

## CORN PRODUCT RESPONSE TO NITROGEN STRATEGY

### TRIAL OVERVIEW

- Questions about how corn products respond to different management strategies can be perplexing as information gleaned from discussions with neighbors about product performance may not provide a complete story as to why a corn product did or did not yield as expected.
- A study was initiated to evaluate two different nitrogen (N) application strategies on multiple corn products to help provide a few answers to farmers about the impact of N strategy on corn yield.

### RESEARCH OBJECTIVE

- The objective of this study was to investigate if the N application strategy impacted corn products differently. Two N application strategies were used: all upfront prior to planting or fertigation over the growing season.

Location	Soil	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield/Acre	Planting Rate/Acre
Gothenburg, NE	Hord silt loam	Soybean	Strip tillage	04/26/2017	10/24/2017	270 bu/acre	36,000 seeds/acre

SITE NOTES:

- A standard formula was used to determine N application rates:
  - N need = (yield goal \* 1.1) - (soil N) - (legume credit)
  - 194 lbs/acre = (270 bu/acre \* 1.1) - (63 lbs soil N in 2 ft) - (40 lbs/acre)
- N treatments were applied as all N upfront or via fertigation consisting of eight applications of 15 lbs of N/acre.
- The study was a split-plot design with N strategy as the whole plot with four replications.
- Corn products were grown under full irrigation using a subsurface drip irrigation system. Total irrigation applied to all products was 9.2 inches over the growing season.
- Barren plants, green-snapped plants, and plants that died prematurely were recorded.

### UNDERSTANDING THE RESULTS

	N application rates (lbs/acre)	
	All N upfront	Fertigation
Residual N	63	63
Strip-till N	19.3	19.3
Legume N credit	40	40
At-planting N	174.7	40.7
Fertigation N	0	120 (8 applications of 15 lbs N/acre)
Total N	297	283

Table 1. Nitrogen application rates and timing along with residual soil N and legume credits. Note that total N is slightly lower in the fertigation treatment.

- Corn products responded differently to N strategy with 9 out of the 24 corn products tested having significantly increased yield in response to fertigation with a 12 bu/acre or more difference observed (Table 2).
- The positive response to fertigation was not limited to a specific RM. Instead, the response was recorded in two 105 RM products all the way to the 117 RM product.
- There was no interaction between N strategy and corn product for the incidence of barren plants, green-snapped plants, or plants that died prematurely.

Corn Product	Corn Product Yield (bu/acre)		Response to fertigation (bu/acre)
	All upfront	Fertigation	
100RM-A	228	228	0
103RM-A	255	251	-4
104RM-A	235	241	6
105RM-A	225	238	13
105RM-B	236	251	15
106RM-A	267	279	12
108RM-A	257	265	8
108RM-B	245	271	26
109RM-A	264	270	6
110RM-A	254	260	6
110RM-B	268	266	-2
111RM-A	263	266	3
111RM-B	265	270	5
111RM-C	267	280	13
112RM-A	263	270	7
112RM-B	248	268	20
112RM-C	258	283	25
113RM-A	278	287	9
113RM-B	251	260	9
113RM-C	266	268	2
114RM-A	283	286	3
114RM-B	269	280	11
116RM-A	263	278	15
117RM-A	277	306	29

LSD (0.1) = 11.9

Table 2. Corn product yield in response to N application strategy. Highlighted products indicate a significant response.

## WHAT DOES THIS MEAN FOR YOUR FARM?

- This research provides farmers with another question that they should ask when choosing a corn product to make sure that the product fits their management practices. Whether they apply all the N upfront or can fertigate the N over the growing season, there are corn product options that can meet their needs.
- Farmers should work closely with their local seed sales team to properly choose and place corn products to maximize environment and management potential.
- Seed sales teams can identify how their corn products performed in this trial.

### LEGAL STATEMENT

The information discussed in this report is from a single site, replicated demonstration. This information piece is designed to report the results of this demonstration and is not intended to infer any confirmed trends. Please use this information accordingly. For additional agronomic information, please contact your local seed representative. Developed in partnership with Technology Development & Agronomy by Monsanto. **Individual results may vary**, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. ©2017 Monsanto Company All Rights Reserved. 171114093428 112617CAM