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Evaluation of Soybean Fungicides

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Evaluation of Soybean Fungicides

Abstract

Prior to the 2005 growing season, management of foliar diseases of soybean was not considered in Iowa and much of the Midwest. However, with the introduction of Asian soybean rust caused by *Phakopsora pachyrhizi* in to the United States, fungicide applications may become an additional but necessary input in midwestern soybean production. This report details the efficacy of fungicides registered for use against Asian soybean rust, brown spot, white mold, and other fungal foliar diseases of soybean.

Keywords

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Disciplines

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Evaluation of Soybean Fungicides

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Introduction

Prior to the 2005 growing season, management of foliar diseases of soybean was not considered in Iowa and much of the Midwest. However, with the introduction of Asian soybean rust caused by *Phakopsora pachyrhizi* in to the United States, fungicide applications may become an additional but necessary input in midwestern soybean production.

This report details the efficacy of fungicides registered for use against Asian soybean rust, brown spot, white mold, and other fungal foliar diseases of soybean.

Materials and Methods

In 2005, Pioneer 92M32 Roundup Ready® soybeans were planted (196,433 ppa) at Nashua on May 24 into no-till cornstalks. Plots measured 30 ft long with a 5-ft (2-row) unsprayed border around each plot. Rows in plots were 30 in. apart. A randomized complete block design with four replications of each of 46 treatments was used (Table 1). All treatments were compared with an unsprayed control. The middle four rows of each plot (10 ft × 30 ft) were mechanically harvested on October 4,

2005. Plot yields (bu/acre), the severity of brown spot (%), and the incidence of white mold (%) were recorded.

Results and Discussion

Foliar diseases observed included bacterial blight, brown spot, and occasional lesions of frogeye leaf spot. White mold also was observed. The severity of brown spot and the incidence of white mold for each treatment were assessed (Table 1). Brown spot severity was fairly low and ranged from 5% to 20% amongst the treatments, compared with 10.63% for the unsprayed control. A very low incidence of white mold (0–2.5%) was recorded. Treatment differences are not conclusive due to low disease severity at the site. Yield of the plots ranged from 70.390 to 78.535 bushels/acre. There was no significant difference in yield between the unsprayed check and the sprayed plots.

It is anticipated that the experiment will be repeated in the coming seasons at least until we know if Asian soybean rust will be a frequent production risk to Iowa soybean growers.

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Table 1. Evaluation of fungicides registered for use against Asian soybean rust, brown spot, and white mold during 2005 at Nashua.

Treatment	Application rate (oz/acre)	Timing	Final brown spot severity (%) ¹	Final white mold incidence (%) ¹	Yield (bu/acre) ¹
DOMARK	5	R3	11.25 cdef	1.0 d	72.705 bcd
DOMARK + DOMARK	3 + 3	R1 + R5	5.0 h	1.0 d	75.140 abcd
DOMARK + DOMARK	4 + 4	R1 + R5	10.0 defg	1.75 bc	76.718 abc
LAREDO/LAREDO + HEADLINE	7 / 5 + 6	R1 + 21 days later	11.25 cdef	1.25 cd	77.620 ab
LAREDO + LAREDO	7 + 7	R1 + 21 days later	16.25 ab	1.5 bcd	72.740 bcd
PUNCH	4	R3	6.25 gh	1.75 bc	75.190 abcd
CHARISMA	10	R3	10.0 defg	1.25 cd	72.738 bcd
PUNCH + PUNCH	4 + 4	R1 + 21 days later	10.0 defg	2.5 a	74.032 abcd
CHARISMA + CHARISMA	10 + 10	R1 + 22 days later	20.0 a	1.25 cd	72.978 abcd
PUNCH + CHARISMA	4 + 10	R1 + 23 days later	13.75 bcd	1.75 bc	73.425 abcd
FOLICUR	4	R3	7.5 fgh	1.75 bc	73.990 abcd
HEADLINE	6	R3	6.25 gh	1.25 cd	77.725 ab
ECHO + ECHO	20 + 20	V5 + R3	10.0 defg	0.0 e	73.008 abcd
ECHO + FOLICUR	20 + 4	V5 + R3	6.25 gh	1.25 cd	73.436 abcd
IMPACT + IMPACT	7 + 7	R1 + 18–20 days later	15.0 bc	0.0 e	74.758 abcd
IMPACT + IMPACT	7 + 7	R1 + 28 days later	10.0 defg	0.0 e	74.258 abcd
FOLICUR + STRATEGO	4 + 7	R1 + R3	10.0 defg	1.25 cd	73.340 abcd
FOLICUR + STRATEGO	4 + 10	R1 + R3	11.25 cdef	1.25 cd	73.508 abcd
STRATEGO + FOLICUR	7 + 4	R1 R3	12.5 bcde	1.5 bcd	75.605 abcd
STRATEGO + FOLICUR (IF RUST)	7 + 4	R1 + <=10% rust	8.75 efgh	1.5 bcd	70.390 d
USF2010 + USF2010	5 + 5	R1 + R3	10.0 defg	1.25 cd	75.688 abcd
FOLICUR + FOLICUR	4 + 4	R1 + R5	16.25 ab	1.25 cd	74.723 abcd
FOLICUR + STRATEGO	4 + 10	<=10% rust <=10% rust + 7–10 days	6.25 gh	1.5 bcd	74.220 abcd
FOLICUR + FOLICUR	4 + 4	later	15.0 bc	2.0 ab	72.210 bcd
A12910	4	R3	6.25 gh	1.25 cd	71.535 cd
QUILT	14	R3	15.0 bc	1.0 d	73.428 abcd
A9901-QUADRI EXTRA	1.03	R3	8.75 efgh	1.25 cd	73.258 abcd
TILT	4	R3	12.5 bcde	1.25 cd	75.908 abcd
CARAMBA + CARAMBA	9.6 + 9.6	R1 + 21 days later	11.25 cdef	1.0 d	76.043 abc
CARAMBA + HEADLINE/CARABMA + HEADLINE	7.68 + 4.43 / 7.68 + 4.43	R1 + 21 days later	20.0 a	2.5 a	74.963 abcd
CARAMBA + HEADLINE/CARABMA + HEADLINE	9.6 + 4.29 / 9.6 + 4.29	R1 + 21 days later	7.5 fgh	1.5 bcd	74.950 abcd
HEADLINE + FOLICUR/HEADLINE + FOLICUR	4.71 + 3.16 / 4.71 + 3.16	R1 + 21 days later	16.25 ab	2.0 ab	74.005 abcd

