

Field, Cereal, and Forage Crops

Efficacy of Foliar Fungicides on Corn Foliar Disease Severity and Yield in Southeast Pennsylvania, 2024.

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Tar spot, caused by *Phyllachora maydis*, and gray leaf spot, caused by *Cercospora zea-maydis*, are foliar diseases that cause yield loss in corn (*Zea mays* L.) in Pennsylvania each year. Tar spot is characterized by black stromata on corn leaves late in the season, while gray leaf spot foliar lesions are tan or gray rectangular lesions. These diseases may cause leaf or entire plant death when symptoms are severe. This trial tests the effectiveness of foliar fungicide treatments applied before, at, and after tasseling on disease severity and yield. This trial was conducted at the Southeast Agricultural Research and Extension Center in Manheim, PA. Results from the trial help inform corn growers on the best management timing and products to prevent foliar disease in corn.

Keywords: Veltyma, Adastrio, Topguard, Topguard EQ, Lucento, Miravis Neo, Trivapro, Delaro Complete, Aproach Prima, Headline AMP, tar spot, gray leaf spot

Corn 'P0157AM' was bulk planted in Hagerstown silt loam with soybean stubble on June 12th with 60 units of N at 32,000 seeds per acre. Plots were established 25 feet long and 10 feet wide, with alleys 5 feet wide to accommodate 18 treatments and four replicates. One hundred twenty units of N were applied around V5 for the side dress, and standard farm management practices were used for the post-herbicide. Treatments were applied using a CO₂ backpack sprayer and telescoping boom with 8002-VS spray tips. An untreated check was included, and Adastrio (8 oz a⁻¹) was applied at V10. Most treatments, including

Veltyma (7 oz a⁻¹), Adastrio (8 oz a⁻¹), Miravis Neo (13.7 oz a⁻¹), Trivapro (13.7 oz a⁻¹), Delaro Complete (8 oz a⁻¹), Aproach Prima (6.8 oz a⁻¹), and Headline AMP (10 oz a⁻¹) were applied at VT. One treatment, Adastrio (8 oz a⁻¹), consisted of one late application at R3. Several treatments included an early application and a late application: Topguard (8 oz a⁻¹) at V10 followed by Adastrio (8 oz a⁻¹) at R3 and Adastrio (8 oz a⁻¹) V10 followed by Topguard EQ (7 oz a⁻¹) at R3. Treatments applied at VT followed by 3 weeks after treatment included Veltyma (7 oz a⁻¹) at VT followed by Headline AMP (10 oz a⁻¹), Aproach Prima (6.8 oz a⁻¹) at VT followed by Headline AMP (10 oz a⁻¹), Miravis Neo (13.7 oz a⁻¹) at VT followed by Headline AMP (10 oz a⁻¹), and Delaro Complete (8 oz a⁻¹) at VT followed by Headline AMP (10 oz a⁻¹). Approximately four weeks after VT, during the R5 growth stage, each plot was rated for TS and GLS disease severity (%). The ear, ear plus one, and ear minus one leaves were rated for ten plants in each plot. A second disease assessment was completed at R6 for TS and GLS. The yield and test weight were measured at harvest on October 30, and yield was corrected to 15.5% moisture for analysis. Data were analyzed using ANOVA with a Tukey's HSD post hoc test ($\alpha=0.05$).

Although the TS severity was low across the trial, all treatments reduced TS compared to the untreated check except for Adastrio at V10. In the first assessment, Adastrio followed by Topguard, Adastrio at V10, Topguard followed by Adastrio, Adastrio at VT, Delaro Complete followed by Headline AMP, and Miravis Neo followed by Headline AMP performed the best at reducing GLS. In the second assessment, Adastrio followed by Topguard, Topguard followed by Adastrio, Adastrio at V10, Veltyma followed by Headline AMP, Veltyma, Miravis Neo followed by Headline AMP, and Delaro Complete followed by Headline AMP were best at reducing GLS. There were no significant differences in yield or test weight; however, when comparing means numerically, all treatments except Adastrio at VT, Aproach Prima followed by Headline AMP, Lucento, and Adastrio followed by Topguard yielded higher than the untreated check.

Supplementary Table S1. Efficacy of Foliar Fungicides on Corn Foliar Disease Severity and Yield in Southeast Pennsylvania, 2024

Treatment	Appl. Rate (oz a ⁻¹)	Appl. Timing	Tar spot severity		Gray leaf spot severity		Test Weight (lb/bu) ^z	Yield (bu/A) ^z
			September 17 (%) ^y	October 1 (%) ^y	September 17 (%) ^y	October 1 (%) ^y		
Untreated Check	-	-	1.33 a	3.63 a	3.46 a	13.58 a	60.6	137.1
Veltyma	7	VT	0.17 b	0.50 c-f	1.13 b-d	1.54 b-e	60.9	148.3
Adastrio	8	VT	0.17 b	1.04 bc	0.67 c-f	2.42 b-d	59.9	126.3
Adastrio	8	R3	0.04 b	0.58 b-f	2.13 ab	3.54 b	60.7	145.8
Topguard fb Adastrio	8, 8	V10, R3	0.00 b	0.71 b-f	0.50 d-f	0.92 c-e	60.3	145.8
Adastrio fb Topguard EQ	8, 7	V10, R3	0.04 b	0.25 ef	0.13 f	0.33 e	59.5	133.0
Adastrio	8	V10	0.96 a	2.38 a	0.25 ef	1.00 de	61.3	146.9
Lucento	5	R3	0.42 b	0.75 b-f	1.92 ab	3.17 b-d	59.7	132.8
Miravis Neo	13.7	VT	0.08 b	0.83 b-e	1.33 b-d	2.67 b-d	60.0	162.7
Trivapro	13.7	VT	0.29 b	1.21 bc	1.25 b-d	3.04 bc	59.3	155.5
Delaro Complete	8	VT	0.33 b	1.25 b	1.83 a-c	3.25 bc	60.7	149.1
Aproach Prima	6.8	VT	0.04 b	0.83 b-f	1.88 ab	4.00 b	61.1	154.0
Headline AMP	10	VT	0.29 b	0.75 b-f	1.58 bc	3.21 b-d	61.1	148.4
Veltyma fb Headline AMP	7, 10	VT, 3 WAT	0.08 b	0.33 d-f	1.00 b-e	1.33 b-e	60.4	162.0
Aproach Prima fb Headline AMP	6.8, 10	VT, 3 WAT	0.08 b	0.33 ef	1.17 b-d	2.29 b-d	59.9	129.0
Miravis Neo fb Headline AMP	13.7, 10	VT, 3 WAT	0.04 b	0.29 ef	0.92 b-f	1.54 b-e	60.3	155.7
Delaro Complete fb Headline AMP	8, 10	VT, 3 WAT	0.04 b	0.21 f	0.88 b-f	1.75 b-e	59.2	150.0

^y Means followed by the same letter within columns are not significantly different according to Tukey's LSD (P < 0.05).

^z Means are not significantly different according to Tukey's LSD (P < 0.05).