

RESIDUAL HERBICIDES FOR PALMER AMARANTH MANAGEMENT IN COTTON**J. W. Cave****Texas Tech University****Lubbock, TX****J. W. Keeling****P. A. Dotray****J. D. Reed****Texas A&M Agrilife Research****Lubbock, TX****Abstract**

Palmer amaranth is the most common and widespread weed problem on the Texas High Plains. Prior to the introduction of glyphosate-tolerant cotton varieties, producers used a combination of preplant and preemergence soil residual herbicides in combination with cultivation to control this weed. The use of residual herbicides has declined as producers relied more on glyphosate to control Palmer amaranth and other weeds. Concerns about emerging glyphosate-resistant Palmer amaranth has resulted in a renewed interest and need for residual herbicides.

A field study was conducted on a field with glyphosate susceptible Palmer amaranth near Halfway, TX in 2012 evaluating preplant incorporated (PPI), preemergence (PRE), postemergence (POST), and postemergence-directed (PDIR) herbicides in cotton. Plots were 4 rows by 30 feet with 4 replications arranged in a randomized complete block design. The soil type was a Pullman clay loam with 1.2% O.M. and pH 7.7. Herbicide applications were made at the recommended use rate for a clay loam soil using a carrier volume of 10 GPA. Preplant incorporated treatments were incorporated with a field cultivator and PRE treatments activated with 0.5 inches of overhead irrigation after application. Palmer amaranth were 2-4 inches tall at the POST application and PDIR treatments were applied to late-season weed flushes when Palmer amaranth were 2-4 inches tall.

Trifluralin and Prowl H2O PPI controlled Palmer amaranth greater than 90% early-season, but late-season control declined to 70 and 50%, respectively. Late-season control with trifluralin improved with a PRE overlay of Caparol, Cotoran, or Direx. Preemergence treatments alone controlled Palmer amaranth 91 to 97% early-season, while combinations with Dual Magnum or Staple improved mid-season Palmer amaranth control. Glyphosate POST alone or in combination with Dual Magnum, Warrant, Staple, Milo-Pro, or Envoke, controlled mid-season Palmer amaranth greater than 97% 14 days after treatment. All treatments applied PDIR controlled Palmer amaranth at least 94%. These results indicate that a PPI herbicide with a PRE overlay, combined with a residual herbicide tank-mixed with glyphosate can effectively control Palmer amaranth season-long.