

Glyphosate-Resistant Palmer Amaranth In Georgia

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Introduction: Since commercialization of Roundup Ready technology, some Southeastern growers have used this technology in a monoculture system and have relied exclusively on glyphosate (Roundup, others) applied multiple times each season to manage Palmer amaranth and other weeds. From commercialization until 2004, these glyphosate programs in Roundup Ready technology effectively and economically controlled Palmer amaranth. Unfortunately, a cotton grower in Georgia was unable to control Palmer amaranth with glyphosate in 2004.

Field Research: The experiment was conducted in two fields in Macon County, GA in 2005. Treatments included the potassium salt of glyphosate at 0, 1.0, 2.25, 4.5, 6.7, and 9.0 lb ae/A applied at 15 GPA. Palmer amaranth heights and densities at time of treatment ranged from 2 to 4 inches and 10 plants per square foot, respectively, at one location and 3 to 5 inches and 40 plants per square foot at the second location. Glyphosate at 1.0, 2.25, 4.5, 6.7, and 9.0 lb/A controlled emerged Palmer amaranth 8, 17, 46, 70 and 82%, respectively, 28 d after application. Glyphosate at 12 times the recommended rate, or 9.0 lb/A, failed to provide commercially acceptable control.

Greenhouse Research: Seedlings (F2 generation) reaching 3 to 5 inches tall were treated with 12 rates of glyphosate. The level of glyphosate needed to control the Macon County population was eight times that of the known susceptible biotype. This experiment, in conjunction with the field experiment, confirmed that the Palmer amaranth infesting the farm in Macon County, Georgia was indeed resistant to glyphosate.

Locations Infested: During the fall of 2005, Palmer amaranth samples were randomly taken from 100 fields throughout Macon, Dooly, and Taylor counties in Georgia. Glyphosate-resistant Palmer amaranth was confirmed in 47% of those samples. Additional samples from Lee, Sumpter, Crisp, and Wilcox counties were taken during the fall of 2006 and are currently being tested for resistance.