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7. Title

Biology, Distribution, and Management of Soybean Insect Pests

12. Investigator Name(s) (Last Name and Initials)

Davis, J. A.

20. Termination Date 06/30/2013	40. Period Covered (mo/da/year): 01/01/2011 TO 12/31/2011

Outputs:

This project generated outputs in the form of seven research presentations presented at regional and national meetings, eleven extension/outreach field day and parish meetings, three peer-reviewed journal articles, and seven technical reports.

Outcomes/Impacts:

Resistance to Intrepid 2F exists in midsouth (Louisiana, Mississippi, Missouri, and Texas) soybean looper populations, resulting in 10 to 32X the amount of product needed to control this pest compared to lab reference colonies. Several field control failures with Intrpid at (6 oz/A) occurred this year. Producers will need to use alternative products to control soybean loopers. Stink bug egg parasitoids (1431) were identified over a three year period. These species parasitize 52% of egg masses, but are highly susceptible to insecticide applications. 80% of all parasitoids are a single species. Identification of stink bug damaged soybean seed in the field found 95% of the damaged seed in the top canopy compared to 61% in the bottom when mean redbanded stink bug populations were 5.4 per 25 sweeps from R5 to R7 soybean growth stages. Action thresholds have been lowered to 4 per 25 sweeps and will be verified next year. This change may result in more insecticide applications but higher grower returns due to reduced damage. Redbanded stink bug populations are reduced 61 to 95% when winter temperatures fall below 20 degrees F. Preliminary data indicates that for each hour below 20 degrees F there is 8% decrease in population. Current soybean varieties differ in stink bug susceptibility. In the untreated plots, redbanded stink bug numbers reached 20 per 25 sweeps in P4906 RR and 13 per 25 sweeps in DP4888 RR. Those cultivars containing moderate resistance will not need as many insecticide applications. Three insecticide applications were needed to control redbanded stink bug on P4906 RR while only two were needed on DP4888 RR. This will save Louisiana soybean producers money while benefiting the environment as well as conserving soybean pest predators. Prior to insecticide applications, fire ant numbers were 100 per plot sample. After insecticide applications were applied, fire ants were reduced to zero. This effect coincided with a flaring of velvetbean caterpillar and soybean looper precautions. Stink bugs can be concentrated for site-specific targeted insecticide applications using spinosad which attracted males of redbanded and rice stink bugs. Control of stink bugs was achieved (below economic threshold of 6 per 25 sweeps) while spraying only 25% of the acreage. This practice could save producers $28 per acre, reducing input insecticide costs by as much as 75%.

Publications:

Davis, J. A., and A. R. Richter. Evaluation of tank mixed foliar insecticides for soybean looper and velevetbean caterpillar control, 2010. 2011. Arthropod Management Tests 2011, 36 (F81).

Davis, J. A., and A. R. Richter. Residual efficacy of foliar insecticides for soybean looper and velevetbean caterpillar control, 2010. 2011. Arthropod Management Tests 2011, 36 (F80).

Davis, J. A., and A. R. Richter. Evaluation of foliar insecticides for soybean looper and velevetbean caterpillar control, 2010 (Test 1). 2011. Arthropod Management Tests 2011, 36 (F79).

Leonard, B. R., G. B. Padgett, J. L. Griffin, D. J. Boquet, R. J. Levy, Jr., R. W. Schneider, J. A. Davis, and R. A. Valverde. 2011. Soybean green plant malady contributing factors and mitigation. Louisiana Agriculture 54: 32-34.

Davis, J. A., K. L. Kamminga, and A. R. Richter. 2011. New integrated pest management strategies for stink bug control in Louisiana soybean. Louisiana Agriculture 54: 26-27.

Temple, J., J. A. Davis, J. Hardke, P. Price, S. Micinski, C. Cookson, A. Richter, and B. Rogers Leonard. 2011. Seasonal abundance and temporal occurrence of the redbanded stink bug in Louisiana soybean. Louisiana Agriculture 54: 20-22.

Participants:

J.A. Davis (PI), A. Richter, S. Brown, W. Joffrion, M. Moonga, K. Hernowo, G. Tate, E. Omojola, R. Dale, D. Nelson, M. Nelson, A. Cox, D. Lewis, J.T. James, S. Lowe, D.S. Aiken, K. Allen, J. Baldwin, D. Clark, C. Griffin, J.L. Herbert, A. K. Ames, B.R. Leonard, B. Padgett, T. Smith, M. Stout, R. Valverde, LSU AgCenter; Michael Way, Texas Agrilife Research; Ames Herbert and K. Kammizer, Virginia Tech University; S. Aiken, University of Arkansas, K. Tindall, University of Missouri, C. Allen, USDA-ARS SFCIML.

Target Audiences:

The target audience for the project research outputs are other researchers, producers, and policy makers.

Project Modifications:

Nothing significant to report during this reporting period.

Approved (Signature)	Title	Date