



2015 Demonstration Report

MONSANTO LEARNING CENTER AT MONMOUTH, IL

Fungicide Yield Response by Corn Product

Background

Corn leaf diseases, such as Gray Leaf Spot (GLS), Northern Corn Leaf Blight (NCLB), and Anthracnose Leaf Blight, can reduce yield potential when environmental conditions are ideal for disease development, such as the humid, wet conditions observed across the Corn Belt through much of the 2015 growing season.

Decisions of whether or not to protect yield from leaf blights by applying a fungicide are frequently made at tasseling (VT).

Yield losses may be more substantial when disease development progresses above the ear leaf, as approximately 75% of the carbohydrates in the grain are produced by the top eight or nine leaves on the corn plant.¹

Leaf diseases may lead to reduced photosynthesis during grain fill, which can result in reduced levels of carbohydrates in stalks and roots due to demands to fill the ears.²

This stalk cannibalization process may result in increased susceptibility to stalk and root rots and increased amounts of physiological stalk lodging.



Figure 1. NCLB lesions beginning to form on the ear leaf and upper leaves at silking (R1) growth stage.

Study Guidelines

The objective of this trial was to determine the return on investment of a fungicide application at VT growth stage for eight different corn products.

Eight corn products, ranging in maturity from 108 RM to 116 RM, were planted in a single demonstration at three Illinois locations. The previous crop was corn at two locations and soybean at one location. Product reactions ranged from moderate to moderately susceptible to GLS and from moderately resistant to moderately susceptible to NCLB. Plots were located in Champaign, Greene, and Warren counties in Illinois. Field preparation included fall chisel plow followed by a spring soil finisher. Rows were 30 inches wide. All plots were planted between April 17 and April 28 at seeding rates between 34,500 seeds/acre to 36,000 seeds/acre.

Treatments

- Untreated check
- 14 fl oz/acre of Headline AMP® Fungicide applied at VT growth stage

Eight rows of each corn product were planted side-by-side. Four rows of each corn product were treated with Headline AMP® Fungicide at VT growth stage and the remaining four rows were left untreated. Plots were harvested between September 18 and September 26. Yield data was adjusted to 15% moisture content.

Results and Discussion

A nearly record amount of rainfall was received during June and July which contributed to ideal conditions for disease development during vegetative and early reproductive growth stages. GLS was the primary disease present in the plot and NCLB was also observed.



