

U.S. Department of Agriculture Work Unit Description AD-416 U.S. Dept. of Agriculture, State Agricultural Experiment Stations and Other Institutions				Date (Month/Day/Year)
1. Accession No.		Agency Identifiers		5. Work Unit/Project No.
		2. NIFA	3. LA.B	LAB94138
7. Title Integrated Pest Management of Arthropod Pests on Cotton				6. Status A = New Project
8. Performing Organization 0351 - 2010 Red River Station Agricultural Experiment Sta, Louisiana State Univ			9. Cooperating Departments within State Performing Institution	
10. Multistate Project No.			11. Cooperating States	
12. Investigator Name(s) Last Name and Initials)				sent via electronic mail system Date: <u>2/10/12</u>
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14. Project Type Hatch	15. Contract/Grant/Agreement No.		16. Amount	17. FY
18. Award Date (Month/Day/Year)	19. Start Date (Month/Day/Year)		20. Termination Date (Month/Day/Year)	
	05/01/2012		04/30/2017	
Goals/Objectives/Expected Outputs				
<p>The overall objective of this project is to use research methods to develop arthropod management solutions for the cotton insect pests of Louisiana. The specific goals of this project are: 1) to evaluate the efficacy of experimental and registered insecticides and acaricides against the arthropod pests of cotton, 2) to evaluate the efficacy and performance of genetically engineered cottons against selected arthropod pests of cotton, 3) to develop, improve, and refine strategies and management systems for cotton pests that make use of available technologies in an effort to improve economic viability and sustainability, and 4) to conduct studies on the biology, ecology, and population dynamics of selected cotton arthropod pests. Expected outputs from the project include peer-reviewed journal articles and papers in proceedings such as the Beltwide Cotton Conferences and presentations to other cotton scientists, as well as industry, consultant, and grower groups. Selected information will also be available on an Entomology in North Louisiana web blog.</p>				
Methods				
<p>Multiple studies will to evaluate the efficacy of commercially available and experimental insecticides and acaricides in replicated field trials. Experimental design will be a RCB with a minimum of four replications. Plot sizes will be dependent on the quantity of the insecticides to be evaluated and the plot size deemed necessary for the target pest. All trials will include at least one standard material and an untreated control. Initial trials involve evaluation of Bt cotton cultivars with resistance to the bollworm/tobacco budworm complex. In general, experimental design for these studies will be a RCB with four replications. Evaluations of selected lines will include performance against secondary lepidopteran pests when outbreaks occur in the trial area. Where a split-plot treatment arrangement is used, main plots will be with and without weekly applications of an appropriate insecticide for control of the bollworm/tobacco budworm complex. Weekly insecticide applications will begin when an economic bollworm/tobacco budworm infestation is first observed. Other arthropod pests will be controlled across the entire test as recommended by the Louisiana Agricultural Center's cotton insect control guide. Subplots will be cultivars or strains. Subplots will generally contain an adapted, non-transgenic cultivar for this area, and 1 or cultivars with Bt genes. Initial studies will be conducted to compare the efficacy of Bt cottons under various management regimes. The initial trial will include Bollgard II, and Widestrike cotton varieties. Experimental design will be completely randomized blocks with a split-plot treatment arrangement and a minimum of four replications. Main plots will be insecticide treatment (no treatment for the bollworm/tobacco budworm complex, treatment for the complex based on thresholds, and weekly treatment applications for the complex). Subplots will be variety. Plot size will be a four rows X 50 ft on 40-inch centers. Evaluations will include observations on damaged terminals, larvae infested terminals, damaged squares, larvae infested</p>				

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squares, damaged white flowers, larvae infested flowers, damaged bolls and larvae infested bolls. Yield will be determined by mechanically harvesting the center two rows of each plot. The seasonal occurrence of tobacco budworm and bollworm populations in cotton will be monitored using pheromone-baited traps. Pheromone trap catches will be used to record adult population levels and to predict ovipositional peaks. Traps will be maintained at the same location each year and records of trap locations with respect to cotton fields and other crops will be maintained each season. Beet armyworm, *Spodoptera exigua* (Hubner), populations will also be monitored using a series of traps located in the Red River Valley region. Insecticide resistance monitoring of tobacco budworm and bollworm populations using the adult vial technique will be done.

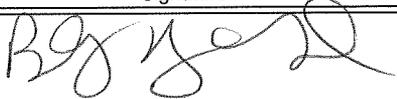
23. Non-Technical Summary

Cotton is a long-season crop that serves as a host for a large number of arthropod pests. Insects and other arthropod pests are an important limiting factor in the economical production of cotton. In the United States alone, more than 100 species of arthropod have been reported to attack cotton. The failure to control a single species may significantly reduce profitability and may on occasion result in an almost complete crop loss. This project addresses the monitoring and suppression or control of the important pests of cotton by utilizing integrated pest management methods including, but not limited to pesticides and genetically engineered varieties.

24. Keywords

cotton; integrated pest management; IPM; pesticides; insecticides; Bt cotton; genetically engineered; bollworm; tobacco budworm; thrips; plant bugs; stink bugs; armyworm; aphid; mites

**** The Original signed document is on file at this institution. ****

Signature	Title	Date
Dept:  Admin:	Associate Director	2-9-12