Tailoring Irrigated Corn Systems with Seed, Weed, and Disease Management

Trial Objective

- Decisions about what pest management system in corn is the best can be difficult with limited information comparing weed and disease control options.
- The objective of this study was to evaluate the yield effects of combining corn products, weed control, and disease control from Bayer to a competitive system.

Research Site Details

Location	Soil Type	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield (bu/acre)	Seeding Rate (seeds/acre)
Gothenburg, NE	Hord silt loam	Sorghum	Strip till	4/30/20	10/31/20	260	36,000

- This study was setup in a split-plot design with three replications. The weed and disease control systems were the whole plot, and corn products were the sub-plot.
- The Bayer corn system included three Bayer corn products paired with three Bayer pesticide application programs.
- The competitive corn system included one competitor corn product paired with a competitor pesticide application program.
- Table 1 contains details of the weed and disease control products used in the study, as well as the application timing when the products were applied.
- A total of 10 inches of sprinkler-irrigation was applied in addition to the 12 inches of rain received during the growing season.
- Fertility application included:
  - 70 lb phosphorus/acre, 15 lb sulfur (S)/acre, and 27.5 lb nitrogen (N)/acre banded with strip till on 4/26/20,
  - 100 lb N/acre applied with a streamer bar on 4/28/20, and
  - 15 lb S/acre and 90 lb N/acre Y-drop applied with 360 Y-DROP® applicators on 6/26/20.
- Average yield of each corn system was calculated from shelled corn weight, moisture, and test weight.

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Table 1. Treatment descriptions including applications and timings.

Treatment (#)[1]	Corn Product Brand Blend	Corn System	Pesticides Used	Rate	Application Timing (Date)
1 2 3	111-Relative Maturity (RM) 113-RM 120-RM	1	Corvus® herbicide Roundup PowerMAX® herbicide Atrazine 4L herbicide Ammonium sulfate (AMS)	0.125 qt/acre 1 qt/acre 1 qt/acre 17 lb/100 gal	Pre-emerge (5/1/2020)
			Delaro® 325 SC fungicide DiFlexx® herbicide Roundup PowerMAX herbicide AMS	0.125 qt/acre 12 fl oz/acre 1 qt/acre 17 lb/100 gal	V5 (6/10/20)
			Delaro 325 SC fungicide	0.25 qt/acre	VT (7/24/20)
4 5 6	111-RM 113-RM 120-RM	2	Corvus herbicide Roundup PowerMAX herbicide Atrazine 4L herbicide AMS	0.125 qt/acre 1 qt/acre 1 qt/acre 17 lb/100 gal	Pre-emerge (5/1/2020)
			DiFlexx herbicide Roundup PowerMAX herbicide AMS	12 fl oz/acre 1 qt/acre 17 lb/100 gal	V5 (6/10/20)
			Delaro 325 SC fungicide	0.25 qt/acre	VT (7/24/20)
7 8 9	111-RM 113-RM 120-RM	3	Balance® Flexx herbicide Atrazine 4L herbicide Roundup PowerMAX herbicide AMS	0.125 qt/acre 1 qt/acre 1 qt/acre 17 lb/100 gal	Pre-emerge (5/1/2020)
			DiFlexx herbicide Roundup PowerMAX herbicide AMS	12 fl oz/acre 1 qt/acre 17 lb/100 gal	V5 (6/10/20)
			Delaro 325 SC fungicide	0.25 qt/acre	VT (7/24/20)
10	113-RM Competitor	4	Resicore® Herbicide Durango® DMA® herbicide AMS	1.25 qt/acre 1.09 qt/acre 17 lb/100 gal	Pre-emerge (5/1/2020)
			Resicore® Herbicide Durango® DMA® herbicide AMS	1.25 qt/acre 1.09 qt/acre 17 lb/100 gal	V5 (6/10/20)
			DuPontTM Aproach® Prima fungicide	0.1875 qt/acre	VT (7/24/20)

[1]Treatments 1 through 9 use Bayer Crop Science corn and pesticide products. Treatment 10 uses competitor corn and pesticide products.

