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Effectiveness of Foliar Fungicides by Timing on Hybrid Corn in Iowa

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Effectiveness of Foliar Fungicides by Timing on Hybrid Corn in Iowa

Abstract

Fungicide use on hybrid corn has increased considerably in the past three growing seasons 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) evaluate the yield response of hybrid corn to foliar fungicide application, 2) compare the yield response of various products and timing of application, and 3) to assess the effect of fungicide application on stalk rot development.

Keywords

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Disciplines

Agricultural Science | Agriculture | Plant Pathology

Effectiveness of Foliar Fungicides by Timing on Hybrid Corn in Iowa

RFR-A1090

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Introduction

Fungicide use on hybrid corn has increased considerably in the past three growing seasons 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) evaluate the yield response of hybrid corn to foliar fungicide application, 2) compare the yield response of various products and timing of application, and 3) to assess the effect of fungicide application on stalk rot development.

Materials and Methods

At the ISU Armstrong Research Farm, Lewis, IA, Headline (6 oz/acre), Headline AMP (10 oz/acre), Quilt Xcel(14 oz/acre), and Stratego YLD (4 oz/acre) were each applied to hybrid corn DKC60-69 at either one of three growth stages: V6, R1, and R2 (blister) or at V6 followed by a second application at R1. The experimental design was a randomized plot design. Each plot was 4 rows wide (30-in. row spacing) by 97 ft long. Corn was planted with a 7000 series John Deere 8-row planter calibrated to plant @ 35,600 seeds/acre on corn following corn fungicides were applied with either a hand boom at V6 on June 15 or a

Hagie high clearance sprayer on July 22 (R1) and August 5 (R2). Spray solutions were applied in a volume of 15 gallons/acre. At R6 (September 17), stalk rot severity was assessed by splitting the stalks of five plants. The University of Illinois Stalk Rot Scale was used where 0 = no disease and 5 = lodging due to stalk rot. The middle four rows of each plot were harvested with a John Deere 9450 combine on October 4.

Results and Discussion

Two unsprayed checks were evaluated in the trial. Stalk rot severity ranged from a high of 2.25 to a low of 0.5. Both Quilt Xcel at R2 (0.5) and Quilt Xcel at V6 and R1 (1.08) resulted in significantly less stalk rot than check 2, but not check 1. Stalk rot severity in all other fungicide treatments did not differ from either checks. Yields ranged from a high of 217.7 to a low of 178.3 bushels/acre. Despite this wide range in yields, yield response associated with a fungicide application did not differ from either check. Moisture levels ranged from a high of 17.6 percent to a low of 16.6 percent, with no significance detected. No differences between fungicide products were detected.

Studies on the efficacy of foliar fungicide timing for disease management and yield response are expected to continue in 2011.

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Jeff Butler, Armstrong Research Farm.

Table 1. Effect of fungicide and timing of fungicide applications on stalk rot severity, yield, and harvest moisture of corn at the ISU Armstrong Research Farm, Lewis, IA in 2010.

Treatments	Stalk rot ^{a, c}	Yield ^{b, c}	Harvest moisture % ^c
Check 1	1.92abc	201.64a	17.0a
Headline 6oz V6	1.75abc	197.2a	16.6a
Headline AMP 10oz R1	1.42abc	181.4a	17.2a
Headline 6oz V6 + Headline AMP 10oz R1	1.25acd	217.7a	17.3a
Headline AMP 10oz R2	2.08ab	207.5a	17.4a
Stratego YLD 4oz V6	1.92abc	215.0a	16.9a
Stratego YLD 4oz R1	1.42abc	214.4a	17.2a
Stratego YLD 4oz V6 + Stratego YLD 4oz R1	1.50abc	217.5a	17.6a
Stratego YLD 4oz R2	1.58abc	183.1a	17.4a
Quilt Xcel 14oz V6	1.83abc	198.2a	17.3a
Quilt Xcel 14oz R1	1.58abc	205.2a	17.5a
Quilt Xcel 14oz V6 + Quilt Xcel 14oz R1	0.50d	178.3a	17.3a
Quilt Xcel 14oz R2	1.08cd	178.8a	17.4a
Check 2	2.25a	198.7a	17.0a
LSD _{0.05}	0.87	53.3	1.3

^aSeverity at R6 (where 0 = healthy and 5 = lodging due to stalk rot–R. Hines, University of Illinois stalk rot scale).

^bBushels/acre at 15 percent moisture.

^cMeans with the same letter in the same column are not significantly different ($P < 0.05$) using Tukey's test.