

Comparison of Bayer foliar fungicide products and adjuvants combinations for efficacy against *Cercospora sojina* and phytotoxicity on soybean in Mississippi, 2013.

Foliar fungicides were evaluated at the Delta Research and Extension Center (DREC) in Washington County, Mississippi. The previous crop was soybean followed by winter wheat. The trial was planted on Tunica clay on 27 Jun to the susceptible soybean variety Armor DK 4744. Plots consisted of four rows spaced 40-in apart and were 20 ft in length. Treatments were replicated four times in a randomized complete block design. Plots were irrigated as needed. Fungicide treatments were applied on 28 Aug (approximately R5) to each plot using a tractor-mounted multi-boom sprayer fitted with TeeJet 8003VS nozzles spaced 20 in. apart and delivering 15 gal/A at 38 psi. Fungicides were applied with or without an adjuvant as several different rates and combinations. Three different rates of Stratego YLD (4.0, 4.5, and 4.65 fl oz) were applied either with or without 0.125% or 0.25% (v/v) of a non-ionic surfactant (NIS; as Induce). In addition, treatments were applied with 0.125% or 0.25% (v/v) of a crop oil concentrate (COC; as AgriDex). However, space limitations meant that Stratego YLD at 4.65 fl oz/A could not be included with 0.25% (v/v) of COC. Disease severity ratings were visually assessed based on the presence of foliar disease symptoms from the two center rows of the soybean plot canopy. Plots were rated 14 days (11 Sep), 22 days (19 Sep) and 29 days (26 Sep) post-treatment. Visual assessments were made based on a scale of 0 to 9 where 0 = no disease present and 9 = foliage exhibiting lesions on 90% of leaf material. Visual assessments of phytotoxicity present in each plot were made post-application 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 14 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. 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).

Frogeye leaf spot was the predominant disease present. At the first frogeye leaf spot severity rating, 14 days post-application, Stratego YLD at 4.0 oz combined with 0.125% v/v and 0.25% NIS and COC, Stratego YLD at 4.65 oz with 0.25% NIS and Proline with 0.25% NIS significantly reduced observable frogeye leaf spot compared to the non-treated check. Observations of frogeye leaf spot severity conducted 22 days post-application determined that applications of Stratego YLD at 4.5 oz combined with 0.125% v/v NIS and Stratego YLD at 4.0 oz in combination with 0.25% v/v COC significantly reduced frogeye leaf spot symptoms compared to the non-treated check. Treatment with Stratego YLD at 4.0 and 4.5 oz in combination with 0.125% NIS significantly reduced observable frogeye leaf spot compared with the non-treated check 29 days post-treatment. In addition, treatment with Stratego YLD at 4 oz in combination with 0.125% COC and Stratego YLD at 4.5 oz with 0.25% COC also significantly reduced symptoms of frogeye leaf spot compared to the non-treated check 29 days post-treatment. A decrease in control of frogeye leaf spot control was observed 29 days post-treatment; however, Stratego YLD applied at the 4 and 4.5 oz rate in combination with 0.125% v/v of NIS and 0.125% and 0.25% v/v of COC, respectively, significantly reduced frogeye leaf spot severity compared to the non-treated check. Phytotoxicity was observed across all three rating periods when combinations of Stratego YLD at 4.5 and 4.65 oz was combined with 0.125% NIS, and when Stratego YLD was combined with 0.125% COC compared to the non-treated check. Stratego YLD at 4.5 oz combined with 0.125% v/v NIS and Stratego YLD applied at 4.0 oz in combination with 0.125% v/v COC produced the greatest amount phytotoxicity across treatments. No significant differences in yield were observed regardless of fungicide and/or fungicide by adjuvant combination. Although phytotoxicity was observed across most treatments, there was no impact on yield.

