

## Effectiveness of Foliar Fungicides by Timing on Gray Leaf Spot on Hybrid Corn

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### Introduction

Foliar fungicides remain an input on hybrid corn that many farmers consider. New fungicides for use on corn are registered annually. The goal of this project is to provide data to help farmers determine the need for foliar fungicides in their production. The objectives of this project were to 1) assess the effect of timing of application of fungicides on disease, 2) evaluate the yield response of hybrid corn to foliar fungicide application, and 3) discern differences, if any, between fungicide products.

### Materials and Methods

The corn hybrid Pioneer P0157AMXT, with a resistance rating of 4 for grey leaf spot (GLS) (1-9 scale, 9 = outstanding), was planted following soybeans in a minimum tillage system May 17, 2018. A randomized complete block design with six replications was used. Each plot was four rows wide (30-in. row spacing) by 73 ft long. All plots were bordered by two rows on either side. Fungicides were applied at either V5 (June 5), V12 (July 9), or R1 (July 24) (Table 1). A CO<sub>2</sub> pressurized 10 ft hand boom was used to spray the plots, fitted with Tee Jet flat fan sprayer nozzles

(XR11003VS), spaced 20 in. apart and delivering 20 gal/acre at 24 psi. On September 7 (1/2 milk line), disease severity in the lower canopy and the upper canopy (ear leaf and above) of each plot was assessed. Disease severity was assessed on a plot basis as an estimate of percent leaf area diseased. On October 13, all four rows of each plot were harvested with a John Deere 9450 combine fitted with an Avery Weigh-Tronix weigh scale and Shivvers 5010 moisture meter. All data were subjected to analysis of variance and means were compared at the 0.1 significance level using Fisher's protected least significant difference (LSD) test.

### Results and Discussion

The most prevalent disease observed in the trial was gray leaf spot, with some common rust observed in the upper canopy. Disease was more severe than usually observed at this location (37% in untreated control). Disease severity was not reduced by applications at V5. Applications of fungicide at R1 were more effective at reducing disease than applications at V12. Miravis Neo, TrivaPro, and Revysol premix were the most effective fungicides at reducing disease (>90% disease control). An effect of a fungicide application on yield was detected ( $P = 0.0003$ ). In general, the greatest yields occurred with treatments that reduced disease the most.

**Table 1. Effect of fungicide and timing of fungicide applications on foliar disease severity and yield of corn at Nashua, Iowa, in 2018.**

Treatment, rate/ac, application timing <sup>z</sup>	Disease severity (%) <sup>y</sup>	Yield (bu/ac) <sup>x</sup>
Non-treated control	37.5 a	237.2 ef
Delaro, 4 fl oz, V5	37.2 a	241.0 de
Aproach Prima, 6.8 fl oz, V12	15.8 cd	241.9 cde
Delaro, 8 fl oz, V12	25.8 b	243.4 bcd
Miravis Neo, 13.7 fl oz, V12	3.8 g	244.3 abcd
Priaxor, 4 fl oz, V12	15.3 cd	241.8 cde
Topguard EC, 5 fl oz, V12	16.5 cd	243.9 bcd
Trivapro, 13.7 fl oz, R1	3.3 g	246.8 abc
Delaro, 8 fl. oz, R1	9.0 ef	248.7 a
Aproach Prima, 6.8 fl oz, R1	19.7 c	242.8 bcd
Miravis Neo, 13.7 fl oz, R1	4.3 g	247.1 ab
Topguard EC, 5 fl oz, R1	9.2 ef	242.6 bcd
Revysol premix, 7 fl oz, R1	2.2 g	248.7 a
Priaxor, 4 fl oz, R1	12.7 de	240.0 de
P-value	<0.0001	0.0003

<sup>z</sup>V5, 5-leaf stage; V12, 12-leaf stage, R1, silking.

<sup>y</sup>Percent canopy diseased at 1/2 milk line (August 25). Gray leaf spot was the most prevalent disease. Some common rust also was present.

<sup>x</sup>Corrected to 15.0% moisture content.

<sup>w</sup>Means followed by same letter do not significantly differ (P = 0.1, LSD).