Effect of Foliar Fungicides on Standability of Corn

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Introduction

Fungicide use on hybrid corn continues to be of interest to many farmers in Iowa. Fungicides keep crops greener even after black layer development. Many farmers have reported corn stands better when a fungicide is applied. Consequently, some farmers apply a fungicide, even in the absence of disease, to assist with harvest. There are no published data to support this observation, therefore the objective of this trial was to determine if a fungicide application at VT reduced stalk lodging at harvest.

Materials and Methods

The corn hybrid Pioneer P0589 AM, with a resistance rating of 4 for northern corn leaf blight (NCLB) (1-9 scale, 1 = excellent, 9 = poor), was planted following soybean in a no tillage system April 26. Treatments were fungicide application at R1 or no fungicide application (factor 1) and harvest date (factor 2). The experimental design was a 2 x 5 factorial in randomized complete block design with 4 blocks. Each plot was 6 rows wide (30-in. row spacing) by 50 ft long. All plots were bordered by two rows on either side. Fungicide product was applied at R1. On August 18 (1/4 milk line), disease severity in the upper canopy (ear leaf and above) of each plot was assessed. Disease severity was an estimate of percent leaf area diseased. All four rows of each plot were harvested with a JD 9450 combine equipped with a Harvest Master system. Immediately prior to harvest, percent lodging in each plot was determined as the number of plants lodged or plants that lodged when pushed to the 2 o'clock position/number of consecutive plants assessed (n=100). Harvest dates were October 3, October 14, October 20, October 28, and November 4, 2016. All data were subjected to analysis of variance, and means were compared at the 0.1 significance level using Fisher's protected least significant difference (LSD) test.

Results and Discussion

No fungicide by harvest date interaction was detected for foliar disease, lodging, yield, or grain moisture ($P > 0.2$). Grey leaf spot (GLS) was observed in the trial, but at low severity. Nevertheless, an effect of fungicide treatment on GLS was detected ($P < 0.0001$). The fungicide application reduced lodging and had no effect on yield, but increased grain moisture at harvest (Table 1). An effect of harvest date was detected on lodging and grain moisture (Table 1). Percent lodged corn increased, although percent grain moisture decreased as the harvest date got later. No effect of harvest date was detected on yield. These data support observations from the field that an application of fungicide at flowering time improves standability of corn.

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Table 1. Effects of fungicide application and harvest date on percent lodging, yield and percent grain moisture of corn at the ISU Armstrong Research Farm, 2016.[1]

Main effect	Lodging (%)[2]	Yield (bu/ac)[3]	Grain moisture at harvest (%)
Fungicide applied at R1			
No	20.0 a	213.4	15.3 a
Yes	13.7 b	215.0	15.2 b
P value	0.0048	0.6525	0.091
Harvest date			
October 3	10.4 b	210.1	16.3 a
October 14	13.4 b	217.2	14.8 d
October 20	15.1 b	218.3	15.4 b
October 28	22.0 a	210.4	15.1 c
November 4	23.4 a	214.9	14.8 d
P-value	0.0014	0.4478	<0.0001

[1]Means within a column followed by the same letter do not differ.
[2]Number of plants lodged or plants that lodged when pushed to the 2 o'clock position/number of consecutive plants assessed (n=100).
[3]Corrected to 15.5% moisture content.