PHYSIOLOGICAL ASPECTS OF GLYPHOSATE-RESISTANT PALMER AMARANTH (*AMARANTHUS PALMERI*). William. K. Vencill, Jay B. Haider, Timothy. L. Grey, and A. Stanley Culpepper, Univeristy of Georgia, Athens and Tifton.

Glyphosate resistance has been confirmed in a population of Palmer amaranth (*Amaranthus palmeri*) in central Georgia. In a field dose response experiment, the growth reduction 50% (GR_{50}) was 6.0 kg aei ha^{-1} glyphosate applied to 5 to 12 cm tall Palmer amaranth and 7.0 kg ha^{-1} for 7.6 to 15 cm tall Palmer amaranth when rated at 14 d after application. No differences in foliar uptake, translocation, and metabolism between resistant and susceptible biotypes have been observed. Differences in shikimate accumulation between resistant and susceptible biotypes indicate that the resistance may be based on a site change at the active site or an overproduction of the target site enzyme. Studies were conducted to determine if there is a physiological penalty in glyphosate-resistant Palmer amaranth. Differences in height, weight, time to seed production, and gas exchange were examined. These studies indicate that glyphosate-resistant Palmer does not incur a physiological penalty for glyphosate-resistance.

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