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Effectiveness of Foliar Fungicides by Timing on Hybrid Corn

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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 several 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, Microbiology

Disciplines

Agricultural Science | Agriculture | Microbiology | Plant Pathology

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 several 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 0448R 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 50 ft long. Corn was planted May 8 with a 7000 series John Deere 6 row planter calibrated to plant 35,000 seeds/acre on corn following corn. Fungicides were applied with either a 10 ft hand boom at 20 gpa at V6 on May 30 or a Hagie high clearance sprayer at 15 gpa on July 10 (R1) and July 24 (R2). Spray solutions were applied in a volume of 15 gal/acre. Prior to harvest, ear rot severity (percent moldy kernels) was assessed on five consecutive ears in one outer row of each plot. Notes on percent lodging also were taken. All four rows of each plot were harvested with a John Deere 4400 combine on September 17.

Results and Discussion

The 2012 growing season was extremely dry as a severe drought occurred across the state. Furthermore, a severe windstorm on July 25 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). Yields ranged from 112.5 to 143.0 bushels/acre, however, there was no evidence of an effect of fungicide treatment on yield ($P < 0.1$).

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

Table 1. Effect of fungicide and timing of fungicide applications on ear rot severity, lodging and yield, and harvest moisture of corn at Kanawha, Iowa.

| Treatments | Ear rot severity ^a (%) | Lodging ^b (%) | Yield ^c (bu/A) | Harvest moisture (%) |
|--|-----------------------------------|--------------------------|---------------------------|----------------------|
| Check 1 | 2.00 | 80.0 | 118.9 | 16.7 |
| Headline 6 oz V6 | 0.25 | 20.0 | 124.1 | 16.7 |
| Headline AMP 10 oz R1 | 0.75 | 42.5 | 123.4 | 16.3 |
| Headline 6 oz V6 + Headline AMP 10 oz R1 | 0.25 | 82.5 | 134.4 | 15.9 |
| Headline AMP 10 oz R2 | 0.25 | 37.5 | 129.0 | 17.0 |
| Stratego YLD 4 oz V6 | 0 | 52.5 | 133.2 | 17.0 |
| Stratego YLD 4 oz R1 | 0 | 60.0 | 124.2 | 16.2 |
| Stratego YLD 4 oz V6 + Stratego YLD 4 oz R1 | 0.25 | 72.5 | 112.5 | 16.8 |
| Stratego YLD 4 oz R2 | 0.20 | 73.0 | 125.9 | 16.5 |
| Quadris 6 oz V6 | 0.25 | 55.0 | 117.8 | 16.8 |
| Quilt Xcel 14 oz R1 | 0 | 23.8 | 126.7 | 17.1 |
| Quadris 6 oz V6+ Quilt Xcel 14 oz R1 | 0 | 32.5 | 137.9 | 16.9 |
| Quilt Xcel 14 oz R2 | 0 | 63.8 | 116.3 | 16.8 |
| Domark 4 oz R1 | 0 | 47.5 | 114.4 | 16.7 |
| Domark 4 oz R2 | 0.25 | 68.8 | 121.1 | 16.7 |
| Priaxor 4 oz V6 | 1.0 | 76.3 | 142.8 | 16.6 |
| Priaxor 4 oz V6 + Headline AMP 10 oz R1 | 0 | 56.3 | 143.0 | 16.6 |
| Proline 5 oz R1 | 0.25 | 67.5 | 130.9 | 16.4 |
| Evito 2 oz V5 | 1.25 | 95.0 | 128.2 | 16.4 |
| Evito-T 5 oz R1 | 2.75 | 43.8 | 123.0 | 16.5 |
| LSD _{0.10} | NS | NS | NS | NS |
| C.V. (%) | 357.02 | 56.45 | 16.36 | 3.02 |

^aPercent moldy kernels on an ear. N = 5 ears per plot.

^bVisual estimation of percent plants lodged at harvest.

^cBushel/A at 15.5 percent moisture.