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

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Objectives:
- To compare corn yield response to nitrogen applied at side-dress as swine manure and UAN 28%.
- To compare yield response from soil compacted with loaded manure tanker with traditional UAN 28% system.

Background
Crop Year: 2008
Cooperator: Dennis Niese
County: Putnam
Nearest Town: Leipsic
Drainage: Tile-40 ft spacing
Soil type: Lucas silty clay loam
Tillage: Conversation tillage
Previous Crop: Soybeans
Variety: Pioneer 32T85
Soil test: pH 6.4, P 48 ppm, K 163 ppm, OM 2.35%
Planting Date: April 23, 2008
Row Width: 30 inch
Herbicides: Cinch
Insecticide: n/a
Harvest Date: October 17, 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 finishing building was applied via incorporation using a 2400 gallon Husky tanker equipped with an AerWay toolbar.

The swine manure and 28% UAN were applied on the same day while the corn was in the two leaf stage. The fully loaded manure tanker was used for the soil compaction treatments. Field conditions were dry at the time of application.

The 28% UAN application rate was 180 units of Nitrogen per acre or 60 gal/ac. The target swine manure application rate was 180 units of nitrogen per acre or 5,000 gallons per acre. The swine manure test results were higher in nitrogen than expected. Manure samples indicated 41 pounds of available nitrogen per 1,000 gallons. Swine manure treatments received 201 pounds of nitrogen, 112 lb/ac P₂O₅ and 157 lb/ac K₂O.

Swine Finishing Manure Analysis

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>lbs. per 1,000 Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen (available the 1st year)</td>
<td>40.31</td>
</tr>
<tr>
<td>Phosphorus as P₂O₅</td>
<td>22.15</td>
</tr>
<tr>
<td>Potassium as K₂O</td>
<td>31.37</td>
</tr>
</tbody>
</table>
Weather conditions during the time of manure application were sunny and 80 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

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Description</th>
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<tbody>
<tr>
<td>Treatment 1 (T1)</td>
<td>60 gal/ac UAN 28%</td>
</tr>
<tr>
<td>Treatment 2 (T2)</td>
<td>60 gal/ac UAN 28% + compaction</td>
</tr>
<tr>
<td>Treatment 3 (T3)</td>
<td>5,000 gal/ac swine manure</td>
</tr>
</tbody>
</table>

### Results and Discussion

#### Yield Summary

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Yield (bu/ac)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of five 28% UAN reps (T1)</td>
<td>168.5 a</td>
</tr>
<tr>
<td>Average of five 28% UAN + compaction reps (T2)</td>
<td>169.7 a</td>
</tr>
<tr>
<td>Average of five manure reps (T3)</td>
<td>169.8 a</td>
</tr>
</tbody>
</table>

LSD (0.05) NS

The results of this plot indicate no statistical difference for yield between any of the treatments. Firm field soil conditions during application may have mitigated soil compaction. Swine manure appears to be a satisfactory source of side-dress nitrogen for corn.

In 2008, 28% UAN cost $0.80 per pound or $144.00 per acre ($0.80 x 180 units) plus the cost of application. The manure was available from the farmer’s swine finisher 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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