

Swine Manure, Beef Manure and 28% as Nitrogen Sources at Corn Side-dress

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Objective

To compare corn yield response to nitrogen applied at side-dress as incorporated swine manure, incorporated beef manure and incorporated 28% UAN.

Background

Crop Year: 2016

County: Fulton

Location: Wauseon, Ohio

Drainage: Systematic, 25' laterals

Previous Crop: Soybeans

Variety: Rupp D05-04

Population: 37,000 seeds per acre

Plant Date: May 18, 2016

Harvest Date: October 26, 2016

Herbicide: Bicep II Magnum

Soil Type: Nappanee, Hoytville clay loam

Tillage: Conventional

Starter Fertilizer: 51-20-0

Pre-Sidedress Nitrogen Test: 27 ppm NO₃-

Rainfall (May – August): 14.1"

Methods

This trial was designed with three treatments of sidedress nitrogen sources replicated four times in an alternating block design. Plots were 6 rows wide (15 feet) by 1,100 feet long. The trial was planted, sprayed, and harvested with commercial farm equipment. The nitrogen treatment was made with a commercial 28% applicator using knife injection. The manure was side-dressed using a 5,200 gallon Balzer tanker with Dietrich shanks that incorporated the manure to a depth of 5 inches. All treatments received 51 units of nitrogen at plant (planter applied + pre-emerge). Manure samples were taken from tank and analyzed, this swine manure had a 25-11-33 per 1,000 gallons, and beef manure had 41-26-30 per 1,000 gallons. The side-dress application rate goals were 5,000 gallons/acre of swine manure, 4,000 gallons/acre of beef manure and 50 gallons/acre of 28% UAN. A corn stalk nitrate test (CSNT) was taken for every replication and then averaged. Yields were determined using a weigh wagon and a calibrated moisture tester and then shrunk to 15% moisture. Precipitation data was recorded by farmer.

Treatments:

1. Liquid swine manure
2. Liquid beef manure
3. 28% UAN (check)



Results

Table 1. Swine Manure vs. Beef Manure vs. 28% at Corn Sidedress

Nitrogen Source	Application Rate (gal/ac)	Units of N/ac Applied at Sidedress	Yield (bu/ac)	CSNT (ppm NO ₃ -N)
Swine (25-11-33/1,000 gal)	5,000	125	203.8 b	6,930
Beef (41-26-30/1,000 gal)	4,000	161	214.0 a	6,270
28% UAN	50	150	215.8 a	6,557
LSD (P<.05, CV 1.25)			4.57	

Discussion:

There was no statistically significant difference in yield between the beef manure and commercial nitrogen. The swine manure did show a significantly lower yield than the other two treatments and this may have been due to a lower than expected ammonia nitrogen content in the swine manure or because the nitrogen was not plant-available soon enough. Further data in the former multi-year replications will add to the validity of these results.

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