

# Effectiveness of Foliar Fungicides by Timing on Foliar Diseases on Hybrid Corn in Southeast Iowa

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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 foliar disease, 2) evaluate the yield response of hybrid corn to foliar fungicide application, 3) discern differences, if any, between fungicide products, and 4) to investigate the effect of nitrogen on fungicide yield response.

### Materials and Methods

The corn hybrid Pioneer 1108Q, with a resistance rating of 5 for grey leaf spot (GLS) (1-9 scale, 9 = outstanding), was planted following soybean in a minimum tillage system April 23, 2020. A randomized complete block design with six replications was used. Each plot was four rows wide (30-in. row spacing) by 50 ft long. All plots were bordered by two rows on either side. All plots received 180lb/acre of NH<sub>3</sub> April 10. Two plots (one with no fungicide and one with Miravis Neo (13.7 fl. oz/ac) applied at R1) received 50 lb/acre of 32 percent UAN as a

side dressing June 8. Fungicides were applied at either V12 (July 2) or at R1 (July 17) (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 gallons/acre at 24 psi. On August 24 (1/2 milk line), disease severity in each plot was assessed at five ear leaves, and in the lower and upper canopy 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

Below normal precipitation throughout grain fill meant very little disease was observed in the trial. Gray leaf spot was observed but at extremely low levels. Gray leaf spot severity on the ear leaf, in the lower and upper canopy of the control was 1.1 percent, 5.5 percent, and 0.9 percent, respectively, at R5. Fungicides reduced disease ( $P < 0.1$ ). Applications at V12 reduced disease severity in the lower canopy more than applications made at R1. Yield of the control was 245.1 bushels/acre. Yields of the fungicide treatments ranged from 236.5 to 250.5 bushels/acre. No effect of fungicide on yield was detected ( $P = 0.95$ ). No effects of N on yield were detected ( $P > 0.1$ ).

**Table 1. Effect of fungicide and timing of fungicide applications on northern leaf blight and yield of corn at Crawfordsville, Iowa, in 2020.**

Fungicide rate/ac, application timing <sup>z</sup>	N application rate and timing	Disease severity (%) <sup>y</sup>			Yield (bu/ac) <sup>x</sup>
		Ear leaf	Lower canopy	Upper canopy	
Non-treated control	180 lb/ac preplant	1.18 a	5.5 a	0.9 a	245.1
Non-treated control	180 lb/ac preplant + 50 lb/ac side dress	0.66 b	4.8 a	0.8 a	236.5
Miravis Neo, 13.7 fl oz, R1	180 lb/ac preplant	0.32 c	2.7 b	0.0 c	242.8
Miravis Neo, 13.7 fl oz, R1	180 lb/ac preplant + 50 lb/ac side dress	0.24 cd	1.7 bc	0.2 b	253.3
USF0411, 8 fl oz, V12	180 lb/ac preplant	0.02 e	0.3 d	0.0 c	244.1
Trivapro, 13.7 fl oz, V12	180 lb/ac preplant	0.02 e	0.4 d	0.0 c	247.5
Miravis Neo, 13.7 fl oz, V12	180 lb/ac preplant	0.01 e	0.2 d	0.0 c	249.9
Veltyma, 7 fl oz, V12	180 lb/ac preplant	0.02 e	0.1 d	0.0 c	238.6
Topguard EQ, 5 fl oz, R1	180 lb/ac preplant	0.23 cd	1.3 cd	0.0 c	246.7
Lucento, 5 fl oz, R1	180 lb/ac preplant	0.41 c	2.7 b	0.0 c	250.5
Trivapro, 13.7 fl oz, R1	180 lb/ac preplant	0.29 cd	2.4 b	0.0 c	243.7
Veltyma, 8 fl oz, R1	180 lb/ac preplant	0.29 cd	2.8 b	0.0 c	240.4
USF0411, 8 fl oz, R1	180 lb/ac preplant	0.47 c	2.3 b	0.0 c	250.8
P-value		< 0.0001	< 0.0001	< 0.0001	0.7835

<sup>z</sup>V12 = 12-leaf stage, R1 = silking.

<sup>y</sup>Percent lower canopy diseased at 1/2 milk line (September 2). Gray leaf spot was the most prevalent disease.

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