

**WEED RESPONSE TO GLYPHOSATE, GLUFOSINATE, 2,4-D AND DICAMBA ALONE OR IN MIXTURE****J. Kichler****University of Georgia Cooperative Extension****Oglethorpe, GA****A. S. Culpepper****University of Georgia****Tifton, GA****Abstract**

Cotton with tolerance to glyphosate, glufosinate, and dicamba or 2,4-D may offer growers more effective weed management options. Therefore, a study was conducted at two locations during 2013 to determine the most effective dicamba or 2,4-D mixtures for the control of annual grasses and Palmer amaranth.

Treatments included Weedar (2,4-D amine, 0.75 lb ae/A), Clarity (dicamba, 0.375 lb ae/A), Roundup WeatherMax (glyphosate, 1.12 lb ae/A), and Liberty (glufosinate, 0.58 lb ai/A) applied alone and in the following combinations (same herbicide rates): Roundup + Weedar or Clarity, Liberty + Weedar or Clarity, Roundup + Liberty + Weedar or Clarity. No adjuvants were used with any treatment and applications were made with AIXR spray tips generating course to extra course droplets. A non-treated control was included.

Annual grasses (large crabgrass and Texas millet) were present at both Tift and Macon counties. Pooled over locations, Roundup provided 99% control 20 d after treating 8 inch grasses. The addition of Weedar or Clarity with Roundup did not influence control. Liberty was less effective controlling grasses only 67%; the addition of Clarity or Weedar did not influence control (69 to 73%). The 3-way mixtures with Liberty + Roundup + an auxin provided control similar to that of Roundup alone and were much more effective than Liberty mixtures (95 to 97% control).

A population of Palmer amaranth being 50% glyphosate-resistant and 50% glyphosate-sensitive was present in Tift county and treated when it ranged from 6 to 12 inches in height. At 20 d after treatment, Roundup alone controlled the weed 50% which was less than that of Weedar (77%), Clarity (82%), or Liberty (81%). All tank mixtures were more effective than any of these herbicides applied alone with control from the mixtures ranging from 89 to 99%. The 3-way combinations and Liberty + Weedar or Clarity were generally more effective than Roundup combinations.

In Macon county, Palmer amaranth was highly resistant to glyphosate and was treated when it ranged from 7 to 14 inches in height. Roundup, Liberty, Weedar, and Clarity alone controlled Palmer amaranth 18, 42, 55, and 57%, respectively, at 20 d after treatment. All tank mixtures were more effective than herbicides applied alone. However, control from the mixtures still provided poor control (60 to 77%). The 3-way combinations and Liberty + Weedar or Clarity were the effective mix options (75 to 77%).

In this study, auxins mixed with Roundup or Liberty did not improve or reduce annual grass control but mixing Roundup with Liberty mixtures improved control at least 12%. For Palmer amaranth, three-way combinations of Liberty + Roundup + an auxin were more effective than two-way Roundup mixtures and herbicides applied alone.

Although auxin combinations may improve a growers' ability to control emerged Palmer amaranth, control of a large highly glyphosate-resistant Palmer amaranth population in this study was very poor. These results stress that growers must maintain diverse management programs that include extremely timely herbicide applications even with future auxin technologies.