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Understanding the Results

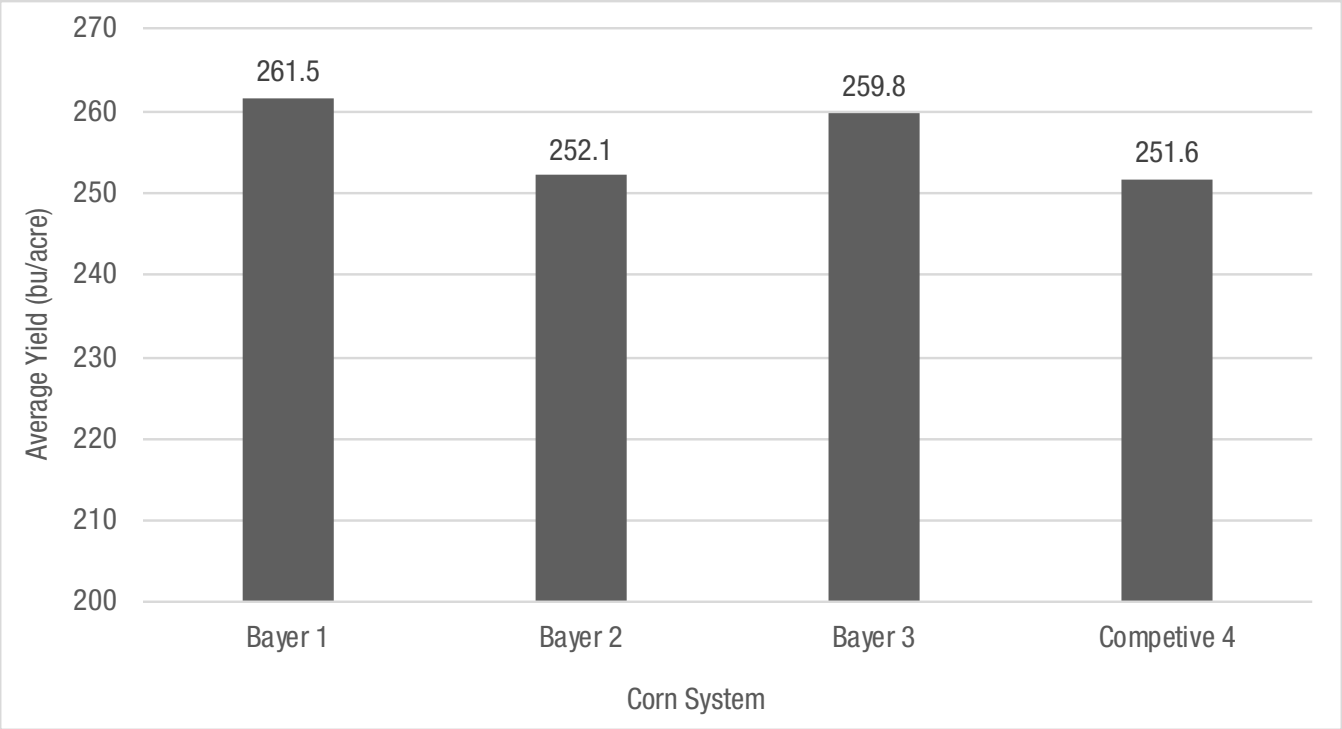

Figure 1. Average yield response by corn system.

- There were no significant yield differences between corn systems. However, the three Bayer systems (systems 1, 2, and 3) produced a higher average yield than the competitive system (system 4) in the trial.
- The highest average yield in this trial was from Corn System 1, which included two applications of Delaro® 325 SC fungicide applied at V5 and R1 growth stages.
- Corn System 3 included a Delaro 325 SC fungicide application at VT growth stage. This system had slightly lower average yields than Corn System 1.
- Corn System 2 was treated with Delaro 325 SC fungicide plus Corvus® herbicide at the VT growth stage. This system had the lowest average yield of the Bayer systems.

Key Learnings

- Evaluating complete systems of corn products, herbicides, and disease management tools can be difficult because there are a limited number of system combinations that can be addressed in a given trial.
- The four systems researched here are all viable systems currently used in irrigated corn production.
- There may be some value in multiple fungicide applications, as observed in Corn System 1.
- Corn System 3 provided a good combination of corn, herbicide, and fungicide products that produced high average yields for this trial.
- Corn product selection is a critical component of a tailored solution, please consult your seed representative to help you select the best corn products for your farm.

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Legal Statements

The information discussed in this report is from a single site, replicated demonstration. This informational piece is designed to report the results of this demonstration and is not intended to infer any confirmed trends. Please use this information accordingly.

ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields.

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