

IMPACT OF IRRIGATION ENVIRONMENT ON CORN PRODUCT PERFORMANCE

TRIAL OVERVIEW

- There are many different irrigation environments across the Great Plains. In some areas, water applications are restricted by pumping capacity or by allocation, but there are still many fully-irrigated fields.
- Farmers need information on how corn products perform in various irrigation environments to help them choose the best products for their fields.

RESEARCH OBJECTIVE

- This study was set up to evaluate corn product performance in various irrigation environments.

Location	Soil	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield/Acre	Planting Rate/Acre
Gothenburg, NE	Hord silt loam	Corn	Conventional	05/07/2017	11/01/2017	240 bu/acre	34,000 seeds/acre

SITE NOTES:

- Four irrigation rates were used: 100% full irrigation (FI) to meet the irrigation needs of the crop, 70%, 50%, and 20% FI.
- The irrigation rates were achieved using a variable rate irrigation system installed on a linear move overhead sprinkler system.
- Rainfall amounted to: May 2.53 in., June 0.75 in., July 1.52 in., August 3.63 in., and September 2.4 in., totaling 10.83 in.
- 15 corn products were tested with RM ranging from 101 to 116.
- The study design was a split plot with irrigation rate as the whole plot with two replications.
- Weeds were uniformly controlled across the study and no insecticides or fungicides were applied.

UNDERSTANDING THE RESULTS

Irrigation treatment	Irrigation amount ----- Inches -----	Total moisture (irrigation + precipitation)
100% FI	6.0	16.83
70% FI	4.2	15.03
50% FI	3.0	13.83
20% FI	1.2	12.03

Table 1. Irrigation treatments

- As expected, corn product performance was impacted by irrigation rate with higher yields observed under 100% FI, indicating that water stress reduced yield.
 - On average, 70% FI yielded 93% of the 100% FI treatment.
 - On average, 50% FI yielded 89% of the 100% FI treatment.
 - On average, 20% FI yielded 75% of the 100% FI treatment.
- The corn products that provided consistent performance across irrigation treatments were 105RM-A, 110RM-B, and 113RM-A (highlighted in Table 2).
- Corn product 106RM-A had consistent performance at the 70% and 50% FI treatments, but yield decreased significantly at the 20% FI treatment when compared to 100% FI (highlighted in Table 2).
- Corn product 116RM had a high yield at the 100% FI treatment, but had reduced yields at the other irrigation treatments. This product should be well suited for fully-irrigated ground.

Corn product	Yield 100% FI (bu/acre)	70% FI		50% FI		20% FI		Product average (bu/acre)
		Yield (bu/acre)	% of 100% FI	Yield (bu/acre)	% of 100% FI	Yield (bu/acre)	% of 100% FI	
101RM	178	142	80	148	83	111	63	145
105RM-A	218	198	91	210	97	209	96	209
105RM-B	231	209	90	201	87	160	69	200
106RM-A	237	240	101	211	89	156	66	211
106RM-B	238	229	96	190	80	166	70	205
108RM	231	214	93	186	81	168	73	200
109RM	234	210	90	198	85	174	74	204
110RM-A	242	233	96	208	86	181	75	221
110RM-B	210	225	107	191	91	188	89	206
112RM-A	245	224	91	242	99	178	73	222
112RM-B	243	225	92	222	91	178	73	223
113RM-A	230	216	94	228	100	207	90	220
113RM-B	209	205	98	189	90	156	74	190
114RM	249	237	95	214	86	159	64	215
116RM	259	218	84	225	87	208	80	227
Treatment average	230	215	93	204	89	173	75	

Table 2. Corn product performance affected by irrigation environment (average of the two reps)

WHAT DOES THIS MEAN FOR YOUR FARM?

- As new corn products come to the market, this type of research provides valuable information on the correct placement of these products to provide the best opportunity for a successful crop.
- Branded information to identify these corn products can be acquired from your local Monsanto seed sales team.

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. Monsanto and Vine Design® is a registered trademark of Monsanto Technology LLC. All other trademarks are the property of their respective owners. ©2018 Monsanto Company All Rights Reserved. 171201155447 122217CAM