cDNA MICROARRAY ANALYSIS OF GENE EXPRESSION IN INSECTICIDE SUSCEPTIBLE AND – RESISTANT TARNISHED PLANT BUG, *Lygus lineolaris* Zibiao Guo Yu Cheng Zhu Randall Luttrell USDA-ARS-JWDSRC Stoneville, MS

Abstract

Tarnished plant bug, *Lygus lineolaris* (Palisot de Beauvois) is an important cotton pest in the Mid-south region of the United States. Management of the tarnished plant bug relies almost exclusively on chemical control strategies. Over the years, surviving populations of the tarnished plant bug have increasingly become resistant to these chemical insecticides and farmers have had to increase the dose to maintain chemical efficacy against target pests. Plant bug populations with high levels of resistance to the organophosphate insecticide (acephate) were found in the Hill and Delta regions of Arkansas, Louisiana and Mississippi in 2005 and 2006.

In an attempt to understand insecticide resistance mechanism in the tarnished plant bug, microarray was used to identify a differential gene expression pattern associated with different susceptibilities to acephate between a susceptible laboratory colony and the field-collected resistant strains. We found 14 up-regulated genes and 12 down-regulated genes in acephate-resistant strain. One easterase up-regulated gene has been confirmed by semiquantitative RT-PCR. Other up- or down-regulated genes will also be validated and characterized by real-time PCR in our future work. This cDNA microarray gene expression information could be used to identify new genes that are associated with insecticide resistance development in the tarnished plant bug.