

# Comparison of Swine Manure and Anhydrous Ammonia 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 Anhydrous Ammonia.

## Background

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Crop Year:	2014	Soil Test:	pH 6.5
Cooperator:	Aaron Bernath		P 130 ppm (260 lb/ac)
County:	Fulton		K 263 ppm (526 lb/ac)
Nearest Town:	Wauseon, OH		PSNT 46 ppm Nitrate N
Drainage:	Tile-40 feet spacing		Organic Mater 1.7%
Soil Type:	Lamson fine sandy loam	Planting Date:	May 19, 2014
Tillage:	Conventional	Row Width:	30 inch
Previous Crop:	Wheat	Harvest Date:	October 30, 2014
Variety:	Golden Harvest G07V88	Rainfall (Apr-Sept):	14.64"

## Methods

A randomized block design with two treatments and four replications was used. Plots were 12 rows (30 feet) wide and 1175 feet long. Liquid swine manure from a finisher 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 five inch sweeps.

The swine manure and 110 Units of anhydrous ammonia were applied on the same day while corn was in the V2 stage. Field conditions were firm at the time of application.

All swine manure replications received 6,000 gallons per acre. Manure samples indicated 29.1 pounds of available nitrogen per 1,000 gallons. Swine manure treatments received 174.6 pounds of nitrogen, 107.4 lb/ac  $P_2O_5$  and 196.2 lb/ac  $K_2O$  per acre.

**Table 1. Swine Finishing Manure Analysis**

Nutrient	lbs. per 1,000 Gallons
Nitrogen (available the 1 <sup>st</sup> year)	29.1
Phosphorus as $P_2O_5$	17.9
Potassium as $K_2O$	32.7

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

**Table 2. Treatment Summary**

<b>Treatment</b>	<b>Description</b>
Treatment 1 (T1)	Anhydrous ammonia, 110#/ac of N
Treatment 2 (T2)	6,000 gal/ac incorporated liquid swine manure, 175#/ac of N

## **Results and Discussion**

**Table 3. Yield Summary**

<b>Treatments</b>	<b>Yield (bu/ac)</b>
Anhydrous ammonia (T1)	198.5
Incorporated manure (T2)	198.8

LSD (0.05)

The results of this plot indicated no significant difference between the treatments (LSD (0.05) = 6.41, C.V=1.44).

The anhydrous ammonia cost \$0.52 per pound or \$57.20 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 was approximately \$9.50 per acre.

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.

## **Acknowledgement**

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