

Swine Finishing Manure as a Top-Dress Nitrogen Source on Wheat

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Objectives:

1. To compare wheat yield response to nitrogen applied at top-dress as swine manure and UREA.
2. To compare wheat yield response to surface applied swine manure and incorporated swine manure.

Background

Crop Year:	2008	Soil test:	pH 6.5, P 125 ppm, K 312 ppm, OM 3.65%
Cooperator:	Tom Warnimont	Planting Date:	September 25, 2007
County:	Putnam	Row Width:	7.5 inch
Nearest Town:	Miller City	Herbicides:	n/a
Drainage:	Surface	Insecticide:	n/a
Soil type:	Paulding Clay	Harvest Date:	July 11, 2008
Tillage:	Conversation tillage	PSNT test:	n/a
Previous Crop:	Soybeans		
Variety:	Pioneer 25R47		

Methods

A randomized block design with three treatments and four replications was used. Manure plots were 26 feet wide and UREA plots were 40 feet wide. All plots were 835 feet in length. The center 15 feet of each replication was harvested. Liquid swine manure from a finishing building was applied via both surface application and incorporation using a 3,000 gallon tanker equipped with a modified Pecan toolbar 13 feet in width. UREA was applied using a standard fertilizer buggy.

The UREA application rate was 85 pounds of nitrogen per acre. The liquid swine manure application rate was 5,200 gallons per acre. Manure sample results indicated 26 pounds of available nitrogen per 1000 gallons of swine finishing manure. Swine manure treatments received 127 pounds of nitrogen, 75 lb/ac P₂O₅ and 85 lb/ac K₂O.

Swine Finishing Manure Analysis

Nutrient	lbs. per 1,000 Gallons
Nitrogen (available the 1 st year)	24.38
Phosphorus as P ₂ O ₅	14.37
Potassium as K ₂ O	16.25

Weather conditions during the time of manure application were sunny and 76 degrees. Because of the wet spring, the wheat was approximately eight inches (Feekes growth stage five) tall at the time the treatments were applied on April 15th. Substantial amounts of wheat were flattened, especially by the manure tanker. The plot received above average rainfall for the 2008 growing season. Field conditions were firm during application.

Treatment Summary	Description
Treatment 1 (T1)	UREA 85 units of nitrogen per acre
Treatment 2 (T2)	5,200 gal/ac incorporated swine finishing manure
Treatment 3 (T3)	5,200 gal/ac surface applied swine finishing manure

Results and Discussion

Yield Summary

Treatments	Yield (bu/ac)
Average of four UREA reps (T1)	61.0 a
Average of four incorporated manure reps (T2)	58.2 a
Average of five surface applied manure reps (T3)	58.2 a
LSD (0.05)	NS

The results of this plot indicate no statistical difference for yield between the UREA treatments, the incorporated manure treatments and the surface applied manure treatments. Swine manure appears to be a satisfactory source of top-dress nitrogen source for wheat.

UREA cost was \$0.75 per pound. UREA replications had \$64 per acre in nitrogen expense 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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