Effectiveness of Foliar Fungicides by Timing on Northern Leaf Blight on Hybrid Corn in Northeast Iowa

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Introduction

Fungicide use on hybrid corn has increased considerably, primarily due to reports of increased yields, even in the absence of disease and higher corn prices. A number of fungicides are registered for use on corn. 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 P0297AM1, with a resistance rating of 5 for northern corn leaf blight (NCLB) (1-9 scale, 9 = outstanding), was planted following soybeans in a minimum tillage system on May 19, 2014. The experimental design was a randomized complete block design with six blocks and each plot was four rows wide (30-in. row spacing) by 63 ft long. All plots were bordered by four rows on either side. Fungicides were applied at either V5 (June 20), at R1 (July 23), or at both growth stages (Table 1). On September 3 (1/4 milk line), disease severity in the upper canopy (ear leaf and above) of each plot in reps 4 to 6 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 21. 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

Weather conditions during the 2014 growing season started wetter than normal. From June 16 through June 30, 10 rain events produced a total of 9.64 in. of precipitation and light hail damage occurred on June 29. July had 1.41 in. total rainfall. Minimal rainfall occurred in August, followed by a normal rain pattern in September. Very little disease was observed in the trial. Eyespot, common rust, and northern corn leaf blight were all less than 1 percent severity in the canopy above the ear leaf. Applications of Fortix at R1, Headline AMP at R1, Quilt Xcel at R1, Stratego YLD at V5 + R1, and Stratego YLD at R1 all increased yield compared with the non-sprayed control (P < 0.1).

A similar study was conducted in 2013, with 23 fungicide/fungicide combinations and two untreated checks. Dekalb C53-78GENSSRIB was planted following soybeans in a minimum tillage system on May 18, 2013. Fungicides were applied at either V5 (July 2), V8 (July 15), R1 (July 29), V5+R1, or R2 (August 9). Frequent and excessive rainfall occurred in June, followed by below average rainfall for the rest of the growing season. Very little disease was observed in the trial. No statistical yield differences (P = 0.2135) were found among the treatments (data not shown).

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

Treatment, rate/A, application timing[z]	Yield (bu/A)[y]	
Control 1	213.6	de[x]
Priaxor (3 oz/A)@ V5	212.9	e
Priaxor (3 oz/A)@ V5 + Headline AMP(10 oz/A)@ R1	219.5	abcd
Headline AMP(10 oz/A) @ R1	220.7	ab
Stratego YLD(3 oz/A) @ V5	213.9	cde
Stratego (2 oz/A) @ V5 + Stratego YLD(4 oz/A)@ R1	223.1	a
Stratego YLD (4 oz/A)@ R1	221.2	a
Quilt Xcel (10.5 oz/A) @ R1	221.9	a
Aproach (3 oz/A) @ V5+ Aproach (6 oz/A) @ V5	218.9	abcd
Aproach (6 oz/A) @ V5	215.0	bcde
Fortix (5 oz/A) @ V5	214.2	cde
Fortix (5 oz/A) @ V5 + Fortix (5 oz/A) @ R1	214.5	cde
Fortix (5 oz/A) @ R1	219.9	abc
Custodia (6 oz/A) @ V5	212.4	e
Custodia (12.8 oz/A) @ R1	214.0	cde
Control 2	212.0	e
Aproach (3 oz/A) @ V5+ Aproach Prima (6.8 oz/A) @ V5	213.6	de
Aproach Prima (6.8 oz/A) @ V5	212.9	e
LSD (0.01)	7.0	
P-value	0.0112	

[z]V5, 5-leaf stage; R1, silking.

[y]Corrected to 15.5 percent moisture content.

[x] Numbers followed by the same letter in the same column are not statistically different at $P < 0.1$.