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Effectiveness of Foliar Fungicides by Timing on Hybrid Corn

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, 2) evaluate the yield response of hybrid corn to foliar fungicide application, and 3) discern differences, if any, between fungicide products

Keywords

Plant Pathology and Microbiology

Disciplines

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Effectiveness of Foliar Fungicides by Timing on Hybrid Corn

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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, 2) evaluate the yield response of hybrid corn to foliar fungicide application, and 3) discern differences, if any, between fungicide products.

Materials and Methods

Headline (6 oz/A), Headline AMP (10 oz/A), Quadris (6 oz/A), Quilt Xcel(14 oz/A), Domark (4 oz/A), Priaxor (4 oz/A), Evito (2 oz/A), Evito-T (5 oz/A), Proline (5 oz/A), and Stratego YLD (4 oz/A) were each applied to hybrid corn Pioneer 0453HR 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 four rows wide (30-in. row spacing) by 63 ft long. Corn was planted May 11 with a 3000

series Kinze 6 row planter calibrated to plant 35,077 seeds/acre on corn following soybeans. Fungicides were applied with either a 10 ft hand boom at 20 gpa at V6 on June 13 or a Hagie high clearance sprayer at 15 gpa on July 17 (R1), and 10-ft hand boom at 20 gpa on August 1 (R2). At R6 (October 2), ear rot and lodging was assessed. All four rows of each plot were harvested with a John Deere 9450 combine on October 10.

Results and Discussion

A severe drought occurred across the state during the 2012 growing season. This limited the development of foliar disease and so no assessments were made. On July 25, a severe wind storm caused lodging in several ranges of the trial across most replications (Table 1). The most prevalent ear rot was *Fusarium* ear rot but even then incidence (number of ears with symptoms) and severity (percent of ear rotted) was very low (Table 1). A few ears with *Aspergillus* ear rot were found. There was no evidence of an effect of treatment of standability, yield, or moisture ($P < 0.1$) although the trend was for higher yields with a fungicide treatment.

Studies on the efficacy of foliar fungicide timing for disease management, and yield response are expected to continue in 2013.

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Table 1. Effect of fungicide and timing of fungicide applications on ear rot severity, lodging and standability (as measured by the push test), yield, and harvest moisture of corn at Nashua, Iowa.

Treatments	Mean % ear rot ^a	% Lodging at harvest ^b	Push test ^c	Yield ^d	Harvest moisture (%)
Check 1	0.75	12.5	3	155.4	15.9
Headline 6 oz V6	0.15	7.5	1.5	182.9	16.2
Headline AMP 10 oz R1	0.00	17.5	2.5	175.2	15.8
Headline 6 oz V6 + Headline AMP 10 oz R1	0.35	16.3	2	167.9	15.7
Headline AMP 10 oz R2	0.20	17.5	0.5	166.6	16.3
Stratego YLD 4 oz V6	0.15	12.5	1.5	170.6	16.1
Stratego YLD 4 oz R1	0.05	13.8	4	162.2	16.3
Stratego YLD 4 oz V6 + Stratego YLD 4 oz R1	0.05	30.0	2.5	144.5	16.2
Stratego YLD 4 oz R2	0.00	20.0	3	175.3	15.9
Quadris 6 oz V6	0.00	10.0	4	181.7	16.2
Quilt Xcel 14 oz R1	0.00	12.5	1	167.6	16.2
Quadris 6 oz V6+ Quilt Xcel 14 oz R1	0.05	22.5	4.5	188.1	16.0
Quilt Xcel 14 oz R2	0.05	13.8	1	161.2	15.9
Domark 4 oz R1	0.05	12.5	3	159.9	16.0
Domark 4 oz R2	0.00	12.5	5	162.1	16.0
Priaxor 4 oz V6	0.00	16.3	5	161.4	15.9
Priaxor 4 oz V6 + Headline AMP 10 oz R1	0.00	18.0	4.5	180.6	15.9
Proline 5 oz R1	0.05	12.5	2.5	177.3	16.2
Evito 2 oz V5	0.10	17.5	3.5	166.6	16.1
Evito-T 5 oz R1	0.05	20.0	4	175.3	16.0
LSD _{0.10}	NS	NS	NS	NS	NS
C.V. (%)	359.61	65.39	89.94	12.78	2.28

^aEar disease on a percentage of area infected. N = 5 ears per plot.

^bVisual estimation of percent plants lodged at harvest.

^cPush Test is number of plants lodging out of 20 when pushed to the 2 O'clock position.

^dBushels/acre at 15.5 percent moisture.