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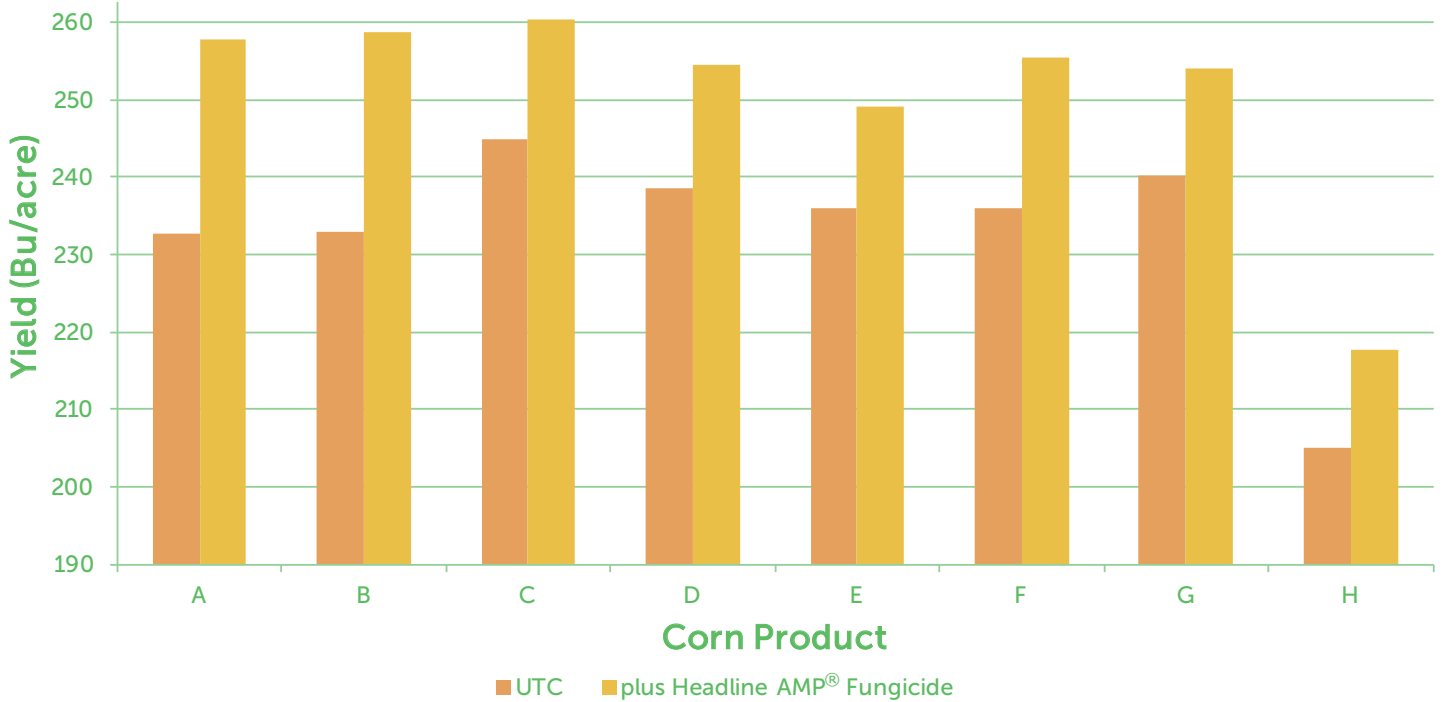


