THE BUG PROBLEM IN COTTON – CAN WE MANAGE BUGS AND BOLL-ROTTING PATHOGENS WITHOUT A CRYSTAL BALL?

Jeremy K. Greene
Clemson University
Blackville, SC
Enrique G. Medrano
USDA-ARS-SPARC Cotton Pathology Research Unit
College Station, TX

Abstract

As cotton varieties with single-protein (i.e. Bollgard®) protection from caterpillar pests, provided by genetic insertions from *Bacillus thuringiensis* (Bt) var. *kurstaki*, are phased out after 2010 and dual-protein (i.e. Bollgard II®, WideStrike®, etc.) transgenic Bt varieties become the only options, the bollworm, *Helicoverpa zea* (Boddie), will lose its status as one of the most damaging insect pests of cotton in the USA. True bugs (Hemiptera: Miridae – plant bugs and Hemiptera: Pentatomidae – stink bugs) have taken over the number one spot, depending on region of the country (Southeast, Mid-South, and West). The tarnished plant bug, *Lygus lineolaris* (Palisot de Beauvois), is the most important insect pest of cotton in the Mid-South, the western tarnished plant bug, *Lygus hesperus* Knight, will remain predominant in western areas, and species of stink bugs, such as the green stink bug, *Acrosternum hilare* (Say), the southern green stink bug, *Nezara viridula* (L.), and the brown stink bug, *Euschistus servus* (Say), will be the most important group of insect pests of cotton in the Southeast. The true bugs are achieving this top status because of reduced use of foliar-applied insecticides for major pest species that previously provided coincidental control of bug pests. Plant bugs and stink bugs prosper in cotton with limited or no use of broad-spectrum insecticides. Eradication of the boll weevil, *Anthonomus grandis grandis* Boheman, high adoption of Bt cotton that controls destructive caterpillar pests such as tobacco budworm and bollworm, and an explosion of selective insecticide chemistry have all contributed to the declined use of broad-spectrum insecticides. Because hemipterans are associated with the transmission of pathogens that exacerbate feeding injury caused by bugs, we have an increased susceptibility to the development of boll-rot diseases. With the more prominent role of bugs as pests of cotton, it is inevitable that we will experience elevated problems with increased incidence of boll rot organisms. Many questions remain to be answered regarding the conditions involved with interactions of bugs and pathogens. What environmental conditions facilitate these interactions and how we can effectively use all parameters related to bugs, pathogens, and weather to model a better solution to the problem are the areas in which entomologists and plant pathologists can work together (in lieu of finding a functioning crystal ball).