## THE EFFECTS OF PRE-EMERGENCE HERBICIDES ON NEONICOTINOID SEED TREATMENTS IN SEEDLING COTTON Cory Vineyard Scott Stewart Larry Steckel Heather Kelly The University of Tennessee West Tennessee Research and Education Center Jackson, TN

## <u>Abstract</u>

Seed treatments are used on cotton acres in the Mid-South to manage early season pests. The most popular seed treatments used today are neonicotinoid insecticides with the active ingredients of thiamethoxam and imidacloprid. Recently, there has been concern about the effectiveness of neonicotinoid seed treatments against thrips (Thysanoptera) populations in upland cotton (Gossypium hirsutum). This concern coincides with an increase in herbicide use to manage glyphosate resistant weeds. Field and greenhouse studies were conducted in 2013 to determine the effects of pre-emergence herbicides on neonicotinoid seed treatments and their control of thrips populations. The studies also evaluated the effects of pre-emergence herbicides on the uptake of neonicotinoid insecticide concentrations within the plant structure. Seed with neonicotinoid seed treatments Cruiser (thiamethoxam, Syngenta) and Gaucho (imidacloprid, Bayer Crop Science) were treated with three herbicide combinations. The results indicated that the pre-emergence herbicides interacted with and negatively affected the performance of at-planting thrips treatments, primarily with Cruiser. The use of pre-emergence herbicides increased thrips numbers and injury ratings as well as reduced vigor and plant biomass. The failure of Cruiser was the main factor of the test. Results also indicated that although pre-emergence herbicides appeared to increase thrips injury and negatively affect plant growth, neonicotinoid concentrations in leaf tissue were similar or higher where herbicides were applied.