

**EVALUATING POTENTIAL ANTAGONISM OF TANK-MIXED HERBICIDES FOR USE IN ENLIST™
AND BOLLGARD®II XTENDFLEX® COTTON SYSTEMS****N.R. Steppig****C.J. Meyer****J.K. Norsworthy****Dept of Crop, Soil, and Environmental Sciences****University of Arkansas****Fayetteville, AR****Abstract**

Two of the most recent herbicide-resistance technologies coming to market in cotton production include Enlist and Roundup Ready Xtend. Enlist will allow for applications of 2,4-D, glyphosate, and glufosinate, while Roundup Ready Xtend will allow for applications of dicamba, glyphosate, and glufosinate. As adoption of these technologies increases, tank-mixtures of these herbicides will become more prevalent. In order to understand the potential interactions between these tank mixtures, two field trials were conducted in 2015 at the Northeast Research and Extension Center in Keiser, Arkansas, with one test examining Enlist and the other Roundup Ready Xtend. Various rates and combinations of glyphosate, glufosinate, 2,4-D, and dicamba were applied, and visual estimates of weed control were collected 2 weeks after application (WAA). Control of Palmer amaranth, velvetleaf, prickly sida, and barnyardgrass was analyzed for herbicide interaction using Colby's method. In the Enlist trial, glyphosate alone controlled barnyardgrass 92%, but a tank-mix combination of glyphosate and 2,4-D resulted in only 84% control at 2 WAA. In the Roundup Xtend trial, glyphosate alone resulted in 85% barnyardgrass, but glyphosate+dicamba only provided 79% control at 2 WAA. In both experiments, control of Palmer amaranth was >85% for all mixtures and velvetleaf and prickly sida control were >80% for all mixtures. Control of broadleaf weeds with mixtures of two or more herbicides was equal to or greater than control with either product alone. Based upon the results from these experiments, application of glyphosate with 2,4-D or dicamba to large (30cm) barnyardgrass is antagonistic compared to application of glyphosate alone. As adoption of the Enlist and Roundup Ready Xtend technologies become more widespread, it is important that growers and applicators understand antagonistic interactions that may accompany the technologies in order to effectively manage weeds.