Figure 2. Average Yield Response from Fungicide Application by Corn Product

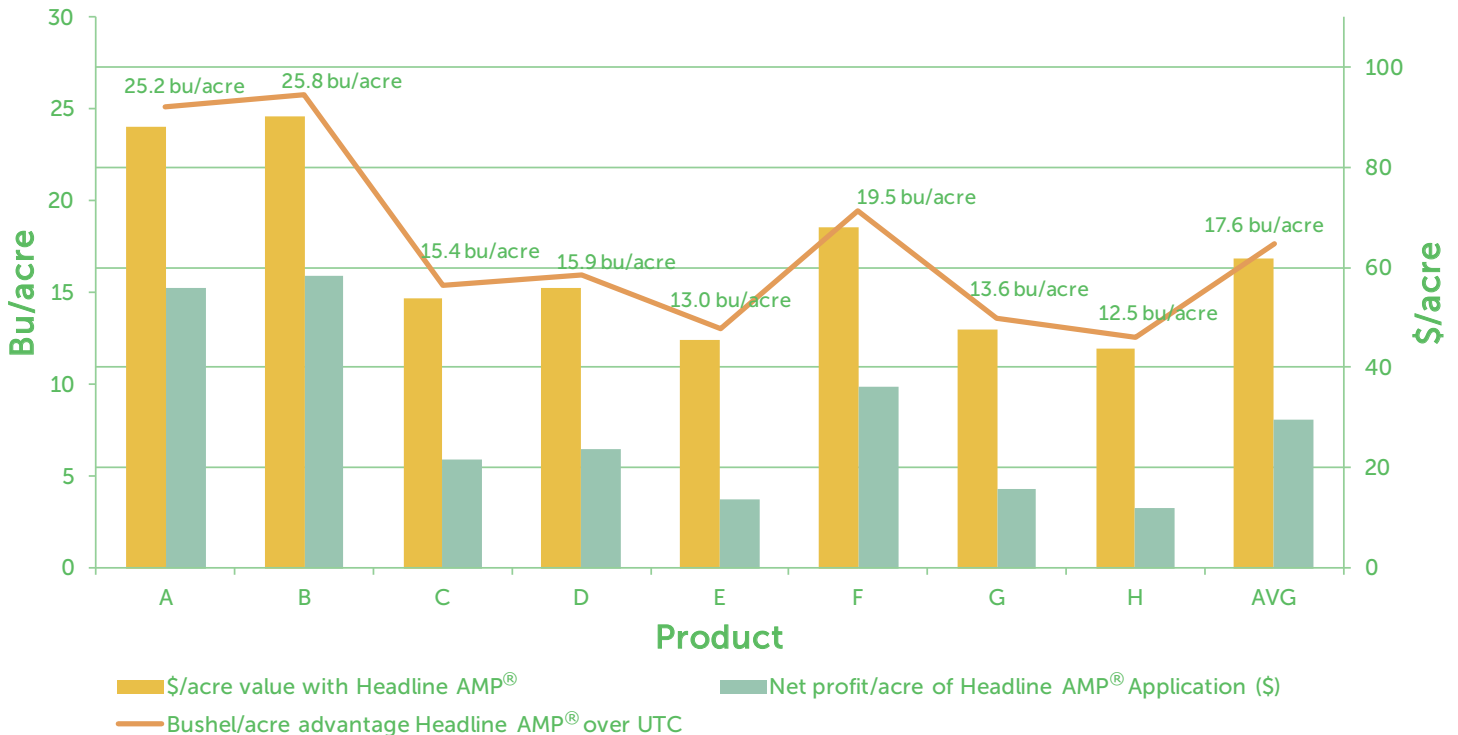


Figure 3. Economic Analysis of Headline AMP® Fungicide Application*

*Economic analysis assumes \$3.50/bu corn and \$32.00/acre fungicide application cost.



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TABLE 1. AVERAGE YIELD RESPONSE BY CORN PRODUCT'S DISEASE REACTION*

Corn Product's Least Desirable Reaction to NCLB or GLS	Difference (bu/acre) Untreated vs 14 fl oz/acre Headline AMP®	% Yield Protection from Fungicide
Moderately Resistant (Products C and H)	14.0	5.9
Moderate (Products B, D, E and G)	17.2	6.7
Moderately Susceptible (Products A, and F)	22.4	8.7

*GLS was the primary disease present and NCLB was also observed

Takeaways

- An average yield increase of 17.6 bu/acre was observed with the VT treatment of Headline AMP® fungicide.
- An average net profit of \$29.64/acre was attributed to a VT application of fungicide in this study.
- All genetics responded positively to the VT fungicide application, but they did not all respond equally. Benefits of fungicides were about 8.4 bu/acre greater on seed products which were moderately susceptible to GLS and/or NCLB. Therefore, it is important to reference your local seed guide or speak with your agronomist for specific corn product recommendations.
- Disease development and progression is highly dependent on environmental conditions and corn product genetics. June and early-July weather was nearly ideal for the development of GLS and NCLB. Therefore, an economic yield response to fungicide application is highly variable from year-to-year.
- Prior to tasselling, scouting plans should be in place for fields with susceptible genetics, continuous corn fields, or in fields with a history of disease; especially with wet weather.
- When scouting, take into consideration the severity of disease symptoms and the incubation period. The long incubation period for GLS prolongs the appearance of symptoms.

- To determine if a fungicide application is warranted consider yield potential, corn growth stage, potential for additional development of disease symptoms, fungicide application cost, and the price of corn.

Sources

¹Rees, J.M. and Jackson, T.A. 2008. Gray leaf spot of corn. NebGuide G1902. University of Nebraska-Lincoln Extension. www.ianrpubs.unl.edu.

²Nielsen, R.L. 2013. Stress during grain fill: A harbinger of stalk health problems. Purdue University. <https://www.agry.purdue.edu/ext/corn/news/timeless/stalkhealth.html>.

Web sources verified 10/6/15.

Legals

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.

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.

