

HERBICIDE PROGRAMS IN GLYTOL-LIBERTY LINK COTTON**D.B. Johnson****J.K. Norsworthy****H.D. Bell****University of Arkansas Division of Agriculture****Fayetteville, AR****D.O. Stephenson****LSU AgCenter****Alexandria, LA****D.K. Miller****LSU AgCenter****St. Joseph, LA****J.A. Bond****Mississippi State University****Stoneville, MS****Abstract**

Glytol-Liberty Link cotton is a new stacked herbicide trait technology that is tolerant to both glyphosate and glufosinate. Use of this technology would allow growers to effectively manage glyphosate-resistant weed species with glufosinate without the risk of crop injury while still utilizing glyphosate in weed control programs. Field experiments were conducted in the summer of 2012 at the Northeast Research and Extension Center in Keiser, AR, Northeast Research Center in St. Joseph, LA, and at the Dean Lee Research Station in Alexandria, LA. The objective of the experiment was to develop herbicide programs for problematic weeds and determine the proper application sequence of glyphosate and glufosinate in Glytol-Liberty Link cotton. The weed species evaluated in the experiment included: glyphosate-resistant Palmer amaranth, susceptible Palmer amaranth, redroot pigweed, hemp sesbania, barnyardgrass, goosegrass, and large crabgrass. Treatments evaluated in this experiment consisted of glyphosate at (0.75 lb ae/A) followed by (fb) glufosinate (0.53 lb ai/A) or glufosinate fb glyphosate. Both application sequences were evaluated in programs containing no residual, following fluometuron (1 lb ai/A) applied preemergence (PRE), or with *S*-metolachlor (0.95 lb ai/A) in the first postemergence (POST) application. The final treatment evaluated consisted of fluometuron PRE fb sequential applications of glyphosate, glufosinate, and *S*-metolachlor applied as a tank mixture. Visual weed control ratings were taken weekly throughout the growing season. Control of susceptible Palmer amaranth, redroot pigweed, hemp sesbania, barnyardgrass, goosegrass, and large crabgrass was not affected by the application sequence of glyphosate and glufosinate. Sequential applications of glyphosate + glufosinate provided more consistent control of glyphosate-resistant Palmer amaranth (99%) than glyphosate or glufosinate applied alone, regardless of application sequence. For control of all other weed species evaluated, sequential applications of glyphosate + glufosinate were comparable to that of the other treatments evaluated. In programs that contained no residual herbicide, glyphosate-resistant Palmer amaranth control was greater when glyphosate (71%) was applied in the first application compared to glufosinate in the first application which resulted in only 58% control at 4 weeks after the final treatment. However, neither of these treatments would be considered effective and should not be recommended. Sequential applications glyphosate + glufosinate + *S*-metolachlor following a residual herbicide at planting can provide effective control of glyphosate-resistant Palmer amaranth in cotton and is also an excellent program for mitigating the evolution of additional resistant weed species.