

# Swine Finishing Manure Applied on Frozen Ground as a Top-Dress Nitrogen Source on Wheat

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## Objectives

To compare wheat yield response to nitrogen applied as top-dress on frozen ground as swine manure and urea applied when the soil was not frozen.

To determine if clover seed applied with swine finishing manure on frozen ground resulted in an acceptable clover stand for fall plow down purposes.

## Background

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Crop Year:	2009	Soil test:	pH 6.4 P 120 ppm (240 lbs/ac) K 270 ppm (520 lbs/ac)
Cooperator:	Tom Warnimont	Organic Mater	3.52%
County:	Putnam	Planting Date:	September 29, 2008
Nearest Town:	Miller City	Plot Width:	26 feet
Drainage:	Surface & tile	Plot length	1,250 feet
Soil type:	Paulding Clay	Herbicide:	N/A
Tillage:	Conventional tillage	Insecticide:	N/A
Previous Crop:	Soybeans	Harvest Date:	July 7, 2009
Variety:	Hopewell		

## Methods

A randomized block design with two treatments and four replications was used. Manure plots were 26 feet wide and urea plots were 40 feet wide. All plots were 1,250 feet in length. The center 15 feet of each replication was harvested. Liquid swine manure from a finishing building was applied via surface application on frozen soil in early March using a 3,000 gallon tanker equipped with a modified Pecan toolbar 13 feet in width. Urea was applied using a standard fertilizer buggy in early April when the ground was not frozen and field conditions supported the fertilizer buggy.

The urea application rate was 75 pounds of nitrogen per acre. The liquid swine manure application rate was 3,400 gallons per acre. Manure sample results indicated 17.69 pounds of available nitrogen per 1000 gallons of swine finishing manure. Swine manure treatments received 60.15 pounds of nitrogen, 9.72 lb/ac P<sub>2</sub>O<sub>5</sub> and 51.27 lb/ac K<sub>2</sub>O.

Red clover seed was added to the tanker of manure by placing the seed in the suction hose and then attaching the hose to the taker for loading. Clover seed was applied with the liquid manure at a rate of 15 pounds of seed per acre. Red clover seed was surface applied to the urea reps using a four wheeler equipped with a seeder in early April at a rate of 15 pounds per acre.

## Swine Finishing Manure Analysis

Nutrient	lbs. per 1,000 Gallons
Nitrogen (available the 1 <sup>st</sup> year)	17.69
Phosphorus as P <sub>2</sub> O <sub>5</sub>	2.86
Potassium as K <sub>2</sub> O	15.08

Weather conditions during the time of manure application were sunny and 22 degrees. The soil was frozen to a depth of several inches and held the manure tanker without leaving tracks. The field experienced four days of freezing and thawing weather, and then received a four inch rainfall event. Urea was applied approximately one month later in early April when field conditions were firm. The plot received above average rainfall for the 2009 growing season.

Treatment Summary	Description
Treatment 1 (T1)	Urea - 75 units of nitrogen per acre
Treatment 2 (T2)	3,400 gal/ac surface applied swine finishing manure

## Results and Discussion

### Yield Summary

Treatments	Yield (bu/ac)
Average of four urea reps (T1)	53.8 A
Average of four manure reps (T2)	57.1 A

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The results of this plot indicate no statistical difference for yield between the urea treatments, the surface applied swine finishing manure treatments. ( $F = 0.47$ ,  $P = 0.54$ ) Swine finishing manure appears to be a satisfactory source of top-dress nitrogen source 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. Clover stands were assessed in late July. Clover stands were similar in the manure and urea reps with approximately 15 plants per square foot.

Urea cost was \$0.65 per pound. Urea replications had \$48.75 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.

## Acknowledgments:

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