

**PALMER AMARANTH MANAGEMENT IN TEXAS HIGH PLAINS COTTON****J.W. Keeling****P.A. Dotray****J.D. Reed****Texas AgriLife Research****Lubbock, TX****Abstract**

Palmer amaranth (*Amaranthus palmeri* S. Wats.) has gained increased attention as a problem weed in many cotton producing states since resistance to glyphosate was identified in 2005. Palmer amaranth has long been the most common and troublesome weed in Texas High and Rolling Plains cotton. In 1994, prior to the commercial development of Roundup Ready cotton, pigweed spp. (mainly Palmer amaranth) were the number one weed problems in Texas cotton, followed by johnsongrass (*Sorghum halepense* (L.) Pers.), silverleaf nightshade (*Solanum elaeagnifolium* Cav.), and morningglory (*Ipomoea hederacea* (L.) Jacq.). Herbicide programs at that time focused on Palmer amaranth control, with 91% of the planted acres treated with a preplant incorporated (PPI) dinitroaniline herbicide, 20% with a preemergence (PRE) overlay, but only 1-2% treated with a postemergence topical (POST) or postemergence directed (PDIR) herbicides. Roundup was applied as a spot spraying treatment to 40% of acreage and essentially all (98%) of cotton was cultivated 3+ times per season.

When Roundup Ready cotton was introduced, some interest in Roundup-only systems existed. However, both research and farmer experiences showed residual herbicides significantly reduced weeds numbers and minimized early-season crop completion with Palmer amaranth. Difficulty in treating large acreages under wet and windy conditions resulted in significant weed problems in Roundup-only systems. Texas producers have continued to rely on preplant herbicides and some tillage in Roundup Ready cotton, although PRE herbicide use has declined. While Palmer amaranth resistance to glyphosate has been identified in at least five states since 2005, no resistance has been suspected or confirmed in the Texas High or Rolling Plains. It appears that continued use of other herbicides and tillage and less reliance on Roundup-only systems has prevented resistance development to date. While it could be easier to use Roundup-only systems in Roundup Ready Flex cotton, producers should continue current weed management systems to avoid or delay resistance problems.