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Effectiveness of Foliar Fungicide Timing on Hybrid Corn in Iowa, 2008

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Abstract
Fungicide use on hybrid corn has increased considerably in the past two growing seasons primarily due to reports of increased yields, even in the absence of disease and higher corn prices. The objectives of this project were to assess 1) the effect of foliar fungicide timing of application on foliar disease development and stalk rot severity of hybrid corn, and 2) evaluate the yield response of hybrid corn to foliar fungicide timing.

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Introduction

Fungicide use on hybrid corn has increased considerably in the past two growing seasons primarily due to reports of increased yields, even in the absence of disease and higher corn prices. The objectives of this project were to assess 1) the effect of foliar fungicide timing of application on foliar disease development and stalk rot severity of hybrid corn, and 2) evaluate the yield response of hybrid corn to foliar fungicide timing.

Materials and Methods

Headline (6oz/acre) was applied to hybrid corn Agrigold 6325 VT3 at two timings: VT and R2. The experimental design was a randomized plot design. Each plot was 16 rows wide (30 in. row spacing) by 94 ft long. Corn was planted with a 7000 series John Deere 8 row planter calibrated to plant 35,600 seeds/acre on a corn following corn, and corn following soybean tilled fields on April 29. Fungicides were applied with a John Deere 6000 high clearance sprayer on July 28 and August 7. Spray solutions were applied in a volume of 15 gallon/acre. Foliar disease assessments were done August 20. Disease severity was assessed as the percent ear leaf diseased. At R6 (October 9), stalk rot severity was assessed by splitting the stalks of five plants and giving a rating of 0 to 5. Middle four rows of each plot were harvested with a MF 540 combine on October 16.

Results and Discussion

Disease pressure for the 2008 growing season was extremely low, and no differences between timing of application were detected for foliar disease control. Stalk rot severity was reduced by a foliar fungicide application in the corn following soybean plots, but no reduction in stalk rot severity occurred in the corn following corn plots. An application of fungicide at VT resulted in higher yields ($P = 0.065$) than an application at R2 or the unsprayed check.

Studies on the efficacy of foliar fungicide timing for disease management, and yield response are expected to continue in 2009.

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Table 1. Effect of previous crop and timing of fungicide application on foliar disease severity, stalk rot severity, and yield of corn at Sutherland, Iowa in 2008.

	C-C				C-Sb			
Timing	Foliar disease[a]	Stalk rot[b]	Yield[c]	Yield response	Foliar disease	Stalk rot	Yield	Yield response
Check	0.38	1.3	189.7	-	0.4	2.7 a[d]	208.2	-
VT	0.31	1.3	205.9	+16.2	0.4	1.2 b	224.6	+16.4
R2	0.38	1.0	190.6	+0.9	0.5	1.1 b	221.0	+12.8
	NS	NS	NS	NS	NS		NS	

[a]Severity (%) (percent of ear leaf with disease).
[b]Severity (where 0 = healthy and 5 = lodging due to stalk rot [R. Hines, University of Illinois stalk rot scale]).
[c]Bushels/acre at 15% moisture.
[d]Means with the same letter in the same column are not significantly different ($P < 0.05$) using Tukey's test.