FACTORS AFFECTING THE EFFICACY OF INSECTICIDE SEED TREATMENTS ON THE CONTROL **OF THRIPS** Scott Stewart **Cory Vineyard** The University of Tennessee, West Tennessee Research and Education Center Jackson, TN **Gus Lorenz Derek Clarkson** The University of Arkansas, Department of Entomology, Lonoke Extension Center Lonoke, AR **Angus Catchot** Jeff Gore **Darren Dodds Drake Copeland** Mississippi State University, MSU Extension Service Mississippi State, MS

## <u>Abstract</u>

Imidacloprid (e.g., Gaucho 600, Bayer CropScience) and thiamethoxam (e.g., Cruiser 5F, Syngenta) are neonicotinoid insecticides that are widely used as seed treatments for the control of thrips (Thysanoptera) in cotton. In the Mid South, thrips control failures with these treatments have been more commonly observed during the past 2-3 years, particularly with thiamethoxam. Research efforts have documented a reduction in the efficacy thiamethoxam-based seed treatments against thrips. Several research projects are investigating the role that pre- and post-emergence herbicides might have on the efficacy or uptake of insecticidal seed treatments. The possibility that soil microbes have evolved to degrade neonicotinoid insecticides into inactive metabolites is also being studied. This research is demonstrating that injury caused by pre-emergence herbicides can compound the injury caused by thrips, but there is no evidence that the use of pre-emergence herbicides is reducing the uptake of insecticides by plants. Although some level of neonicotinoid metabolism by soil microbes has been preliminarily documented, it does not appear substantial enough to appreciably affect the performance of seed treatments. During 2013, testing by Syngenta indicated reduced susceptibility to thiamethoxam in four populations of tobacco thrips collected from the Mid South. Although preliminary, it appears likely that tobacco thrips in the Mid South have developed resistance to thiamethoxam. It is unclear to what extent cross resistance with imidacloprid might occur. Widespread monitoring of tobacco thrips populations is planned in 2014 to determine the extent that resistance may occur in the Mid South and other parts of the Cotton Belt. However, mid-southern recommendations for thrips management are already being modified. Cotton growers, crop advisors and retailers are being encouraged to avoid thiamethoxam-based seed treatments in favor of imidacloprid. Proactive management is suggested if thiamethoxam is used, including more aggressive use of foliar or in-furrow sprays with alternative chemistries such as acephate.