Comparison of Swine Manure and Anhydrous Ammonia as Nitrogen Sources at Side-dress for Corn Yield Using a Drag Hose Application System

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Objective

To compare corn yield response to nitrogen applied at sidedress as incorporated swine finishing manure and anhydrous ammonia using a dragline system.

Background

Crop Year: 2018
Location: Greenville Township
County/Town: Darke/Greenville
Soil Type: Crosby Silt Loam
Celina Silt Loam
Brookston Silty Clay Loam
Drainage: Tiled
Previous Crop: Soybeans/Rye Cover Crop
Tillage: No-Till
Soil Test: pH 6.5, P 35 ppm BP1, K 129 ppm
Planting Date: May 21, 2018
Nitrogen: None
Seeding Rate: 34,000
Harvest Date: September 28, 2018
Rainfall: 15.38 inches, April - August

Methods

A randomized block design with two treatments and three replications was used. Plots were 12 rows (40 feet) wide and field length. Liquid swine manure from a finishing building was applied via a drag hose system and incorporated between the rows a using Vertical Tillage Injector (VIT) toolbar. The VIT unit has a rippled coulter on the front that tilled the soil to a depth of five inches. Manure was applied to the tilled soil and a pair of closing wheels covered the manure. The drag hose was six inches in diameter and manure was being applied to 12 rows during each pass across the field. The manure application rate was 1750 gallons per minute and the manure application amount was 5700 gallons per acre.

The corn was in the V4 stage of growth at the time of application. Field conditions were good at the time of application.

The anhydrous application rate was 175 units of nitrogen per acre. Manure samples indicated 37.5 pounds of available nitrogen per 1,000 gallons. Swine manure treatments received 200 pounds of nitrogen, 32.5 lb./ac P_2O_5 and 210 lb./ac K_2O.

Results

No.	Treatments	Moisture (5%)	Yield (bu./acre)
1	Swine Manure	23.6 b	264 a
2	Anhydrous	22.6 a	246 b

Grain Moisture LSD (0.10): 4.13 CV %: 0.97 - Yield LSD (0.10): 4.13, CV%: 0.97

Summary

There was a significant difference in grain moisture at harvest with the swine manure treatments being a point higher in moisture. There was also a significant difference in yield with the manure treatments yielding 18 bushel to the acre better.

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