Enhanced Pest Control Systems for Mid-South Soybean Production (Year 2 of 2)

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Host plant resistance trials to evaluate resistance to the Midsouth stink bug complex; *Nezara viridula* L., *Euschistus servus* (Say) (brown stink bug), *Chinavia hilarus* (Say) (green stink bug). and redbanded stink bug (RBSB), *Piezodorus guildinii* (Westwood) were conducted at the Ben Hur Research Station, LSU AgCenter, Baton Rouge, LA. For the JHT-TX lines, seed quantity was sufficient to plant plots 4 rows wide by 25 ft in length, with treatments arranged in a RCBD with four replications. For seed provided by Dr. Moldir Orazaly, seed was sufficient to plant plots 2 rows wide by 25 ft in length, with treatments arranged in a RCBD with four replications. Once soybeans had reached R4, treatment efficacy against stink bugs was determined using a standard (15 in diameter) sweep net to take 25 sweeps per plot weekly, counting number of pests collected. We then estimated stink bug pressure from R5 to R8, providing a measure of the seasonal stink bug exposure that soybean experiences, similar to calculating area under the disease curve. We calculated cumulative stink bug days (CSBD) using the following equation:

$$\sum_{n=1}^{\infty} = \left(\frac{x^{i-1} + x^{i}}{2}\right) \text{x } t$$

where x is the mean number of stink bugs on sample day i, x^{i-1} is the mean number of stink bugs on the previous sample day, and t is the number of days between samples $i - 1$and i. Analysis of variance was performed following transformation of CSBD using $\log_{10}(x+1)$. The level of significance was set at P= 0.05 and the REGWQ test was used to separate means.

Stink bug pressure has been very high all year round, allowing for a good differentiation in resistant lines. So far, the data is for stink bug populations only. Once harvest is finished, we will commence evaluation of seed weights and damage.

TX soybean lines specifically bred for stink bug resistance showed significant differences in CSBD (Table 1). JHT-TX1034 had the least number of stink bugs over time while JHT-TX1041 had the most. AR soybean lines also showed significant differences in CSBD (Table 2). R09-1589 had the highest number of stink bugs over time while R11-2354 and UA 4805 had the least. Note that although AR lines did show a range in susceptibility to the stink bug complex, both R11-2354 and UA 4805, the most resistant AR lines, would be considered susceptible compared to the TX lines which were bred for stink bug resistance.

Table 1. Mean (± se) cumulative stink bug days (CSBD) for TX stink bug resistant breeding lines	
Plant Line	**CSBD**
JHT-TX1061	88 ± 47 b
JHT-TX1041	299 ± 133 a
JHT-TX1039	143 ± 82 ab
JHT-TX1035	105 ± 56 b
JHT-TX1034	72 ± 54 b
JHT-TX1033	168 ± 106 ab
Means followed by the same letter within columns are not significantly different (REGWQ; P>0.05).	

Table 2. Mean (± se) cumulative stink bug days (CSBD) for AR soybean breeding lines and varieties	
Plant Line	**CSBD**
Osage	412 ± 184 a-d
R09-1589	619 ± 315 a
R09-430	258 ± 220 cd
R10-197RY	287 ± 234 b-d
R11-2354	192 ± 143 d
R11-7999	364 ± 121 a-d
R11-89RY	338 ± 169 a-d
R13-1019	566 ± 335 ab
UA 4805	243 ± 124 cd
UA 5014C	522 ± 369 a-c
UA 5213C	321 ± 234 a-d
UA 5414RR	466 ± 232 a-d
UA 5612	377 ± 201 a-d
UA 5715GT	438 ± 223 a-d
UA 5814HP	383 ± 266 a-d
UA 5615C	455 ± 234 a-d
Means followed by the same letter within columns are not significantly different (REGWQ; P>0.05).	