> year)	35.9

Phosphorus as P <sub>2</sub> O <sub>5</sub>	9.55
Potassium as K <sub>2</sub> O	27.8

Weather conditions during the time of manure application were sunny with an ambient air temperature of 72 degrees. The plot received above average rainfall for the growing season.

**Table 2. Treatment Summary**

Treatment	Description
Treatment 1 (T1)	57 gal/ac UAN 28%, 171#/ac of N
Treatment 2 (T2)	5,500 gal/ac incorporated liquid swine manure, 197.5#/ac of N

## Results and Discussion

**Table 3. Yield Summary**

Treatments	Yield (bu/ac)
28% UAN (T1)	204.1
Incorporated manure (T2)	203.9

LSD (0.05)

The results of this plot indicated no statistically significant difference between the treatments (LSD (0.05) = 17.65, C.V=2.45). The manure treatments received slightly higher nitrogen amounts than the commercial fertilizer treatments.

The 28% UAN cost \$0.58 per pound or \$99 per acre plus the cost of application. Based on the OSU Extension 2014 Ohio Farm Custom Rate Survey, the cost of applying the 28%UAN is approximately \$9.50 per acre.

The manure was available from the farmer's swine finisher building at no cost. The manure application cost for commercial drag hose operators in this area of Ohio is approximately one cent per gallon. The drag hose was not running at full capacity so a cost of 1.25 cents per gallon would be a more reasonable application cost for a commercial applicator. At 1.25 cents per gallon, the cost of applying 5,500 gallons of manure per acre as side-dress nitrogen was \$68.75 per acre.

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