Bean Leaf Beetle-*Phomopsis* Management Trials on Soybean

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Introduction

The purpose of this study was to evaluate the impact of insecticide and fungicide applications on bean leaf beetle populations and *Phomopsis* (pod and stem blight) infection. There is some evidence that bean leaf beetle activity may directly affect *Phomopsis* colonization of soybean pods and stems.

Materials and Methods

Plots were planted on May 21, 2009, using Pioneer brand soybean variety 92M76. The experimental design for this study was a randomized complete block in a split-plot arrangement with four replications. The main plots were insecticide treatments and consisted of applications targeting different bean leaf beetle life stages. These treatments were: 1) no insecticide, 2) insecticide seed treatment + foliar application to control first generation, 3) insecticide seed treatment + foliar application to control first and second generations, and 4) foliar application to control first and second generations. Insecticide seed treatment consisted of the neonicotinoid insecticide thiamethoxam (Cruiser 5FS), and foliar applications were pyrethroid insecticide lambda-cyhalothrin (Warrior). All seeds were treated with fungicides Apron Maxx (Apron XL and Maxim). The sub-plots were foliar fungicide applications of the triazole fungicide tebuconazole (Folicur 3.6F), and strobilurin fungicide pyraclostrobin (Headline) at R5 growth stage and an untreated control. The foliar insecticide applications were on July 7 and August 13, and R5 fungicide spray was on August 18.

Results and Discussion

Even though bean leaf beetle populations were very low in 2009, it was observed that foliar insecticide applications had an effect of reducing insect feeding damage. Treatments that included a foliar application targeting the second beetle generation showed less pod damage compared with other treatments (Table 1).

A plate test was performed to evaluate *Phomopsis* incidence in stems. Treatments that included insecticide seed and foliar applications reduced *Phomopsis* infection of stems (Table 1). The strobilurin fungicide also was effective in reducing *Phomopsis* infection of stems.

Seeds harvested were tested by blotter test to determine *Phomopsis* infection. Treatments that included insecticide seed and foliar applications plus an application of any fungicide reduced *Phomopsis* infection of seeds (Table 1). The strobilurin fungicide also was effective in reducing *Phomopsis* infection of seeds.

Soybean yields did not differ due to treatments (Table 1).

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Table 1. Average percent of *Phomopsis* incidence of stem and seed, percent of insect feeding damage, and yield response.

Treatment		Phomopsis incidents (%)		Insect feeding damage	Yield
Insecticide	Fungicide	Stems[1]	Seeds[1]	% pod damage/plant[1]	(bu/A)[1]
None	None	60 a	11.81 a	11.67 a	68 a
None	Triazole	33 ab	7.37 ab	7.87 ab	71 a
None	Strobilurin	35 ab	5.12 b	9.75 a	75 a
Seed trt+foliar 1st generation	None	36 ab	8.6 ab	8.01 ab	66 a
Seed trt+foliar 1st generation	Triazole	34 ab	5.56 b	9.14 a	66 a
Seed trt+foliar 1st generation	Strobilurin	21 b	4.25 b	2.62 bc	68 a
Seed trt+foliar 1st and 2nd generation	None	43 ab	8.81 ab	1.82 c	57 a
Seed trt+foliar 1st and 2nd generation	Triazole	45 ab	7.19 ab	2.25 c	69 a
Seed trt+foliar 1st and 2nd generation	Strobilurin	48 ab	7.69 ab	0.65 c	66 a
Foliar 1st + 2nd generation	None	50 ab	7.31 ab	1.71 c	64 a
Foliar 1st + 2nd generation	Triazole	35 ab	7.69 ab	1.64 c	67 a
Foliar 1st + 2nd generation	Strobilurin	38 ab	6.06 ab	1.10 c	71 a

[1]Means within a column with the same letter are not significantly different ($P \leq 0.05$).