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Effect of Foliar Fungicides on Soybean Yield

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Effect of Foliar Fungicides on Soybean Yield

Abstract

Use of fungicides prior to 2004 was not common in soybean production in Iowa and much of the north central region, except for soybean seed production. Use of fungicides to control soybean foliar diseases has been a hot topic. Survey of the literature shows a disagreement among researchers, between university extension recommendations and industry application.

Keywords

Plant Pathology

Disciplines

Agricultural Science | Agriculture | Plant Pathology

Effect of Foliar Fungicides on Soybean Yield

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Introduction

Use of fungicides prior to 2004 was not common in soybean production in Iowa and much of the north central region, except for soybean seed production. Use of fungicides to control soybean foliar diseases has been a hot topic. Survey of the literature shows a disagreement among researchers, between university extension recommendations and industry application.

Materials and Methods

The experiments were established in a randomized complete block design with four replications at the ISU Northeast Research Farm, Nashua, IA. A soybean variety, Pioneer 92M76RR, was drilled (210,000 plants/acre). Each plot consisted of 10-in. row spacing, 20 ft wide and 50 ft long. Plots were evaluated for incidence and severities of white mold, brown spot, bacterial leaf blight, and frogeye leaf spot diseases. Yields were measured in bushels/acre.

Results and Discussion

Our results (Table 1) showed that use of fungicide as a preventive measure can increase yields in a season when disease pressure is moderate or high. In such a season, most fungicide treatments yielded better and a few treatments increased yield approximately 10 bushels/acre. In previous years, there were treatments consistently ranked high in terms of increase in yields even when disease pressure was low to moderate. Application at R1 or earlier did not increase soybean yields, except for the Cobra. Application at R3 consistently produced higher yields and application twice in a season was no better than a single application at R3. Increase in yield by certain fungicides was likely the result of controlling other foliar diseases and undetermined physiological response. Only the Headline + Respect treatment had insecticide applied in this study (Table 1).

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Table 1. Evaluation of fungicides for use against soybean foliar diseases and white mold during 2008 at Northeast Research Farm, Nashua, IA.

Products tested	Application rate (oz)	Application time	WM Inc%	WM sev %	FELS sev %	BS sev %	BLB sev %	Yield bu/A
Endura	5.5	R1	0.9	13.8	Low	Low	VL	56.04
Headline + Endura	6 + 5.5	R1	2.0	26.3	Low	Low	VL	56.11
Headline	6	R1	1.0	20.0	Low	Low	VL	56.54
Quadris	6	R3	1.4	20.0	Low	Low	VL	56.98
Untreated Check	0	N/A	1.2	25.9	Low	Low	VL	57.07
Tebuzol	4	R3	2.1	20.0	Low	Low	VL	57.16
Endura	10	R1	0.9	18.8	Low	Low	VL	57.59
Topsin	16	R3	1.6	20.0	Low	Low	VL	58.31
Topsin + Tebuzol	16 + 4	R3	1.5	20.0	Low	Low	VL	58.88
Cobra	6	R1	0.4	21.3	Low	Low	VL	59.07
Endura / Headline	5.5/6	R1/R3	0.7	11.3	Low	Low	VL	59.14
Headline	6	R3	1.3	21.3	Low	Low	VL	59.86
Topsin Xtr	20	R3	1.5	18.8	Low	Low	VL	60.47
Headline	6	R3	1.7	20.0	Low	Low	VL	62.02
Headline + Respect (insecticide)	6 + 3.2	R3	1.3	17.5	Low	Low	VL	65.31

Mean of four replications. WM=white mold, Inc=incidence, Sev = severity, FELS= frogeye leaf spot, BS = brown spot, BLB = bacterial leaf blight. Low = 5–10% and Very low = <5%. Note: Chemicals tested in this study or previous studies during 2002–2008 do not imply endorsement of one over another, nor did discrimination intend against any similar products tested in our studies.

