EFFECTIVENESS OF ENLIST™ WEED CONTROL PROGRAMS IN COTTON

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Abstract

Dow AgroSciences recently commercialized Enlist™ cotton. Enlist™ cotton is resistant to applications of 2,4-D choline, glufosinate, and glyphosate. This stacked resistance allows for applications of tank-mixtures with multiple effective modes of action for control of a wide range of weed species, including glyphosate-resistant (GR) Palmer amaranth. In order to assess efficacy of tank-mixtures of these herbicides in cotton production, a field research trial was conducted at the Lon Mann Cotton Research Center in Marianna, Arkansas in 2016. Treatments were arranged in a randomized complete block design with eight herbicide programs, plus an untreated check. All programs, with the exception of the untreated check, received an application of Cotoran 4L (2pt/A) at planting, followed by a herbicide application when weeds reached 2-4" (EPOST) and a subsequent application two weeks after EPOST (MPOST). Programs included: 1) no POST application, 2) Roundup followed by (fb) Roundup, 3) Liberty fb Liberty, 4) Enlist Duo fb Enlist Duo, 5) Enlist fb Liberty, 6) Enlist+Dual Magnum fb Enlist Duo, 7) Liberty+Dual Magnum fb Liberty+Roundup, and 8) Liberty+Dual Magnum fb Enlist Duo. Visual estimates of weed control were collected weekly following herbicide application and cottonseed yield was collected at the end of the season. Data were subjected to analysis of variance and significant means separated using Fisher's protected LSD (α=0.05). Additionally, orthogonal contrasts were run to determine whether the addition of a soil-residual herbicide (Dual Magnum) increased weed control/yield. At 6 weeks after MPOST, Palmer amaranth control was ≥88% in all treatments that included a non-glyphosate POST herbicide and annual grass control was ≥88% in all programs that included a POST herbicide. Cottonseed yield was significantly greater in programs that included a non-glyphosate POST herbicide compared to those that did not. Orthogonal contrast showed that the addition of Dual Magnum increased GR Palmer amaranth control, annual grass control, and yield at the end of the season. Results from this research indicate that tank-mixing the herbicides associated with Enlist™ cotton (2,4-D choline, glyphosate and glufosinate), plus including a herbicide with residual weed control, will result in high levels of weed control and ultimately increased cotton yield.

Enlist Duo: 2,4-D choline+glyphosate (4.7pts/A)
Roundup: glyphosate (1pt/A)
Liberty: glufosinate (29fl oz/A)
Dual Magnum: *S*-metolachlor (1pt/A)