Comparison of Swine Nursery 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 nursery manure and incorporated UAN 28%.

Background

Crop Year:	2012	Tillage:	Conventional
Cooperator:	Jim Leopold	Soil Test	pH 6.4, P 55 ppm, K 140 ppm
County/Town:	Putnam, Glandorf		OM 2.6%
Soil Type:	Toledo	Planting Date:	April 28, 2012
Drainage:	No tile	Row Width:	30 inch
Previous Crop:	Soybeans	Herbicide:	Cinch 2 qts/acre
Corn Hybrid:	Pioneer 33W84	Harvest Date:	October 15, 2012

Methods

A randomized block design with two treatments and three replications was used. Plots were 12 rows (30 feet) wide and 700 feet long. Liquid swine manure from a nursery building was applied via incorporation using a 5,250 gallon Balzer tanker equipped with a Peecon toolbar. The Peecon opens the soil with a narrow coulter to a depth of five inches and does not cover the manure furrow.

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 units of nitrogen per acre. All swine manure replications received 9,500 gallons per acre. Manure samples indicated 16.1 pounds of available nitrogen per 1,000 gallons. Swine manure treatments received 153 pounds of nitrogen, 40 lb./ac P_2O_5 and 115 lb./ac K_2O. Available nitrogen is the ammonia portion of the nitrogen in the swine manure and approximately one-half of the organic portion.

Table 1. Swine Nursery Manure Analysis

Nutrient	lbs. per 1,000 Gallons
Nitrogen (available the 1st year)	16.1
Phosphorus as P_2O_5	4.2
Potassium as K_2O	12.1

Weather conditions during the time of manure application were sunny with an ambient air temperature of 77 degrees. The plot received well below average rainfall for the growing season.

Table 2. Treatment Summary

Treatment	Description
Treatment 1 (T1)	50 gal/ac UAN 28%
Treatment 2 (T2)	9,500 gal/ac incorporated liquid swine manure

Results and Discussion

Table 3. Yield Summary

Treatments	Yield (bu/ac)
28% UAN (T1)	173.6[a]
Incorporated manure (T2)	182.0[b]
	LSD (0.05)

The results of this plot indicated a statistically significant difference between the treatments (LSD (0.05) = 8.09, C.V=1.30). The early portion of the growing season was very dry. The manure treatments likely benefitted from the moisture added when manure was applied.

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 nursery 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 9,500 gallons per acre as sidedress nitrogen was $190 per acre.

Acknowledgement

The author would like to thank Jeff Duling for the use of manure application equipment. The author would also like to thank Jim Leopold for the use of his manure and corn field. The author would also like to thank the Ohio Pork Producers and Ag Credit for their financial support of this research.

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