

Evaluation of foliar fungicides to prevent yield loss from frogeye leaf spot in Mississippi full-season soybean, 2013.

Foliar fungicides were evaluated at the Delta Research and Extension Center (DREC) in Washington County, Mississippi. The previous crop was cotton. The trial was planted on a Bosket very fine sandy loam on 3 May to the soybean variety Armor DK 4744, a frogeye leaf spot susceptible variety. Plots consisted of four rows spaced 40-in. apart and 30 ft in length. Plots were furrow irrigated as needed throughout the season. Treatments were replicated four times in a randomized complete block design. Fungicide treatments were applied on 6 Aug (approximately R5.5) to each plot using a CO₂ backpack sprayer with a 4 nozzle hand boom fitted with TeeJet 11002VS nozzles spaced 20 in apart and delivering 15 gal/A at 34 psi. A non-ionic surfactant (Induce) was added to each treatment at a rate of 0.25% v/v. Disease severity ratings were visually assessed based on the presence of disease symptoms from the two center rows of the soybean plot canopy. Plots were rated immediately prior to fungicide application, 14 days (20 Aug) and 21 days (27 Aug) post-treatment. Assessments were made based on a scale of 0 to 9 where 0 = no disease present and 9 = plants exhibiting 90% of the foliage covered with lesions from the plot as a whole. Visual assessments of phytotoxicity present in each plot post-application were made on a scale of 0 to 100% based on the percentage of foliar tissue affected in each plot. Plots were harvested with a plot combine on 10 Oct and yields were adjusted to 13% moisture. Prior to statistical analysis assessments of phytotoxicity were transformed using a square root transformation. Data presented in the table below were back-transformed to percentages for the purposes of presentation. Area Under the Disease Progress Curves (AUDPC) were determined for each treatment using trapezoidal integration. Data were subjected to analysis of variance and means were compared at the 0.05 significance level using Fisher's protected least significant difference (LSD) test.

Frogeye leaf spot was the predominant disease observed. Prior to fungicide application no significant differences in disease severity were observed. Observations conducted 14 days post-treatment determined that Priaxor, Quadris + Domark, Stratego YLD, and Topguard significantly reduced frogeye leaf spot when compared to the non-treated check. Frogeye leaf spot severity was significantly reduced compared to the non-treated check 28 days post-application with applications of Alto, Domark, Muscle ADV, Priaxor, Proline, Quadris + Domark, Quadris Top, Quilt Xcel, Stratego YLD, Tilt, and Topguard. AUDPC values were significantly different than the non-treated check when soybean was treated with Alto, Priaxor, Quadris + Domark, Stratego YLD, and Topguard. Fungicide treatment with Muscle ADV, Priaxor, Proline, Quadris Top, Quilt Xcel, Stratego YLD, Tilt, and Topguard significantly increased yield compared to the non-treated check. Significant levels of phytotoxicity were observed with applications of Muscle ADV, Proline, and Stratego YLD. Even though Topguard resulted in some phytotoxicity, the observed severity of phytotoxicity did not differ from the non-treated check. In addition, the presence of phytotoxicity was not considered to have negatively affected yield.

Treatment ^z , rate (fl oz or lb/A)	Severity rating (0-9)			AUDPC	Phytotoxicity rating (0-100%)		Yield (bu/A) ^x
	5 Aug	20 Aug ^y	27 Aug		20 Aug	27 Aug	
Non-treated check	5.5	7.3 ab	7.8 a	20.3 abc	0 e	0 c	66.0 d
Alto 100 SL, 4	5.8	6.5 bc	6.8 bc	19.0 de	0 e	0 c	68.8 cd
Cuprofix 40 D, 2 lb/A	5.5	7.8 a	7.8 a	20.6 abc	0 e	0 c	68.6 cd
Domark 230 ME, 4	5.5	6.5 bc	6.8 bc	18.6 abcd	0 e	0 c	70.7 bcd
Headline 2.09 SC, 6	5.3	7.3 ab	7.3 ab	19.8 abcd	0 e	0 c	69.0 cd
Muscle ADV 3.84 SC, 16	5.5	6.5 bc	6.5 bc	18.5 bcde	5.0 b	9.8 b	74.0 ab
Priaxor 4.17 SC, 4	5.0	5.8 c	6.5 bc	17.1 de	0 e	0 c	71.6 abc
Proline 480 SC, 3	5.8	6.3 bc	6.3 cd	18.3 abc	58.3 a	71.7 a	71.1 abc
Quadris 2.08 SC, 6	5.3	7.3 ab	7.3 ab	19.8 abc	0 e	0 c	70.2 bcd
Quadris 2.08 SC, 4 + Domark 230 ME, 3	5.0	6.0 c	6.3 cd	17.1 de	0 e	0 c	69.6 bcd
Quadris Top 2.72 SC, 8	5.8	6.5 ab	6.3 cd	18.6 abcd	0 e	0 c	71.4 abc
Quilt Xcel 2.20 SC, 14	5.3	6.3 bc	6.5 bc	17.9 cde	0 e	1.8 c	75.6 a
Stratego YLD 4.18 SC, 4	5.5	6.0 c	6.3 cd	17.6 e	8.0 c	8.8 b	74.3 ab
Tilt 3.6 EC, 4	5.5	6.5 bc	6.5 bc	18.5 bcde	0 e	0 c	72.3 abc
Topguard 1.04 SC, 7	5.0	5.5 c	5.5 d	16.0 de	2.0 d	1.5 c	69.6 bcd
LSD (0.05)	...	1.04	0.88	1.77	0.25	3.15	4.88
CV (%)	...	11.12	9.15	7.03	11.73	42.61	4.74
R ²	...	0.4818	0.5548	0.5884	0.9918	0.9868	0.3944
P-value for F-statistic	...	0.0033	0.0003	0.0026	<0.0001	<0.0001	0.0414

^z All fungicide treatments included a non-ionic surfactant at 0.25% v/v.

^y Means followed by the same letter(s) within a column are not significantly different according to Fisher's Protected LSD ($P=0.05$).

^x Yields are weight of soybean with moisture content adjusted for 13%.