

CORN PRODUCTIVITY RESPONSE TO DIFFERENT MANAGEMENT PRACTICES

TRIAL OVERVIEW

- Advancements in breeding and seed technologies have greatly improved corn germplasm.
- The influence of farm management practices on modern corn germplasm needs to be evaluated to optimize productivity.

RESEARCH OBJECTIVE

- To evaluate the impact of different management practices on corn yield and profitability.

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

SITE NOTES:

- A 113-relative maturity SmartStax[®] RIB Complete[®] corn blend product was used for this trial.
- The trial was carried out in 30-inch row spacing, 6 rows per treatment, with 2 replications.
- Six different management treatments, consisting of seed treatments, nitrogen, and fungicide, were compared in incremental, stair-step treatments (Table 1).
- Acceleron[®] Seed Applied Solutions ELITE plus Poncho[®]/VOTiVO[®] consists of fungicide, insecticide and nematicide treatments with the Enhanced Disease Control (EDC) offering for the control of early- to mid-season diseases caused by Fusarium, Rhizoctonia and Colletotrichum.
- QuickRoots[®] Dry Planter Box Corn (Q) is a microbial seed inoculant that was added as dry planter box formulation for enhanced nutrient availability.
- All treatments received a MRTN of 140 lbs. of nitrogen/acre in the form of anhydrous ammonia in the spring. An additional 25 lbs/acre of nitrogen was applied in both N1 and N2.
- Headline AMP[®] was the fungicide used in the trial.

UNDERSTANDING THE RESULTS

Treatments	Inputs	Cost (\$/A)
E	Acceleron [®] Seed Applied Solutions ELITE plus Poncho [®] /VOTiVO [®] (E)	\$ -
E+Q	QuickRoots [®] Dry Planter Box Corn (Q)	\$6.38
EQ+N1	Side dress 32% UAN at V5 growth stage (N1)	\$12.13
EQN1+F1	Fungicide application at V5 growth stage (F1)	\$36.13
EQN1F1+N2	Side dress 32% UAN at VT growth stage (N2)	\$41.88
EQN1F1N2+F2	Fungicide application at VT growth stage (F2)	\$73.88

Table 1. Treatments used in the trial with their associated costs.

- Corn yields increased as more inputs were added, such that the base treatment (E) yielded the lowest, and the treatment with the most inputs (EQN1F1N2F2) yielded the highest (Fig. 1).
- Minimal levels of gray leaf spot (GLS) and northern corn leaf blight (NCLB) diseases were observed at the research site and may explain why yield improved in the fungicide application treatments (Fig. 2).
- Yield gained by the other treatments over treatment E was enough to provide higher economic returns than treatment E; with return on investment (ROI) ranging from \$25 to \$54.

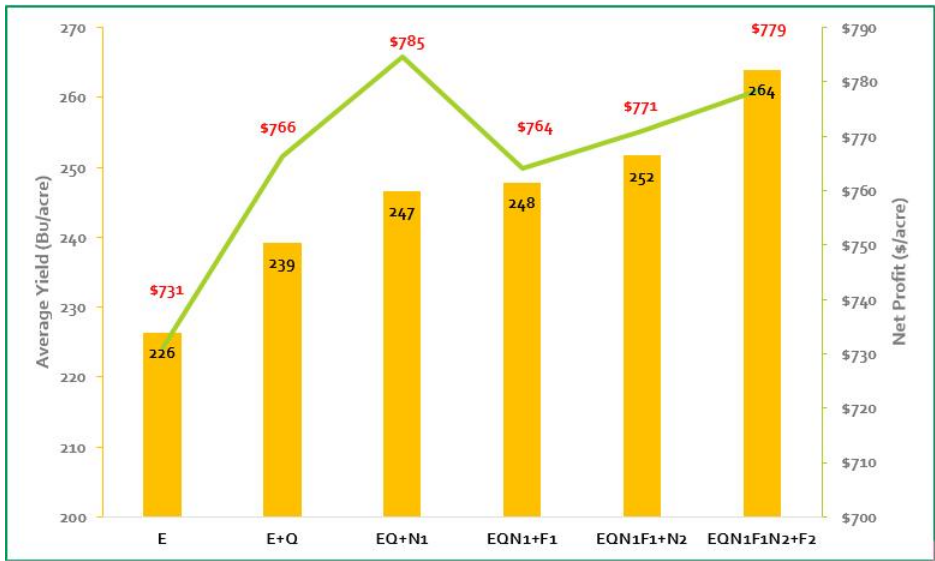


Figure 1. Average yield and net profit of different treatments.

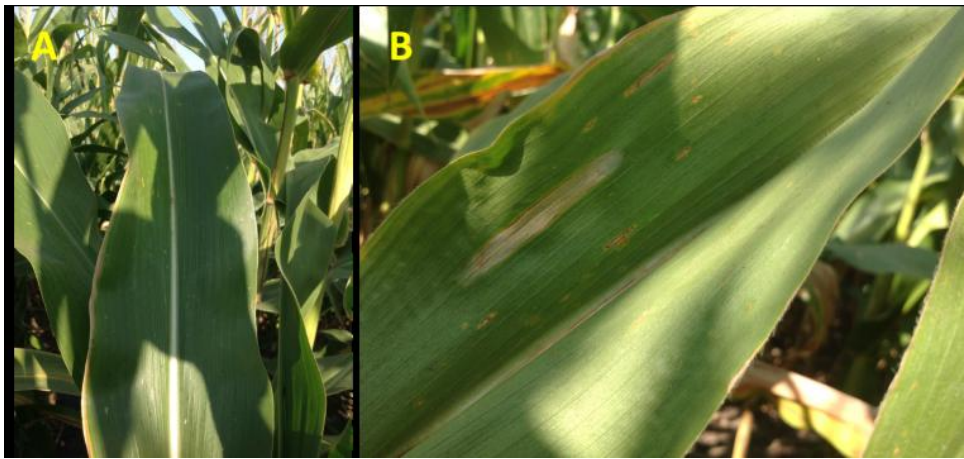


Figure 2. Minimal levels of disease were observed at the research site. A: Plants of treatment EQN1+F1 showing the absence of foliar diseases. This observation was true for the other treatments that consisted of fungicide applications. B: The treatments that did not include fungicide applications showed symptoms of northern corn leaf blight (NCLB) and gray leaf spot (GLS) diseases.

- Using QuickRoots[®] Dry Planter Box Corn with a side dress nitrogen application at V5 (EQN1) provided the highest ROI at \$785/acre. The addition of more inputs beyond this treatment resulted in higher yields, but these were not high enough to defray their cost.

WHAT DOES THIS MEAN FOR YOUR FARM?

- Every growing season is different, and has a significant impact on the performance of farm inputs.
- Corn products respond differently to farm inputs. Therefore, when selecting corn products, growers should consult with their trusted agronomists on how different corn products perform under various growing conditions and management practices.
- Growers should also make a habit of performing small-scale trials on their fields to understand how their management systems impact their operations economically.
- Growers should be aware of the early- to mid-season disease history in their growing area when selecting corn products with disease tolerance or utilizing Acceleron[®] Seed Applied Solutions with Enhanced Disease Control. Fungicide treatment responses vary from year to year based on disease pressure; therefore, fungicide application ROI should be considered each year depending on disease pressure and severity.



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