

Effectiveness of Foliar Fungicides and Timing on Hybrid Corn in Iowa, 2008

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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 1) assess the effect of foliar fungicide application on foliar disease development on hybrid corn, 2) assess the effect of foliar fungicide application on stalk rot, and 3) to evaluate the yield response of hybrid corn to foliar fungicide application.

Materials and Methods

Three fungicide treatments (Headline [6oz/acre], Quilt [14oz/acre], and Stratego [10oz/acre]) were applied to corn hybrid DKC-6018, which is relatively susceptible to gray leaf spot (GLS) (GLS resistance = 7) and has good resistance to anthracnose stalk rot (Anthracnose stalk rot = 5). The experimental design was a randomized plot design. Each main plot was four rows wide (30 in. row spacing) by 116 ft long. Corn was planted with a Kinze 6 row planter calibrated to plant 35,077 seeds/acre in a corn following soybean tilled field on May 8. Fungicides were applied at three timings: Early

(pre pollen shed) on July 29; mid (tasseling) on August 11; and late on August 25. Spray solutions were applied in a volume of 20 gallons/acre with a 10 ft hand boom. Foliar disease assessments of gray leaf spot (GLS) and common rust were done August 26 and September 12. Disease severity was assessed as the percent ear leaf diseased. At R6 (October 7), stalk rot severity was assessed by splitting the stalks of five plants from the ear to the crown, and scoring the amount of rot on a 0 to 5 scale. Three rows of each plot were harvested with a John Deere 4400 on October 26.

Results and Discussion

Foliar disease pressure for the 2008 growing season was extremely low (Table 1). All products reduced disease severity compared with the control. In general, the early application treatment reduced disease severity more than the later applications. No differences in disease control were detected between products. No differences in stalk rot severity were detected between the treatments. Although large yield responses occurred for some treatments, no statistically significant differences in yield were detected between the treatments.

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

Table 1. Effect of fungicide products and timing of product application on foliar disease severity, stalk rot, and yield, Nashua, 2008.

		2008				
Product	Timing	Foliar1 ^b	Foliar2	Stalk rot ^c	Yield ^a	Yield response
Headline	Check	0.92 a ^d	0.96 b	2.00	208.4	-
	Early	0.50 b	0.54 c	1.79	228.0	+19.6
	Mid	0.67 a	0.82 c	1.75	215.8	+7.4
	Late	0.79 a	1.04 b	2.67	214.4	+6.0
Quilt	Check	0.83 a	1.40 a	2.17	210.8	-
	Early	0.33 b	0.38 c	2.42	213.9	+3.1
	Mid	0.68 a	1.17 b	2.27	210.9	+0.1
	Late	0.79 a	0.98 b	2.08	207.2	-3.6
Stratego	Check	0.54 b	1.17 b	2.25	211.6	-
	Early	0.42 b	0.60 c	2.38	221.4	+10.2
	Mid	0.54 b	0.83 b	2.38	214.1	+2.5
	Late	0.88 a	0.98 b	2.29	213.0	1.4
				NS	NS	

^aBushels/acre at 15% moisture.

^bSeverity (%) percent of ear leaf with disease.

^cSeverity (where 0 = healthy and 5 = lodging due to stalk rot [R. Hines, University of Illinois stalk rot scale]).

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