## EVALUATION OF COVER CROP TERMINATION TIMINGS AND METHODS IN COTTON PRODUCTION SYSTEMS Savana Denton Tyson Raper Cheyenne Rushing University of Tennessee Jackson, TN

## Abstract

The sustainability movement which seems to be sweeping across much of the world has also influenced the world of cotton. Researchers and growers alike are searching for ways to make cotton production systems more sustainable. Cover crops have been promoted for use in agricultural systems due to both environmental and economic opportunities. Cotton growers in West Tennessee faced challenges in the 2015 and 2016 growing season with termination management which resulted in failed cotton stands. Research has previously focused on single species effects and management, leaving room for improvement in the knowledge of cover crop blends – which are what is commonly recommended to producers. The objective on this experiment was to determine effects of various cover crop termination timings and methods on subsequent cotton emergence, development, and yield. Field experiments were conducted from 2018 to 2020 in both small plot and on-farm scenarios across West Tennessee. Cover crop termination timings consisted of an at planting termination, three weeks prior to planting, and both a broadcast and strip termination six weeks prior to planting. The cover crop termination methods consisted of chemical termination, mechanical termination, and chemical + mechanical termination. All chemical terminations were accomplished with a tank-mix of glyphosate + dicamba. Mechanical terminations were accomplished with a roller-crimper. Termination method treatments were initiated three weeks prior to planting date. Cotton growth and development was monitored throughout the season, as well as weed and insect pressures. Insect damage from three-cornered alfalfa hoppers was more frequent when more biomass was present in the field from the strip termination and terminations three weeks prior to planting and at planting. At planting and mechanical terminations resulted in fewer plants per acre for their respective treatment comparisons but yields were not significantly impacted. Mechanical terminations, via the rollercrimper, did not provide consistent termination rates due to the lack of biomass that accumulated by the spring.