

SOYBEAN PROJECT REPORT – 2007

Evaluation of Fungicides for Control of Asian Soybean Rust

Investigators: Dennis Delaney, Edward Sikora, and Kathy Lawrence

Objective: To evaluate fungicide applications and management for control of soybean rust and other foliar diseases at multiple locations in Alabama.

Results:

Fungicide trials for the control of Asian soybean rust (ASR) were established at the Gulf Coast REC at Fairhope and the EV Smith Field Crops Unit at Shorter. Due to extreme drought, only the Gulf Coast location experienced damaging levels of ASR or other fungus diseases in 2007.

At the Gulf Coast, DP 7220 RR soybeans were planted on 07 June. Fungicide treatments were applied as a foliar spray at R2 and repeated in 21 days (R4-R5) and/or at 28 days (R5). All treatments were applied with flat fan nozzles in a volume of 18 - 20 gpa. Weather conditions were favorable for moderate incidence of foliar diseases on soybean with adequate rainfall. Soybean rust leaf symptoms were initially observed in the trial in late August at the R5 growth stage in the lower leaf canopy of untreated plots. Soybean foliar diseases were evaluated by rating severity of ASR and target spot in each plot regularly after rust developed. Plots were harvested on 07 November. Data were statistically analyzed using Duncan's New MRT ($P \leq 0.10$). Fungicide treatments reduced the incidence of ASR and Target Spot relative to the untreated control, reduced leaf % defoliation ($P \leq 0.10$), and increased yields from 10 to 18 bu/A over the untreated control (Figures 1 and 2).

Similar results were noted with several other trials with new materials at Fairhope, where other materials tested gave yield increases up to 31 bu/A over the untreated checks. Weights of 100-seed samples were highly correlated with yield in all trials, indicating that the primary effect of ASR was leaf damage and loss that prevented seed fill.

Table 1. Asian Soybean Rust Ratings for Sequential Fungicide Treatments at Gulf Coast REC, 2007

					Asian Soybean Rust							
Rating Date					9/11/2007		9/26/2007		10/3/2007		10/20/2007	
Scale*					0-8		0-8		0-8		0-8	
Trt	Treatment	Rate	Unit	Stage								
1	Untreated Check				1.3	a	3.5	a	6.0	a	8.0	a
2	Headline SBR	7.8	fl oz/a	R2	0.0	b	0.0	b	0.0	c	2.5	d
	fb Headline SBR	7.8	fl oz/a	R2+21da								
3	Stratego	10	fl oz/a	R2	0.0	b	0.1	b	0.1	c	4.3	c
	fb Stratego	10	fl oz/a	R2+21da								
4	Quilt	14	fl oz/a	R2	0.0	b	0.3	b	1.5	b	6.1	b
	fb Quilt	14	fl oz/a	R2+21da								
5	Headline SBR	7.8	fl oz/a	R2	0.0	b	0.0	b	0.0	c	2.7	d
	fb Folicur	4	fl oz/a	R2+21da								
6	Headline SBR	7.8	fl oz/a	R2	0.0	b	0.0	b	0.1	c	2.4	d
	fb Laredo	7	fl oz/a	R2+21da								
7	Headline SBR	7.8	fl oz/a	R2	0.1	b	0.0	b	0.0	c	0.3	e
	fb Top Guard	7	fl oz/a	R2+21da								
8	Stratego	10	fl oz/a	R2	0.0	b	0.1	b	0.1	c	2.6	d
	fb Folicur	4	fl oz/a	R2+21da								
9	Stratego	10	fl oz/a	R2	0.0	b	0.0	b	1.1	b	5.8	b
	fb Laredo	7	fl oz/a	R2+21da								
10	Quilt	14	fl oz/a	R2	0.0	b	0.0	b	0.0	c	2.6	d
	fb Folicur	4	fl oz/a	R2+21da								
11	Quilt	14	fl oz/a	R2	0.0	b	0.1	b	0.9	b	5.9	b
	fb Laredo	7	fl oz/a	R2+21da								
12	Quilt	14	fl oz/a	R2	0.0	b	0.0	b	0.0	c	0.8	e
	fb Top Guard	7	fl oz/a	R2+21da								
13	Stratego	10	fl oz/a	R2	0.0	b	0.0	b	0.0	c	0.7	e
	fb Top Guard	7	fl oz/a	R2+21da								

