

Swine Nursery Manure as a Spring Top-Dress Nitrogen Source on Wheat

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Objective

To compare wheat yield response to nitrogen applied at top-dress as swine nursery manure and as urea.

Background

Crop Year:	2009	Soil test:	pH 6.5 P 70 ppm (140lbs/ac) K 170 ppm (340 lbs/ac)
Cooperator:	Jim Leopold	Organic Mater	2.95%
County:	Putnam	Planting Date:	September 29, 2008
Nearest Town:	Glandorf	Plot Width:	25 feet
Drainage:	None	Herbicide:	N/A
Soil type:	Fulton Loam	Insecticide:	N/A
Tillage:	Conservation tillage	Harvest Date:	July 7, 2009
Previous Crop:	Soybeans		
Variety:	Freedom		

Methods

A randomized block design with two treatments and four replications was used. Manure plots were 30 feet wide and urea plots were 40 feet wide. All plots were 726 feet long. The center 25 feet of each replication was harvested. Liquid swine manure from a nursery manure pit was surface applied using a 2,600 gallon tanker equipped with a rear mounted splash bar. Urea was applied using a standard fertilizer buggy.

The urea nitrogen application rate was 100 pounds of nitrogen per acre. The liquid swine manure application rate was 5,000 gallons per acre. Manure sample results indicated 22 pounds of available nitrogen per 1,000 gallons of swine finishing manure. Swine manure treatments received 110 lbs/ac of nitrogen, 26 lbs/ac of P₂O₅ and 52 lbs/ac of K₂O.

Swine Nursery Manure Analysis

Nutrient	lbs. per 1,000 Gallons
Nitrogen (available the 1 st year)	22.05
Phosphorus as P ₂ O ₅	5.19
Potassium as K ₂ O	10.34

Weather conditions during the time of manure application were sunny and 65 degrees. The plot received above average rainfall for the 2009 growing season. Field conditions were firm during application.

Treatment Summary	Description
Treatment 1 (T1)	UREA 100 units of nitrogen per acre
Treatment 2 (T2)	5,000 gal/ac surface applied swine nursery manure

Results and Discussion

Yield Summary

Treatments	Yield (bu/ac)
Average of four UREA reps (T1)	92.0 A
Average of four surface applied manure reps (T2)	93.7 A

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The results of this plot indicate no statistical difference for yield between the urea treatments and the surface applied nursery manure treatments. ($F = 0.74$, $P = 0.45$). Swine nursery manure appears to be a satisfactory source of top-dress nitrogen for wheat. Farmers utilizing manure as a spring fertilizer source for wheat should plan to utilize the excess phosphorus and potassium applied in the following crop rotation.

Urea cost was \$0.65 per pound so the urea treatments had \$61.75 dollars per acre of purchased fertilizer plus the cost of application. The manure was available from the farmer's swine nursery building at no cost. Application costs for the manure would vary depending on the farm's equipment and labor costs.

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