Table 1 continued.

Treatment	Application rate (oz/acre)	Timing	Final brown spot severity (%) ¹	Final white mold incidence (%) ¹	Yield (bu/acre) ¹
HEADLINE/HEADLINE + FOLICUR	6.14/4.71 + 3.16	R1 + 21 days later	6.25 gh	0.0 e	76.623 abc
HEADLINE/HEADLINE + CARAMBA	6.14/4.43 + 7.68	R1 + 21 days later	10.0 defg	1.75 bc	76.028 abc
FOLICUR + FOLICUR	3.56 + 3.56	days later	7.5 fgh	1.75 bc	72.990 abcd
DITHANE	2.5 lb/acre	R5	12.5 bcde	1.25 cd	74.168 abcd
HEADS UP	1g/L of spray	1st true leaves	11.25 cdef	0.0 e	72.713 bcd
		R2 + 21days later			
HEADLINE/HEADLINE + FOLICUR	6/4.71 + 3.16	if rust occurs	13.75 bcd	1.5 bcd	77.393 ab
		R3 + 21days later			
HEADLINE/HEADLINE + FOLICUR	6/4.71 + 3.16	if rust occurs	12.5 bcde	1.75 bc	78.535 a
		R4 + 21days later			
HEADLINE/HEADLINE + FOLICUR	6/4.71 + 3.16	if rust occurs	12.5 bcde	1.5 bcd	75.715 abcd
		R2 + 21days later			
CARAMBA + HEADLINE/CARABMA + HEADLINE	6.1 + 3.6 / 6.1 + 3.6	if rust occurs	12.5 bcde	1.5 bcd	73.235 abcd
		R2 + 21days later			
CARAMBA + HEADLINE/CARABMA + HEADLINE	7.7 + 4.4 / 7.7 + 4.4	if rust occurs	8.75 efgh	1.0 d	76.698 abc
		R2 + 21days later			
CARAMBA + HEADLINE/CARABMA + HEADLINE	3.2 + 4.7 / 3.2 + 4.7	if rust occurs	10.0 defg	1.5 bcd	74.700 abcd
		R2 + 21days later			
CARAMBA + HEADLINE/CARABMA + HEADLINE	2.38 + 3.6 / 2.38 + 3.6	if rust occurs	10.0 defg	1.75 bc	78.020 ab
		R2 + 21days later			
FOLICUR/FOLICUR	3.2/3.2	if rust occurs	11.25 cdef	1.5 bcd	74.868 abcd
UNTREATED Control	-	-	10.63 def	1.75 bc	73.465 abcd

¹Means sharing a common letter do not differ significantly according to the Waller-Duncan t test (P<0.05).