

Effectiveness of Foliar Fungicides by Timing Disease Severity and Yield of 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 P0157 AMXT, with a resistance rating of 4 for gray leaf spot (GLS) (1-9 scale, 1 = poor and 9 = excellent), was planted into a Sac silty clay loam following soybeans in a minimum tillage system May 7, 2018. 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 four rows on either side, and 6-ft alleys were cut between replications at V4. Fungicides were applied at either V5 (June 22), or V12 (July 8), or at R1 (July 12), (Table 1) using a sprayer fitted with Tee Jet flat fan spray nozzle XR8002VS spaced 20-in. apart and delivering 15.5 gal/acre at 40 psi. On September 9 (1/2 milk line), disease severity in the canopy of each plot was assessed as an estimate of percent leaf area diseased. All four rows of each plot were harvested with a small plot combine October 5. 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 in the trial was gray leaf spot, and disease severity was low (18%) in the non-sprayed check. Disease severity was not reduced by applications at V5. Applications of fungicide at R1 were more effective at reducing disease than applications at V12. No differences in disease control were detected among products. An effect of a fungicide application on yield was not detected ($P = 0.286$).

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

Treatment, rate/ac, application timing^z	Disease severity (%)^y	Yield (bu/ac)^x
Non-treated control	17 a	247.7
Delaro, 4 fl oz, V5	9 b	244.2
Aproach Prima, 6.8 fl oz, V12	4 c	247.9
Delaro, 8 fl oz, V5, V12	5 bc	245.0
Miravis Neo, 13.7 fl oz, V12	4 c	233.0
Priaxor, 4 fl oz, V12	6 bc	224.1
Topguard EC, 5 fl oz, V12	4 c	239.0
Aproach Prima, 6.8 fl oz, R1	3 c	248.2
BASF 75106, 7 fl oz, R1	5 bc	243.5
Delaro, 8 fl oz, V12	2 c	258.7
Miravis Neo, 13.7 fl oz, R1	4 c	224.4
Topguard EC, 5 fl oz, R1	18 a	240.6
P-value	<0.0001	0.286

^zV5, 5-leaf stage; V12, 12-leaf stage, R1, silking.

^yPercent canopy diseased at ¼ milk line (Sept. 9).

^xCorrected to 15.5% moisture content.

^wMeans followed by same letter do not significantly differ (P = 0.1, LSD).