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

<table>
<thead>
<tr>
<th>Nitrogen Source</th>
<th>Application Rate (gal/ac)</th>
<th>Units of N/ac Applied at Sidedress</th>
<th>Yield (bu/ac)</th>
<th>CSNT (ppm NO₃-N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swine (25-11-33/1,000 gal)</td>
<td>5,000</td>
<td>125</td>
<td>203.8 b</td>
<td>6,930</td>
</tr>
<tr>
<td>Beef (41-26-30/1,000 gal)</td>
<td>4,000</td>
<td>161</td>
<td>214.0 a</td>
<td>6,270</td>
</tr>
<tr>
<td>28% UAN</td>
<td>50</td>
<td>150</td>
<td>215.8 a</td>
<td>6,557</td>
</tr>
<tr>
<td>LSD (P&lt;.05, CV 1.25)</td>
<td></td>
<td></td>
<td>4.57</td>
<td></td>
</tr>
</tbody>
</table>

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.

Acknowledgement
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