Effectiveness of Foliar Fungicides by Timing on Northern Leaf Blight and Common Rust on Hybrid Corn

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Introduction

Fungicide use on hybrid corn continues to be of interest to many farmers in Iowa. The number of fungicides registered for use on corn continues to increase, especially with the introduction of various generics. The objectives of this project were to assess the effect of timing of application of fungicides on disease, evaluate the yield response of hybrid corn to foliar fungicide application, and discern differences, if any, between fungicide products.

Materials and Methods

The corn hybrid Agrigold A8252 VT3 PRIB, with a resistance rating of 7 for northern corn leaf blight (NCLB) (1-10 scale, 1 = least tolerance), was planted into a Sac silty clay loam following soybeans in a minimum tillage system on April 27, 2015. The experimental design was a randomized complete block design and each plot was four rows wide (30-in. row spacing) by 44 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 18), or at R1 (July 21), or at both growth stages (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 8 (1/4 milk line), disease severity in the upper canopy (ear leaf and above) of each plot was assessed. Disease severity was an estimate of percent leaf area diseased. All four rows of each plot were harvested with a small plot combine on October 20. 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

Cool, wet growing conditions favored the development of northern corn leaf blight (NCLB) in the trial. Southern rust also was observed, but the cool temperatures likely slowed disease development. Disease severity in the two non-sprayed controls was 6.8 and 7.3 percent for NCLB, and 5.8 and 8.3 percent for Southern rust. In general, fungicides reduced both NCLB and Southern rust severity at R5. Disease severity was significantly reduced ($P < 0.1$) with applications made at R1 or V5 plus R1, compared with applications made at V5 alone. In general, yields were greater with a fungicide application at R1 or V5 plus R1 compared with the non-sprayed controls and applications made at V5 alone, although yield responses were not significantly different from each other ($P > 0.1$).

Table 1. Effect of fungicide and timing of fungicide applications on northern leaf blight and southern rust severity, yield and harvest moisture of corn at Sutherland, Iowa in 2015.

Treatment, rate/A, application timing[z]	Northern corn leaf blight severity (%)[y]	Southern rust severity (%)	Yield (bu/A)[x]
Non-treated control 1	6.8	5.8	220.4
Priaxor, 3 fl oz, V5	4.5	4.5	218.9
Priaxor, 3 fl oz, V5 + Headline Amp, 10 fl oz, R1	2.5	1.3	232.5
Headline Amp, 10 fl oz, R1	4.3	0.9	227.4
Stratego YLD, 2 fl oz, V5	5.0	6.8	201.5
Stratego YLD, 2 fl oz, V5 + Stratego YLD, 4 fl oz, R1	7.0	1.5	227.8
Stratego 4 YLD, 4 fl oz, R1	7.5	0.5	220.4
Quilt Xcel, 10.5 fl oz, R1	2.0	0.4	232.4
Aproach, 3 + Aproach Prima, 6.8, V5 + R1	2.8	0.4	225.2
Aproach Prima, 6.8, R1	2.3	0.6	231.4
Fortix, 5 fl oz, V5	7.3	5.8	220.6
Fortix, 5 + 5 fl oz, V5 + R1	2.0	0.9	226.2
Fortix, 5 fl oz, R1	2.8	1.5	236.2
Trivapro Co-pack, 4.1 fl oz, R1	2.3	2.0	216.1
Non-sprayed control 2	7.3	8.3	212.3
Quilt Xcel, 10.5 fl oz, V5	6.8	8.3	201.0
Aproach, 3 fl oz, V5	5.5	7.0	215.2
Headline, 3 fl oz, V5	7.3	4.8	213.7
Quilt Xcel, 10.5 fl oz, V5 + Trivapro Co-Pack, 4.1 fl oz, R1	2.0	0.0	222.2
Quilt Xcel, 10.5 fl oz, V5 + Quilt Xcel, 10.5 fl oz, R1	2.0	0.3	225.6
LSD (0.1)	2.4	1.7	17.6
CV (%)	43.6	66.8	6.8
P-value	<0.1	<0.1	0.05

[z]V5, 5-leaf stage; R1, silking.
[y]Percent upper canopy (ear leaf and above) diseased at ¼ milk line (Sept. 8).
[x]Corrected to 15.5 percent moisture content.