

## CORN PRODUCT RESPONSE TO IRRIGATION MANAGEMENT

### TRIAL OVERVIEW

- Farmers use a variety of irrigation management practices to irrigate their corn crop based on the water availability of their irrigation systems. There may be limitations on the amount of water that can be pumped by the well or the irrigation water may need to be shared across multiple crops.
- Regardless of the reason, farmers would like to know how corn products respond to different irrigation management strategies.

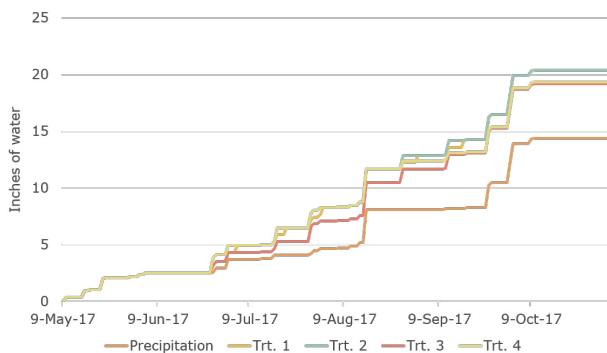


Figure 1. Precipitation and irrigation accumulated in each treatment throughout the growing season

### RESEARCH OBJECTIVE

- The study evaluated the impact of different irrigation management strategies on multiple corn products.

Location	Soil	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield/Acre	Planting Rate/Acre
Gothenburg, NE	Hord silt loam	Corn	Conventional	05/09/2017	10/27/2017	240 bu/acre	34,000

#### SITE NOTES:

- 22 corn products with RM ranging from 100 to 114 were planted on irrigated, conventional-tilled ground previously planted to corn.
- Four different irrigation treatments were applied:
  - Treatment 1: 100% full irrigation (FI) to meet the evapotranspiration demands of the corn crop; 10 applications of 0.6 inch/pass totaling 6.0 inches.
  - Treatment 2: 100% FI; 5 applications of 1.2 inch/pass totaling 6.0 inches.
  - Treatment 3: 60% FI early (up to V16) followed by 100% FI late; 5 applications totaling 4.72 inches.
  - Treatment 4: 100% FI early followed by 60% FI late (after R2); 5 applications totaling 4.92 inches.
- The trial was set up as a randomized split-plot with irrigation treatment as the whole plot and corn product as the subplot with 4 replications.
- Weeds were controlled uniformly across the study and no insecticide or fungicide applications were needed.

### UNDERSTANDING THE RESULTS

- Corn products performed differently in the irrigation treatments. Some corn products lost a significant amount of yield if they were stressed early. Other corn products showed no difference in yield across the irrigation treatments.
- Corn product performance was classified into five categories based on yield:
  - Avoid early-season water stress
  - Avoid late-season water stress
  - Consistent response across all irrigation treatments
  - Handles late-season water stress
  - Prefers 0.6 inch/pass applications and handles late-season water stress

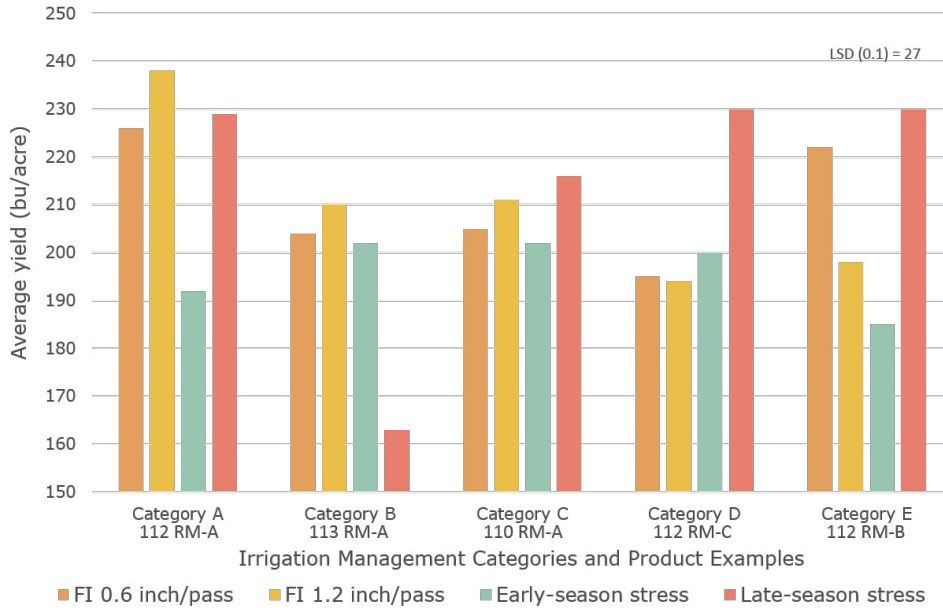


Figure 2. Corn product examples for the five irrigation management categories

Category A	Category B	Category C	Category D	Category E
106 RM	113 RM-A	110 RM-A	105 RM-A	112 RM-B
112 RM-A		110 RM-B	112 RM-C	111 RM-A
105 RM-B		113 RM-B	103 RM	
109 RM-A		114 RM-A		
114 RM-B		100 RM		
111 RM-B		113 RM-C		
108 RM-B		104 RM		
		111 RM-C		
		108 RM-A		

Table 1. Categorization of the different corn products based on average yield in the different treatments



Figure 3. Performance of the 114 RM-B corn product across two irrigation treatments, Treatment 1. 100% FI with 0.6 inch/pass and Treatment 3. 60% FI early (up to V16) followed by 100% FI late. The 114 RM-B corn product was grouped into Category A (avoid early-season water stress).

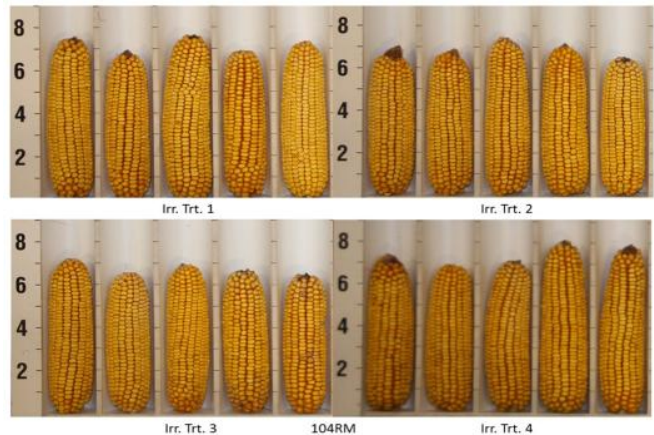


Figure 4. Corn ears from the 104 RM corn product showing performance across treatments. The 104 RM corn product was grouped into Category C (consistent response across all irrigation treatments).



- A majority of corn products fell into category A, where the product had a negative response to early-season stress, or category C, where the product had a consistent response across irrigation treatments (Figures 3 & 4).
- The lone corn product in category B was unique as all other corn products could handle late-season stress.
- For categories D and E, there were some slight differences, but the corn products in both categories had high yields when the corn product was exposed to late-season stress. The corn products in category E also yielded higher when 0.6 inch of water was applied per pass compared with all the other categories.

## WHAT DOES THIS MEAN FOR YOUR FARM?

- Corn products do respond differently to different irrigation management strategies.
- Producers should work with their local seed sales team to identify a corn product that will work with their irrigation system.
- Ask your agronomist how their branded corn products performed in this study.

### 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.

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