EFFECTS OF NITROGEN MANAGEMENT PRACTICES ON CORN YIELD

TRIAL OVERVIEW

- Nitrogen (N) management in corn production continues to be a subject of much research. This, in part, is due to the complexity of the nitrogen cycle with regards to its availability to plants.
- From N application timing, to different sources and rates, to changing environmental conditions, the N practice that best optimizes corn productivity needs to be understood for sustainable operations.

RESEARCH OBJECTIVE

- To determine the response of two corn products to different N management practices.

<table>
<thead>
<tr>
<th>Location</th>
<th>Soil</th>
<th>Previous Crop</th>
<th>Tillage Type</th>
<th>Planting Date</th>
<th>Harvest Date</th>
<th>Potential Yield/Acre</th>
<th>Planting Rate/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huxley, IA</td>
<td>Clay Loam</td>
<td>Soybean</td>
<td>Conventional</td>
<td>05/06/2017</td>
<td>10/17/2017</td>
<td>225 bu/acre</td>
<td>34,000 seeds/acre</td>
</tr>
</tbody>
</table>

SITE NOTES:
- A 105 RM and a 113 RM SmartStax® Rib Complete® Corn Blend were used for this trial.
- The trial was carried out in 30-inch row spacing, 6 rows/treatment with 2 replications.
- Nitrogen Treatments:
  - 160 lbs/acre PRE
  - 80 lbs/acre PRE + 80 lbs/acre at V5 with coulter
  - 80 lbs/acre PRE + 80 lbs/acre at V5 with 360 Y-Drop®
  - 80 lbs/acre PRE + 80 lbs/acre at VT with 360 Y-Drop®

UNDERSTANDING THE RESULTS

Figure 1. Effect of nitrogen management practice on 105 RM and 113 RM corn products.

- The two corn products responded differently to the nitrogen treatments.
- In all nitrogen treatments, the 113 RM product out-yielded the 105 RM product.
- For both products, the two V5 sidedress applications substantially out-yielded the other treatments.
With the V5 sidedress applications, there was no difference between coulter and 360 Y-Drop® technologies in the 113 RM product. Application with coulters slightly out-yielded 360 Y-Drop® in the 105 RM product.

In both corn products, VT sidedressing yielded much less than the V5 application.

In all the nitrogen treatments, grain moisture content was about 1% lower in the 105 RM product.

WHAT DOES THIS MEAN FOR YOUR FARM?

• Corn products respond differently to different N management systems.
• Every growing season is different which can have a significant impact on the performance of farm inputs. During the 2017 growing season, the research site at Huxley, IA experienced drought and high temperature conditions interspersed with a few 2 to 3 inch rainfalls, a scenario that significantly affects N dynamics in the soil.
• Growers are encouraged to perform small scale trials in their fields to understand how management practices impact economics and production.