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Effectiveness of Foliar Fungicides by Timing on Hybrid Corn in Iowa

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Abstract
Fungicide use on hybrid corn has increased considerably in the past three growing seasons primarily due to of 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) compare the efficacy of various products for management of foliar corn diseases, 2) assess the effect of timing of application of fungicides on foliar disease development, and 3) evaluate the yield response of hybrid corn to foliar fungicide application.

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Disciplines
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RFR-A9115

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Introduction

Fungicide use on hybrid corn has increased considerably in the past three growing seasons primarily due to of 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) compare the efficacy of various products for management of foliar corn diseases, 2) assess the effect of timing of application of fungicides on foliar disease development, and 3) evaluate the yield response of hybrid corn to foliar fungicide application.

Materials and Methods

Headline (6 oz/acre), Headline AMP (10 oz/acre), Quilt (14 oz/acre), and Stratego Pro (4 oz/acre) were each applied to hybrid corn DKC60-18 at one of three growth stages: VT (tasseling), R2 (blister), and R3 (milk). The experimental design was a randomized plot design. Each plot was 4 rows wide (30-in. row spacing) by 50 ft long. Corn was planted with a 2000 series Kinze 6-row planter calibrated to plant 35,600 seeds/acre on corn following corn. Fungicides were applied with a Hagie high clearance sprayer on July 29 (VT), August 12 (R2), and August 19 (R3). Spray solutions were applied in a volume of 10 gal/acre. Foliar disease assessments were done on control plots immediately prior to the VT spray application. The number of lesions on the ear leaf and leaf below of each of five plants were counted. Disease severity was assessed as the percent ear leaf diseased on September 9. At R6 (October 9), stalk lodging was assessed by push test of 10 plants. The middle four rows of each plot were harvested with a John Deere 9450 combine on November 10.

Results and Discussion

Disease pressure for the 2009 growing season was moderate. The predominant disease present was eyespot. There were very few eyespot lesions on the ear leaf and leaf below of the control plants at the time of the VT fungicide application. Fungicide applications at all timings reduced the level of foliar disease. All products were equally effective but applications made at VT reduced disease more than applications made at R2 and R3. Fungicides had no effect on stalk rot severity. Greater yields were associated with fungicide applications, with the greatest yields usually associated with applications made at VT.

Studies on the efficacy of foliar fungicide timing for disease management and yield response are expected to continue in 2010.

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Lu Liu for statistical analysis of the data.

Table 1. Effect of fungicide and timing of fungicide applications on foliar disease severity, stalk rot severity, yield, and harvest moisture of corn.

Treatments	Foliar disease[1]	Stalk lodging[2]	Yield[3]	Harvest moisture
Check	1.20a[4]	33.7	197.7	24.4
Headline VT	0.07c	31.7	214.3	24.3
Headline R2	0.66abc	20.0	208.1	23.9
Headline R3	0.47bc	16.0	205.8	23.8
Headline AMP VT	0.50bc	50.0	217.3	23.7
Headline AMP R2	0.53bc	43.3	205.6	23.6
Headline AMP R3	0.63abc	13.1	203.3	24.7
Quilt VT	0.37bc	30.0	212.7	24.4
Quilt R2	0.57bc	31.7	214.4	23.9
Quilt R3	0.75ab	18.3	216.0	24.5
Stratego Pro VT	0.38bc	25.0	211.5	23.6
Stratego Pro R2	0.37bc	20.0	200.0	24.5
Stratego Pro R3	0.84ab	20.7	220.4	23.7

[1]Severity (%) (percent of ear leaf with disease) at R3.
[2]Percent incidence at R6 (push test at shoulder height where plants stayed lodged).
[3]Bushels/acre at 15% moisture.
[4]Means with the same letter in the same column are not statistically different ($P < 0.05$) using Tukey's test.