

# Effectiveness of Foliar Fungicides by Timing on Gray Leaf Spot 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 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 P1366AMXT, with a resistance rating of 4 for gray leaf spot (GLS) (1-9 scale, 9 = outstanding), was planted following soybean in a minimum tillage system May 8, 2018. The experimental design was a randomized complete block with four blocks and each plot was four rows wide (30-

in. row spacing) by 40 ft long. All plots were bordered by four rows on either side.

Fungicides were applied at either V5 (June 6), V12 (July 2), or R1 (July 10) (Table 1). On September 6 (1/2 milk line), disease severity in the upper canopy (ear leaf and above) was assessed. The canopy below the ear leaf was fired due to nitrogen loss. Disease severity was an estimate of percent leaf area diseased. All four rows of each plot were harvested with a small plot combine October 4. 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

Severe gray leaf spot was observed in the trial at 69 percent in the non-sprayed check. Disease severity was not reduced by applications at V5. Applications of fungicide at R1 were more effective at reducing gray leaf spot than applications at V12. Miravis Neo and BASF 75106 were the most effective fungicides at reducing gray leaf spot (>90% disease control). No effect of a fungicide application on yield was detected ( $P = 0.123$ ). In general, greater disease control resulted in numerically greater yield responses to a fungicide.

**Table 1. Effect of fungicide and timing of fungicide applications on gray leaf spot, yield, and moisture of corn at Crawfordsville, Iowa, in 2018.**

Treatment, rate/ac, application timing <sup>z</sup>	Disease severity (%) <sup>y</sup>	Yield (bu/ac) <sup>x</sup>
Delaro, 4 fl oz, V5	62 b	231.4
Aproach Prima, 6.8 fl oz, V12	42 c	240.7
Delaro, 8 fl oz, V5, V12	36 de	231.7
Miravis Neo, 13.7 fl oz, V12	16 g	237.8
Priaxor, 4 fl oz, V12	31 ef	245.3
Topguard EC, 5 fl oz, V12	28 f	241.8
Aproach Prima, 6.8 fl oz, R1	38 cd	241.2
BASF 75106, 7 fl oz, R1	3 h	248.6
Delaro, 8 fl oz, V12	14 g	239.3
Miravis Neo, 13.7 fl oz, R1	3 h	243.4
Topguard EC, 5 fl oz, R1	12 g	234.5
Non-treated check	69 a	227.4
P-value	<0.0001	0.123

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

<sup>y</sup>Percent canopy diseased at ¼ milk line (August 25).

<sup>x</sup>Corrected to 15.5% moisture content.

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