*Bayer Scale: 0 = no infection; 8 = severely infected

fb = followed by

Means followed by same letter do not significantly differ ($P=.10$, Duncan's New MRT)

Table 2. Percent Defoliation, 100-seed Weights and Yield for Sequential Fungicide Treatments at Gulf Coast REC, 2007

Rating Date					10/20/2007	Harvest		11/7/2007		
					DEFOLIATION	100 seed wt		YIELD		
					%	grams		bu/ac		
Trt	Treatment	Rate	Unit	Stage						
1	Untreated Check				100	a	14.51	g	50.5	c
2	Headline SBR	7.8	fl oz/a	R2	83	f	18.28	ab	64.1	ab
	fb Headline SBR	7.8	fl oz/a	R2+21da						
3	Stratego	10	fl oz/a	R2	94	bc	17.65	b-e	60.9	b
	fb Stratego	10	fl oz/a	R2+21da						
4	Quilt	14	fl oz/a	R2	94.5	bc	17.58	c-f	62	b
	fb Quilt	14	fl oz/a	R2+21da						
5	Headline SBR	7.8	fl oz/a	R2	88.8	de	18.17	abc	68.1	a
	fb Folicur	4	fl oz/a	R2+21da						
6	Headline SBR	7.8	fl oz/a	R2	88.5	e	18.70	a	63.7	ab
	fb Laredo	7	fl oz/a	R2+21da						
7	Headline SBR	7.8	fl oz/a	R2	87	e	18.09	a-d	65.6	ab
	fb Top Guard	7	fl oz/a	R2+21da						
8	Stratego	10	fl oz/a	R2	92	cd	17.44	def	64.6	ab
	fb Folicur	4	fl oz/a	R2+21da						
9	Stratego	10	fl oz/a	R2	94.8	bc	17.25	ef	63.1	b
	fb Laredo	7	fl oz/a	R2+21da						
10	Quilt	14	fl oz/a	R2	93.3	bc	17.84	b-e	64.3	ab
	fb Folicur	4	fl oz/a	R2+21da						
11	Quilt	14	fl oz/a	R2	96.8	ab	17.35	ef	64.3	ab
	fb Laredo	7	fl oz/a	R2+21da						
12	Quilt	14	fl oz/a	R2	92.5	c	17.71	b-e	63.5	ab
	fb Top Guard	7	fl oz/a	R2+21da						
13	Stratego	10	fl oz/a	R2	94.3	bc	16.93	f	63.7	ab
	fb Top Guard	7	fl oz/a	R2+21da						

fb = followed by

Means followed by same letter do not significantly differ ($P=.10$, Duncan's New MRT)

Strobiluron Effects Trials:

Three trials investigated strobiluron timing at different growth stages, with and without desiccants applied to increase harvest efficiency. Trials were conducted in north and central AL at the Tennessee Valley RREC (TVS), Sand Mountain RREC (SMS), and the EV Smith Field Crops Unit (EVS). Headline® @ 6 fl. oz/A was applied at R1, R3, and/or R5 in factorial combinations with or without desiccation. A tank mix of Gramoxone Inteon® 2L (paraquat) @ 1 pt/A plus sodium chlorate @ 3 lb a.i. /A was applied to half the plots at pod maturity. Desiccated treatments were harvested 10 to 15 days after treatment (DAT), while non-desiccated plots were harvested after natural leaf drop (10 to 21 days later). Grain yield and harvest moisture data was recorded. Seed samples were also analyzed for foreign matter content and seed weight.

Greening effects were much reduced in 2007, compared to 2005. In 2007, no significant differences were recorded between fungicide timing treatments for greening, yield or 100-seed weights. In contrast to 2006, Desiccation treatments increased yield at only one location in 2007, by 5.2 bu/A at EVS (Figure 1).

Figure 1. Yields of Strobiluron Fungicide Treated Soybeans With and Without Desiccants In Alabama, 2007

