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

Samuel G. Custer, Ohio State University Extension Educator, Darke County

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 P₂O₅ and 210 lb./ac K₂O.

Results

<table>
<thead>
<tr>
<th>No.</th>
<th>Treatments</th>
<th>Moisture (5%)</th>
<th>Yield (bu./acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Swine Manure</td>
<td>23.6 b</td>
<td>264 a</td>
</tr>
<tr>
<td>2</td>
<td>Anhydrous</td>
<td>22.6 a</td>
<td>246 b</td>
</tr>
</tbody>
</table>

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.

Acknowledgement
The author expresses appreciation to on-farm collaborators Stucke Beef Farms for the land use, planting and harvesting of this plot.

For more information, contact:
Sam Custer
OSU Extension, Darke County
603 Wagner Avenue
Greenville, Ohio 45331
custer.2@osu.edu