| Treatment, rate (fl oz/A) | FLS Severity rating (0-9) | | | Phytotoxicity (0-100%) | | | Yield (bu/A) ^y |
|---|---------------------------|---------|--------|------------------------|-----------|---------|---------------------------|
| | 11 Sep ^z | 19 Sep | 26 Sep | 11 Sep | 19 Sep | 26 Sep | |
| Non-treated check | 7.0 a | 7.5 ab | 8.3 b | 0.0 f | 0.0 f | 0.3 c | 42.0 |
| Stratego YLD 4.18SC, 4.0 | 7.0 a | 7.8 ab | 8.8 a | 0.0 f | 0.0 f | 0.0 c | 39.6 |
| Stratego YLD 4.18SC, 4.5 | 6.5 abc | 7.0 bcd | 8.0 bc | 0.0 f | 0.5 def | 0.0 c | 45.2 |
| Stratego YLD 4.18SC, 4.65 | 6.5 abc | 7.0 bcd | 8.0 bc | 0.0 f | 1.3 cdef | 0.0 c | 45.0 |
| Stratego YLD 4.18SC 4.0., 0.125% v/v NIS | 6.8 ab | 7.0 bcd | 7.8 c | 0.0 f | 0.3 ef | 0.5 bc | 45.5 |
| Stratego YLD 4.18SC 4.0, 0.25% v/v NIS | 7.0 a | 7.5 ab | 8.0 bc | 0.5 cdef | 1.0 cdef | 0.5 bc | 43.9 |
| Stratego YLD 4.18SC 4.5, 0.125% v/v NIS | 6.3 bc | 6.5 d | 7.8 c | 2.0 ab | 7.3 a | 2.8 a | 44.8 |
| Stratego YLD 4.18SC, 4.5, 0.25% v/v NIS | 6.8 ab | 7.0 bcd | 8.0 bc | 1.0 bcde | 2.5 bcdef | 0.0 c | 44.7 |
| Stratego YLD 4.18SC, 4.65, 0.125% v/v NIS | 7.0 a | 7.5 ab | 8.0 bc | 1.5 abc | 3.8 abc | 2.7 a | 44.0 |
| Stratego YLD 4.18SC, 4.65, 0.25% v/v NIS | 6.3 bc | 7.3 abc | 8.0 bc | 0.3 ef | 3.8a bc | 1.3 abc | 47.8 |
| Stratego YLD 4.18SC, 4.0, 0.125% v/v COC | 6.0 c | 7.0 bcd | 7.8 c | 2.0 ab | 4.3 ab | 1.0 abc | 43.5 |
| Stratego YLD 4.18SC, 4.5, 0.125% v/v COC | 6.5 abc | 7.0 bcd | 8.0 bc | 1.3 bcd | 2.8 bcdef | 0.8 bc | 42.8 |
| Stratego YLD 4.18SC, 4.65, 0.125% v/v COC | 6.8 ab | 7.0 bcd | 8.0 bc | 1.8 ab | 3.8 ab | 2.3 ab | 40.0 |
| Stratego YLD 4.18SC, 4.0, 0.25% v/v COC | 6.3 bc | 6.7 cd | 8.0 bc | 2.7 a | 2.7 bcd | 0.3 bc | 43.0 |
| Stratego YLD 4.18SC, 4.5, 0.25% v/v COC | 7.0 a | 7.5 ab | 7.8 c | 0.3 def | 3.7 ab | 1.5 abc | 45.9 |
| Proline 4.18SC, 3.0 oz, 0.25% v/v NIS | 6.3 bc | 7.3 abc | 8.0 bc | 1.0 bcde | 1.8 bcdef | 2.3 ab | 41.7 |
| LSD (0.05) | 0.66 | 0.59 | 0.44 | 0.43 | 0.37 | 2.29 | 5.34 |
| CV (%) | 6.98 | 5.69 | 3.89 | 18.73 | 29.56 | 30.04 | 8.01 |
| R ² | 0.4442 | 0.5041 | 0.4531 | 0.6744 | 0.6381 | 0.4950 | 0.3615 |
| P-value for F-statistic | 0.0219 | 0.0062 | 0.012 | < 0.0001 | 0.0004 | 0.0082 | 0.206 |
| St. Dev. | 0.52 | 0.48 | 0.36 | 1.02 | 2.67 | 1.48 | 3.59 |

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

^y Yield is weight of soybean with moisture content adjusted to 13%.