



Effectiveness of Foliar Fungicides by Timing on Foliar Diseases of Hybrid Corn

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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, and 3) discern differences, if any, between fungicide products.

Materials and Methods

The corn hybrid Pioneer P0157AMXT, with a resistance rating of four for grey leaf spot (GLS) (1-9 scale, 9 = outstanding), was planted following soybean in a minimum tillage system April 27, 2021. 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. All plots had anhydrous ammonia preplant injected 180 lbs. per acre April 3, 2021. Fungicides were applied at either V12 (July 6) or at R1 (July 19) (Table 1). A CO₂ 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. per acre at 24 psi. On September 1 (1/2 milk line), disease severity on the ear leaf and the canopy above ear leaf of each plot in replicates 1, 4, and 6 were assessed. Disease severity was assessed on a plot basis as an estimate of percent leaf area diseased in the control plots only August 11, and September 1. On October 6, 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 the growing season until mid-August meant very little disease was observed in the trial. A severe windstorm (>60 mph winds) caused severe (10-80% per plot) lodging in the trial August 24. Gray leaf spot, southern rust, tar spot and northern corn leaf blight were observed in the trial but severity in the control plots was extremely low (<1%). Mean yield of the two controls was 214.2 bushels per acre. Yields of all fungicide treatments ranged from 206.0 to 223.4. An effect of fungicide on yield was detected ($P = 0.0162$). Yield of corn treated with Miravis Neo at R1 was significantly greater (9.2 bushels per acre more) than the non-sprayed checks, but was not significantly different from corn treated with Lucento or Trivapro at R1. Yields of corn sprayed at V12 ranged from 206.0 to 214.9 bushels per acre. Yields of corn sprayed at R1 ranged from 213.8 to 223.4 bushels per acre. Stalk lodging was not related to any fungicide treatments, but was worse down slope and where wind gust currents went through.

Table 1. Effect of fungicide and timing of fungicide applications on foliar disease severity and yield of corn.

| Fungicide product, rate/ac., application timing ^z | Yield (bu./ac.) ^y |
|--|------------------------------|
| 1. Non-treated check 1 | 215.5 bc ^x |
| 2. Headline AMP, 10 fl. oz., V12 | 210.9 bcde |
| 3. Veltyma, 7 fl. oz., V12 | 206.0 e |
| 4. Trivapro, 13.7 fl. oz., V12 | 214.0 bc |
| 5. Delaro Complete, 8 fl. oz., V12 | 210.1cde |
| 6. Lucento, 5 fl. oz., V12 | 214.0 bc |
| 7. Miravis Neo, 13.7 fl. oz., V12 | 214.9 bc |
| 8. Topguard EQ, 5 fl. oz., V12 | 207.1 de |
| 9. Non-treated check 2 | 212.9 bcd |
| 10. Headline AMP, 10 fl. oz., R1 | 215.1 bc |
| 11. Veltyma, 7 fl. oz., R1 | 216.3 bc |
| 12. Trivapro, 13.7 fl. oz., R1 | 217.4 ab |
| 13. Delaro Complete, 8 fl. oz., R1 | 213.8 bc |
| 14. Lucento, 5 fl. oz., R1 | 216.8 ab |
| 15. Miravis Neo, 13.7 fl. oz., R1 | 223.4 a |
| 16. Topguard EQ, 5 fl oz, R1 | 214.7 bc |
| P-value | 0.0162 |

^zV12=12-leaf stage, R1=silking.

^yCorrected to 15.0% moisture content.

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