## PALMER AMARANTH DEVELOPMENT AND SEED PRODUCTION AS INFLUENCED BY EMERGENCE DATE IN COTTON Brandon Schrage Jason Norsworthy Zach Hill Dilpreet Riar University of Arkansas Fayetteville, AR

## <u>Abstract</u>

Palmer amaranth, because of its reproductive potential, rapid growth, and resistance to herbicides, is one of the most problematic weeds in cotton. To gain an understanding into the ecological characteristics that could potentially assist in control, our objective was to determine how emergence date of Palmer amaranth affects biomass development and seed production, and its resulting effect on cotton biomass and yield.

The split-plot experiment was conducted in Fayetteville, Arkansas in 2012. The main plot factor was various planting dates of glyphosate-resistant Palmer amaranth seeded (0, 2, 4, 6, 9, and 10 weeks after cotton seeding). The subplot factor was the presence or absence of cotton to simulate competition. Established Palmer amaranth populations were thinned to 1 plant/m of row and weekly assessments were taken of cotton and Palmer amaranth heights. At reproductive maturity, Palmer amaranth plants were collected, dried, weighed, and seeds were counted. Seedcotton was removed from bolls and weighed.

Palmer amaranth seed production decreased as the weed-free period in cotton lengthened. When Palmer amaranth emerged 4 weeks after cotton emergence, seedcotton yield was not significantly affected by the presence of Palmer amaranth. Albeit yields were not reduced, later-emerging Palmer amaranth plants were able produce seed beneath the cotton canopy, approximately 4,000 seed/plant, which could result in a potential increase in the soil seedbank. Based on these results, season-long control of Palmer amaranth is needed to ensure that no Palmer amaranth seed production occurs in cotton.