EFFICACY AND COTTON TOLERANCE TO WARRANT Dilpreet S. Riar Jason K. Norsworthy Dennis B. Johnson Clay E. Starkey Austin Lewis, University of Arkansas Favetteville, AR

<u>Abstract</u>

Warrant, an encapsulated acetochlor based herbicide, has recently been registered for residual weed control in cotton. It can be applied over-the-top of cotton to control small-seeded broadleaf and grass weeds. Field experiments were conducted at Marianna, AR, in 2011 with objectives to evaluate early-season weed control efficacy of Warrant compared to commonly used cotton residual herbicide, Dual II Magnum, at different rates and timings; and to evaluate if Warrant causes any injury to cotton or effects seedcotton yield. Treatments included 3 or 6 pt/A Warrant applied 14 days before planting (DPP) or PRE, Warrant at 6 pt/A plus Reflex at 1.5 pt/A applied 14 DPP, Dual II Magnum at 1.3 pt/A or 2.6 pt/A applied PRE, two applications of Warrant at 3 pt/A applied 14 DPP and PRE, and three applications of Warrant or Dual II Magnum at 3 and 1.5 pt/A, respectively, applied 14 DPP, PRE, and early POST. RoundUp PowerMax at 21 oz/A was added to all the treatments. Weeds evaluated were barnyardgrass, entire leaf morningglory, and a mixed population of glyphosate-resistant and -susceptible Palmer amaranth. Palmer amaranth control with Warrant plus Reflex was maximum (>91%) at all evaluation times. Preplanned contrasts revealed that at planting, Palmer amaranth control with Warrant at 3 pt/A applied 14 DPP (88%) was less than Warrant at 6 pt/A (97%) and Dual II Magnum at 1.3 pt/A applied 14 DPP (94%). Palmer amaranth control at 1 week after planting (WAP) was similar among respective Warrant and Dual II Magnum treatments (61 to 82%). At 2 WAP, Palmer amaranth control with single application of Warrant at 3 pt/A (45%) was less than Warrant at 6 pt/A (82%), and three applications of Warrant or Dual II Magnum (>73%), but was similar to all other treatments. Less Palmer amaranth control in general with all Warrant and Dual II Magnum treatments was because of high density of Palmer amaranth at the time of application, and inability of these herbicides to control weeds after their emergence.

According to preplanned contrasts, barnyardgrass control with single application of Warrant 14 DPP at 3 pt/A (92, 64 and 43 at planting, 1 and 2 WAP, respectively) was less than Dual II Magnum at 1.3 or 2.6 pt/A applied PRE (\geq 84 and \geq 69% at 1 and 2 WAP, respectively), and two or three applications of Warrant (\geq 92% at 1 and 2 WAP) and Dual II Magnum (\geq 97% at 1 and 2 WAP). Barnyardgrass control with single application of Warrant applied 14 DPP at 6 pt/A was 96, 73 and 69 at planting, 1 and 2 WAP, respectively, which was similar to Dual II Magnum applied PRE, but was less than two and three applications of Warrant and Dual II Magnum. Entireleaf morningglory control with all the treatments was <65%. Cotton injury with all treatments was >5%. Seedcotton yield with Warrant plus Reflex treatment was maximum (4200 lb/A) and nontreated control was minimum (2000 lb/A). Seedcotton yield of all other Warrant and Dual II Magnum treatments was similar (2940 to 3700 lb/A). Because of similar early-season Palmer amaranth control and seedcotton yield with respective Warrant and Dual II Magnum treatments, both herbicides can be useful for the cotton weed management programs.