

HIGH YIELD MANAGEMENT SYSTEMS IN CORN

TRIAL OVERVIEW

- Many corn production factors are not easily altered so growers must focus on factors that can be changed. Annual production decisions include: soil fertility, seed treatment options, and pest management.
- With the current market trend, growers are contemplating cutting corn production cost by eliminating or reducing some inputs.

RESEARCH OBJECTIVE

- The objective of this trial is to help determine the value soil fertility management and crop protection practices bring to farm operations in the face of lower commodity prices.

Location	Soil	Previous Crop	Tillage Type	Planting Date	Harvest Date	Potential Yield/Acre	Planting Rate/Acre
Huxley, IA	Clay Loam	Soybean	Conventional	04/24/2016	10/18/2016	220	35,000

SITE NOTES:

- A 112 relative maturity SmartStax® RIB Complete® corn product was selected for the trial.
- Eight different treatments evaluated the use of seed treatments, fertilizer, and pesticide applications. Corn products were planted in 30-inch row spacing with 6 rows/treatment.
- Foliar fungicide and insecticide were applied at VT/R1 growth stage at manufacturers recommended rates.
- 32% UAN was used for all sidedress applications at V5 (N1) and VT/R1 (N2) growth stages.

UNDERSTANDING THE RESULTS

TRT	Acceleron® Seed Applied Solutions ELITE (A)	QuickRoots® (Q) ¹	Starter Fertilizers (S) ²	Sidedress Nitrogen (N1) ³	360 Y-DROP® Nitrogen (N2) ⁴	Fungicide and Insecticide (FI) ⁵
A	X					
AQ	X	X				
AQS	X	X	X			
AQSN1	X	X		X		
AQSN2	X	X			X	
AQSN1N2	X	X	X	X	X	
AQSFI	X	X	X			X
AQSN1N2FI	X	X	X	X	X	X

Table 1. Treatments to evaluate high yield management systems in corn.

¹QuickRoots® (Q) cost \$6.00/acre; ²Starter Fertilizer (S) cost \$12.00/acre;

³Sidedress Nitrogen (N1) cost \$17.10/acre;

⁴360 Y-DROP® Nitrogen (N2) cost \$17.10/acre; N1+N2 cost \$ 17.10/acre;

⁵Fungicide and Insecticide application cost \$32.00/acre.

- Nitrogen 360 Y-DROP® was applied at VT to R1 growth stage.
- Fertility - All treatments received 115 lbs N/acre of anhydrous ammonia in the fall of the previous year.
 - Treatments A, AQ, AQS, and AQSFI received an additional 60 lbs N/acre of 32% UAN following planting.
 - Treatments AQN1 and AQN2 received 105 lbs N/acre of 32% UAN in their respective applications.
 - Treatments AQSN1N2 and AQSN1N2FI each received 60 lbs N/acre as sidedress and 45 lbs N/acre as 360 Y-DROP applications. The Climate FieldView™ Nitrogen Monitoring Tool was used to provide N application insight.
- QuickRoots® and starter fertilizer did not improve yield potential.
- Yield was nearly the same for all fertility treatments.
- Timing of N application had minimal effect on yield potential.
- Yield was nearly the same for the two fungicide and insecticide (FI) treatments.

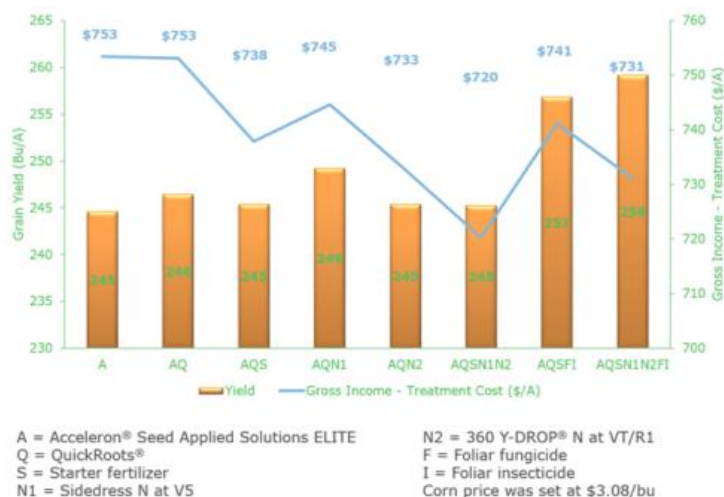


Figure 1. Effects of soil fertility management and crop protection practices on corn productivity.

- Foliar FI improved yield potential:
 - FI applications provided ~12 bu/acre yield increase with a revenue of \$37/acre. (input cost of FI application \$32/acre (Table 1); economic return of \$5/acre (revenue \$37–input cost \$32)
 - Treatments containing FI applications (AQSF1 and AQSN1N2FI) were less economical due to costs of starter fertilizer and sidedress N components (S, N1, and N2) that did not contribute to improved yield potential.
- Acceleron® Seed Applied Solutions ELITE (A) and Acceleron® Seed Applied Solutions ELITE + QuickRoots® (AQ) were the most profitable treatments at \$753/acre each.

WHAT DOES THIS MEAN FOR YOUR FARM?

- Yield response to agronomic inputs is highly dependent on the corn product, soil, and environmental conditions during the growing season causing different responses from year to year.
- Early- and mid-season (especially during pollination) stresses have significant negative impacts on yields.
 - The FI application was necessary to help protect yields due to a wet spring which predisposed plants to stresses followed by the hot, dry midsummer.
 - The 112-day corn product responded positively to FI applications with a 12-14 bu/acre yield advantage over the other treatments.
- Corn product did not respond to starter fertilizer application.
 - Starter fertilizers are most beneficial when planting into cold, wet soils, or when soil fertility is marginal, opposite of the conditions for this trial.
- QuickRoots® enhances nutrient mineralization and nutrient availability to plants.
 - QuickRoots may be the reason why the different N rates and timings had minimal effects on yield potential.
 - In marginal fertility fields, QuickRoots may be a great input to optimizing yield potential.

LEGAL STATEMENT

The information discussed in this report is from a single demonstration at three sites. 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.

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IMPORTANT IRM INFORMATION: RIB Complete® corn blend products do not require the planting of a structured refuge **except** in the Cotton-Growing Area where corn earworm is a significant pest.

See the IRM/Grower Guide for additional information. Always read and follow IRM requirements.

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