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7. Title

Weed Management in Agronomic Crops of the Louisiana Red River Valley

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

Stephenson, D. O.

20. Termination Date 12/31/2013

40. Period Covered (mo/da/year): 01/01/2011 TO 12/31/2011

Outputs:

The project generated outputs in the form of presentations at six professional conferences, eight proceedings, and one refereed journal article. Weed management strategies developed from this project were provided to crop producers and other stakeholders in Louisiana.

Outcomes/Impacts:

A johnsongrass population in Rapides Parish, Louisiana, was identified as resistant to the herbicide, glyphosate. Plants from rhizomes were 28.7 times less sensitive to glyphosate as compared to a glyphosate-susceptible population, indicating that glyphosate is no longer an effective tool for control of this population in glyphosate-resistant crops (corn, cotton, and soybean). For control of glyphosate-resistant johnsongrass, glufosinate applied in sequential applications provides excellent control in glufosinate-resistant soybean and cotton. Preliminary results indicate with fall applications of glyphosate plus Resolve, Canopy EX, Goal, or Valor 60 to 90 days of residual control of henbit. Additional research investigating methods to control henbit just prior to planting corn determined that applying atrazine, Lexar, Callisto, Capreno, and paraquat, following an earlier application of glyphosate and 2,4-D, provided 90% control. These results will provide Louisiana producers with strategies for controlling henbit. In soybean, the utility of preemergence herbicides such as Boundary, Prefix, Envive, and Enlite was highlighted for effective early-season weed management. Their use did not exclude postemergence glyphosate applications in Roundup Ready soybean or Liberty in Liberty Link soybean, which were needed for season-long weed control. Pyroxasulfone provided excellent weed control of many grass and broadleaf weeds; however, it injured soybean when applied preemergence and postemergence, but injury was not observed by 14 days after treatment. In corn, similar pyroxasulfone efficacy results were observed and no corn injury was documented. Research in cotton determined the utility of residual herbicides in conventional, Roundup Ready Flex, and Liberty Link cotton. Residual herbicides are essential to achieve season-long weed control and maximum cotton yield in conventional cotton. However, residuals were not needed for effective weed management in Roundup Ready Flex and Liberty Link cotton, but this was due to the absence of glyphosate-resistant weeds. Experiments were also initiated to investigate weed control in cotton that is resistant to both glyphosate and glufosinate (GlyTol/Liberty Link cotton). The order in which glyphosate or Liberty was applied was not of major importance and overall weed management was similar for all treatments. This program has potential to provide Louisiana cotton producers with an excellent weed management strategy in cotton.

Publications:

Stephenson, IV, D. O., J. L. Griffin, and D. K. Miller. 2011. Battling herbicide-resistant weeds. Louisiana Agriculture 54(2):24-25.

Stephenson, IV, D. O., D. K. Miller, R. L. Landry, and M. S. Mathews. 2011. Influence of adjuvants when co-applied with saflufenacil and glyphosate on burndown weed control. In Proc., South. Weed Sci. Soc. 64:247.

Stephenson, IV, D. O., R. L. Landry, and B. C. Woolam. 2011. Glyphosate-resistant Palmer amaranth in Louisiana. In Proc., South. Weed Sci. Soc. 64:246.

Stephenson, IV, D. O., J. L. Griffin, and N. R. Burgos. 2011. Glyphosate resistant johnsongrass monitoring and management. In Proc., South. Weed Sci. Soc. 64:226.

Bauerle, M. J., J. L. Griffin, D. O. Stephenson, D. K. Miller, and J. M. Boudreaux. 2011. Soybean response to dicamba

simulated drift at vegetative and reproductive growth stages. In Proc., South. Weed Sci. Soc. 64:49.

Stephenson, IV, D. O., R. L. Landry, and S. B. Blanche. 2011. Effect of planting pattern on sequential application timings of glufosinate in glufosinate-resistant soybean. In Proc., South. Weed Sci. Soc. 64:31.

Stephenson, IV, D. O., J. A. Bond, J. Seibert, L. Walton. 2011. Control of various weeds with 2,4-D alone or co-applied with glufosinate or glyphosate. p. 1546. In Proc., Beltwide Cotton Conf., National Cotton Council, Memphis, TN.

Stephenson, IV, D. O., R. L. Landry, and B. C. Woolam. 2011. Glyphosate-resistant Palmer amaranth in Louisiana. p. 1520. In Proc., Beltwide Cotton Conf., National Cotton Council, Memphis, TN.

Steckel, L, J. Bond, and D. Stephenson. 2011. Tolerance of WideStrike cotton to Ignite tank-mix applications. pp. 1540-1541. In Proc., Beltwide Cotton Conf., National Cotton Council, Memphis, TN.

Participants:

Daniel O. Stephenson (PI), LSU AgCenter.

Target Audiences:

Target audiences for this project include crop producers and weed management professionals.

Project Modifications:

Nothing significant to report during this reporting period.

Approved (Signature)	Title	Date
BOK 428		