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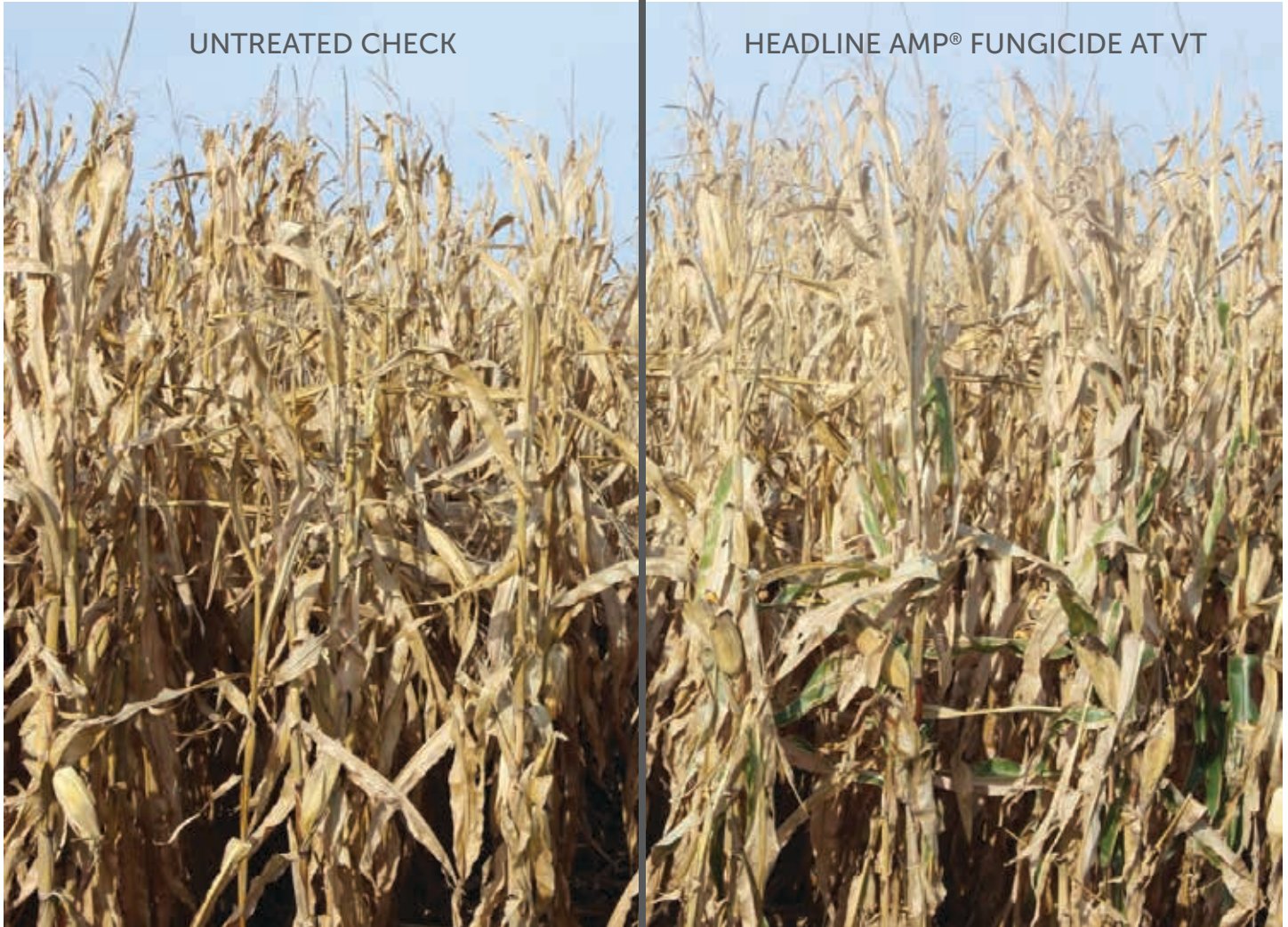


Figure 4. Intactness and “stay green” comparison of the Untreated Check versus Headline AMP® Fungicide treatment at physiological maturity.