

WEED CONTROL PROGRAMS IN COTTON WITH ENLIST-DUO™ HERBICIDE

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Abstract

First confirmed in 2006, glyphosate-resistant Palmer amaranth (*Amaranthus palmeri*) remains a major concern for cotton (*Gossypium hirsutum*) growers in Arkansas. Herbicide systems that contain multiple modes of action and are applied timely are essential in controlling this evasive weed. The Enlist-Duo technology provides an opportunity and the flexibility to use multiple modes of action over-the-top of cotton for control of many weeds including Palmer amaranth. In 2013 and 2014 a trial was established at Rohwer, AR in a Hebert silt loam soil. The trial was arranged in a randomized complete block design with four replications. Treatments were applied at three timings preemergence, 2-4" weeds and 14-21 days after the 2-4" weed application. Herbicides used included Enlist-Duo, 2,4-D choline, Cotoran, Roundup WeatherMax, Liberty, Dual Magnum, and Warrant. These herbicides were applied alone and in combination to create a complete weed control system. All treatments were applied using a compressed air sprayer calibrated to deliver 12 GPA. Means were separated using fishers protected LSD. Weed control was recorded on a 0-100 scale with 0 being no control and 100 being complete control. In 2013 seven days after application B (DAB) Cotoran followed by Round-up and Cotoran followed by Liberty provided 75 and 76% control of Palmer amaranth. Cotoran alone provided 25% control of Palmer amaranth. All other treatments provided 99% control. Cotoran followed by Liberty and Cotoran alone provided 89 and 33% control of Southwestern cup grass (*Eriochloa gracilis*), while all other treatments provided 97% or greater control. In 2013 seven DAC all treatments provided 95% or greater control of Palmer amaranth and 91% or greater control of Southwestern cupgrass except Cotoran alone, which provided no control. In 2014 nine DAB Cotoran followed by Enlist-Duo and Cotoran followed by Liberty plus 2,4-D choline plus Dual Magnum provided 83 and 92% control of Palmer amaranth respectively, while both provided 94% control of barnyardgrass (*Echinochloa crus-galli*). All other treatments provided less than 78% control of either weed species.

In 2014 twelve DAC Cotoran followed by Liberty plus 2,4-D choline plus Dual Magnum followed by Enlist-Duo and Cotoran followed by Liberty plus 2,4-D choline followed by Enlist-Duo provided 95 and 91% control of Palmer amaranth respectively. Cotoran followed by Liberty plus 2,4-D choline plus Dual Magnum followed by Enlist-Duo and Cotoran followed by Enlist-Duo followed by Enlist-Duo both provided 98% control of barnyardgrass. In 2014 the addition of residual herbicides at the 2-4" weed application timing improved overall weed control. In both 2013 and 2014 systems that contained multiple modes of action in the 2-4" weed application provided better weed control.