Swine Manure as a Nitrogen Source at Side-dress for Grain Corn

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Objective:

- To compare corn yield response to nitrogen applied at side-dress as swine manure and UAN 28%.
- To compare yield response from addition of a nitrogen stabilizer to swine nursery manure a side-dress with untreated manure and UAN 28% system.

Background

Crop Year: 2008
Cooperator: Steve Leopold
County: Putnam
Nearest Town: Glandorf
Drainage: Tile-40 ft spacing
Soil type: Fulton Silty Clay Loam
Tillage: Conversation tillage
Previous Crop: Soybeans
Variety: Dekalb DKC63-42

Soil test: pH 6.5, P 101 ppm, K 278 ppm, OM 2.89%
Planting Date: May 3, 2008
Row Width: 30 inch
Herbicides: Roundup
Insecticide: n/a
Harvest Date: October 16, 2008
PSNT test: 14 ppm

Methods

A randomized block design with three treatments and five replications was used. Plots were six rows (15 feet) wide and 620 feet long. Liquid swine manure from a nursery building was applied via incorporation using a 2400 gallon Husky tanker equipped with an AerWay toolbar.

The swine manure and 28% UAN was applied on the same day. The corn was in the two leaf stage. Field conditions were dry at the time of application.

The nitrogen stabilizer, Agrotain, was added to the tanker of manure during the loading process following labeled directions.

The 28% UAN application rate was 150 units of Nitrogen per acre or 50 gal/ac. The target swine manure application rate was 150 units of nitrogen per acre or 6,000 gallons per acre. The swine nursery manure test results were lower in nitrogen than expected. Manure samples indicated 16 pounds of available nitrogen per 1,000 gallons. Swine manure treatments received 97 pounds of nitrogen, 25 lb/ac P_2O_5 and 72 lb/ac K_2O.

Swine Nursery Manure Analysis

Nutrient	lbs per 1,000 Gallons
Nitrogen (available the 1st year)	16.25
Phosphorus as P2O5	4.16
Potassium as K2O	12.06

Weather conditions during the time of manure application were sunny and 82 degrees. The plot received above average rainfall for the first half of the growing season and very little rainfall during the second half of the growing season.

Treatment Summary	Description
Treatment 1 (T1)	50 gal/ac UAN 28%
Treatment 3 (T2)	6,000 gal/ac swine nursery manure + Agrotain
Treatment 4 (T3)	6,000 gal/ac swine nursery manure

Results and Discussion

Yield Summary

Treatment	Yield (bu/ac)
Average of five 28% UAN reps (T1)	161.3 a
Average of five manure reps with nitrogen stabilizer (T2)	144.0 b
Average of five manure reps (T3)	147.2 b
LSD (0.05)	7.56

The results of this plot indicate a statistical difference for yield between the 28%UAN reps and the manure reps but no statistical difference between the manure reps with and without the nitrogen stabilizer. The statistical difference between the 28%UAN reps and the manure reps is likely due to the difference in nitrogen applied as side-dress (150 lbs/ac as 28% UAN compared to 97 lbs/ac of nitrogen as swine nursery manure). There was no statistical difference between the manure treatment with and the manure treatment without the nitrogen stabilizer.

In 2008, 28% UAN cost $0.80 per pound or $120.00 per acre ($0.80 x 150 units) 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.

Acknowledgments:

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