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Evaluation of Fungicides for the Control of Cercospora Leaf Spot, White Mold, and Brown Spot of Soybean

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Abstract

The objectives of the study were to evaluate efficacy of fungicides in controlling Cercospora leaf spot, white mold, and brown spot diseases of soybean.

Keywords

Plant Pathology

Disciplines

Agricultural Science | Agriculture | Plant Pathology

Evaluation of Fungicides for the Control of Cercospora Leaf Spot, White Mold, and Brown Spot of Soybean

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Introduction

The objectives of the study were to evaluate efficacy of fungicides in controlling Cercospora leaf spot, white mold, and brown spot diseases of soybean.

Materials and Methods

To understand the effect of fungicides in controlling Cercospora leaf spot (CLS), white mold, and brown spot, experiments were conducted at Nashua during the 2003 and 2004 growing seasons. In 2003, Headline with six concentrations and Quadris with one concentration were applied at R3 and R5 stages. Similarly, in 2004, the same fungicides were tested with various concentrations against white mold and brown spot. The experimental layouts were in a completely randomized block design with split-plot fungicide treatments (eight in 2003 and fourteen in 2004) in four replications. Planting dates were May 21, 2003, and May 16, 2004. Rows in plots were 30 in. apart and plant population was 196,433 ppa in 2003 and 2004. Treatment details for the 2003 experiment are given in Table 1 and those of 2004 in Table 2. All plots (49 ft long each) were mechanically harvested on September 28, 2003, and October

4, 2004. Plot yields (bu/ac) and incidence and severities of CLS in 2003 as well as plot yields and incidence and severities of white mold and brown spot in 2004 were recorded.

Results and Discussion

Summarized in Table 1 are the results of the 2003 study. Lowest incidence and severity of CLS was observed in plots sprayed with Headline (6.14 oz/ac) at R3 compared with other treatments (Table 1). However, second application of Headline at R5 did not reduce CLS incidence and severities but increased grain yield by 2.7 bushels/acre. In plots sprayed with Quadris (9.2 oz/ac) the CLS readings were on a par with the control at 35.7 bushels/acre grain yield (Table 1). Results of the fungicides evaluated against white mold and brown spot are summarized in Table 2. The Headline appeared more effective against brown spot disease than against white mold during 2004 study (Table 2). Treatment differences are not conclusive due to differences in white mold severity; therefore, it is suggested that the experiment be repeated in the coming season.

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Table 1. Evaluation of Headline and Quadris against Cercospora leaf spot of soybean during 2003 at Nashua.

Treatment details	Application rate oz/ac	Timing	Grain moisture (%)	Yield* bu/ac	Cercospora leaf spot	
					Inc (%)	Sev (%)
Untreated check	--	--	12.8	39.7	14.3	11.7
Headline	6.14	R3	13.0	43.7	2.7	1.0
Headline	9.2	R3	12.6	43.2	11.0	15.0
Headline	6.14	R3 and R5	13.0	46.4	8.3	4.0
Quadris (Abound FL)	9.2	R3	12.6	35.7	17.5	15.0
Headline	12.3	R3	12.8	45.7	7.7	7.3
Headline	9.2	R3 and R5	12.6	42.6	7.5	4.0
Headline	9.2	R5	12.7	38.4	3.3	2.0

*NK Brand S24-K4 RR soybeans.

Table 2. Evaluation of Headline and Quadris against white mold and brown spot of soybean during 2004 at Nashua.

Treatment details	Fungicide application rate (oz/ac)	Timing	Grain moisture (%)	Yield* bu/ac	Mean severity (%)		Severity range (%)	
					White mold	Brown spot	White mold	Brown spot
Untreated check	-	-	11.7	58.0	10.8	16.3	1-30	10-20
Headline	3.07	V5	11.7	54.5	26.3	13.8	10-40	5-20
Headline	6.14	V5	11.6	56.3	13.8	8.8	5-25	5-15
Headline	9.2	V5	11.7	54.9	25.0	12.5	10-40	10-15
Headline	3.07	R1-R2	11.8	57.2	26.3	15.0	20-35	10-20
Headline	6.14	R1-R2	11.8	52.8	23.8	7.5	5-40	5-10
Headline	6.14	R3-R5	11.8	59.3	12.5	10.0	5-35	5-15
Quadris	6.14	R3-R5	11.8	59.6	11.8	12.5	5-30	10-15
Headline with Warrior insecticide**	6.14	R3-R5	11.8	59.5	10.5	12.5	2-15	10-15
Quadris with Warrior insecticide**	6.14	R3-R5	11.8	60.3	12.8	11.5	0-35	1-15
Headline with Mustang Max insecticide**	6.14	R3-R5	11.9	57.5	14.5	8.8	1-30	5-15
Headline	3.07	V5 and R1-R2	11.7	51.6	31.3	7.5	5-50	5-10
Warrior insecticide only**	-	R3-R5	11.6	57.5	5.5	12.5	2-10	5-15
Headline with Lorsban insecticide**	6.14	R3-R5	11.8	58.2	2.5	22.5	0-5	15-30

* Pioneer 92B38 RR soybeans, **Warrior (3.2 oz/ac rate), Mustang Max (4.0 oz/ac rate), and Lorsban (24 pt/ac rate).