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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 four 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) assess the effect of timing of application of fungicides on standability, and 2) evaluate the yield response of hybrid corn to foliar fungicide application.

Keywords

RFR A1075, Plant Pathology and Microbiology

Disciplines

Agricultural Science | Agriculture | Plant Pathology

Effectiveness of Foliar Fungicides by Timing on Hybrid Corn in Iowa

RFR-A1075

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Introduction

Fungicide use on hybrid corn has increased considerably in the past four 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) assess the effect of timing of application of fungicides on standability, and 2) evaluate the yield response of hybrid corn to foliar fungicide application.

Materials and Methods

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 Pioneer 35K04 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 8 rows wide (30-in. row spacing) by 50 ft long. Corn was planted with a 7000 series John Deere 4-row planter calibrated to plant @ 32,000 seeds/acre on corn following corn on May 27. Fungicides were applied with either a hand boom at V6 on June 23 or a Hagie high clearance sprayer on July 27 (R1) and August 9 (R2). Spray solutions were applied in a

volume of 15 gallons/acre. Foliar disease assessments were done on the ear leaf and third leaf below the ear leaf immediately prior to the R1 application of fungicide. At R6 (September 15), 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 9410 combine on October 8.

Results and Discussion

Stalk rot severity ranged from a high of 3.75 to a low of 1.55. An application of Headline AMP at R2 was the most effective treatment at reducing stalk rot severity. Applications of Quilt Xcel at either R1 or R2, significantly reduced stalk rot severity compared with the unsprayed check. Stalk rot in the remaining treatments was not different compared with the check. Although the highest yield was recorded for the Headline AMP application at R2 (177.5 bu/acre), this was not significantly different from the untreated control and many of the treatments. Moisture levels ranged from a low of 19 percent in the unsprayed check to a high of 20.55 percent.

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

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Table 1. Effect of fungicide and timing of fungicide applications on stalk rot severity, yield, and harvest moisture of corn at Crawfordsville, IA in 2010.

Treatments	Stalk rot ^{a,c}	Yield ^{b,c}	Harvest moisture %, ^c
Check	3.20bc	165.3ab	19.0d
Headline 6 oz V6	3.50ab	168.8ab	19.6abcd
Headline AMP 10 oz R1	3.30abc	164.2ab	19.2bcd
Headline 6 oz V6 + Headline AMP 10 oz R1	2.95cd	162.9ab	19.7abcd
Headline AMP 10 oz R2	1.55f	177.5a	20.6a
Stratego YLD 4 oz V6	3.35abc	169.4ab	19.1cd
Stratego YLD 4 oz R1	3.75a	156.0b	20.1abc
Stratego YLD 4 oz V6 + Stratego YLD 4 oz R1	3.50ab	159.2b	19.6abcd
Stratego YLD 4 oz R2	2.95cd	166.9ab	19.8abcd
Quilt Xcel 14 oz V6	3.55ab	166.4ab	19.5bcd
Quilt Xcel 14 oz R1	2.35e	166.0ab	19.8abcd
Quilt Xcel 14 oz V6 + Quilt Xcel 14 oz R1	3.10bcd	164.3ab	19.7abcd
Quilt Xcel 14 oz R2	2.65de	167.2ab	20.2ab
LSD _{0.05}	0.46	15.2	1.0

^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.