

**INTEGRATING RESIDUAL AND NONRESIDUAL HERBICIDE PROGRAMS WITH COVER CROPS IN COTTON****M.G. Palhano****J.K. Norsworthy****Z.D. Lancaster****C.J. Meyer****J.K. Green****S.M. Martin****University of Arkansas****Fayetteville, AR****Abstract**

Palmer amaranth is recognized as the most troublesome weed of cotton fields in Arkansas. Its highly competitiveness, immense seed production, and rapid seedbank replenishment place are a few reasons cotton growers routinely struggle with control. Cover crops have been reported as a tool for Palmer amaranth emergence suppression caused by allelochemical and physical residue barrier. Federal conservation payments are available for growers that want to include cover crops as a means to reduce tillage and increase weed suppression. A field study was initiated in the fall of 2013 at the Arkansas Agricultural Research and Extension Center in Fayetteville to evaluate the value of various cover crops in suppressing weed emergence and protecting cotton yield. This experiment was a split plot design with 14 cover crops serving as a main plot and the residual and nonresidual herbicide programs as a sub-plot. The non-residual herbicide program was designed to assess weed emergence in each cover crop throughout the growing season. Biomass of each cover crop was collected at cotton planting. Palmer amaranth density and visual estimates of weed control were evaluated 2, 4, 6, and 8 weeks after cotton planting. Seedcotton yield was also determined. Rye and wheat had the highest biomass production whereas the amount of biomass present in spring did not differ among the remaining cover crops. All cover crops initially decreased Palmer amaranth emergence. However, rye had the greatest suppression, with 90% less emergence than in no cover crop plots. Brassica and legume cover crops had only a minor impact on Palmer amaranth emergence. For these cover crops, physical suppression of the Palmer amaranth and other weeds from the cereal residues is most likely the greatest contributor to reducing weed emergence in this experiment. Unfortunately, similar to weed suppression, as biomass production increased there was greater difficulty in establishing a stand of cotton. It is likely that this was a result of the moist conditions that occurred at the time of planting and proper equipment and conditions during planting should alleviate this problem.