NON-GLYPHOSATE PROGRAMS FOR PALMER AMARANTH CONTROL IN COTTON

S. K. Bangarwa
J. K. Norsworthy
G. M. Griffith
J. DeVore
J. Still
M. J. Wilson
University of Arkansas
Fayetteville, AR

Abstract

Glyphosate has been the foundation of broad-spectrum weed control in glyphosate-resistant cotton production in Arkansas. However, the continuous use of glyphosate and lack of crop rotation resulted in the development of glyphosate-resistant weeds in cotton. Palmer amaranth (*Amaranthus palmeri*) is a major problematic glyphosate-resistant weed in cotton because of its competitive growth habit and prolific seed production. Thus, an effective non-glyphosate weed management program is needed. A field experiment was conducted in 2009 to evaluate cotton response and weed control efficacy of different non-glyphosate herbicide programs in cotton. The experiment was organized in a randomized complete block design with a 3-factor factorial arrangement of treatments and was replicated four times. Treatment factors included: 1) three preplant (PP)/preemergence (PRE) herbicides - Reflex PP, Cotoran PRE, and Prowl PRE; 2) two postemergence (POST) herbicides – Dual Magnum at 1-leaf and 4-leaf cotton; 3) two post-directed (PD) herbicides (Suprend and none). Additionally, a non-treated control was included for comparison. Data were collected on cotton injury, Palmer amaranth control, and seed cotton yield. Cotton injury was minimal (≤2%) in all herbicide programs. Herbicide programs including Reflex PP controlled Palmer amaranth 76 to 91% throughout the season. However, herbicide programs including Cotoran PRE and Prowl PRE provided no more than 60 and 31% control of Palmer amaranth, respectively. Weed control was similar from Dual Magnum POST applied either at 1-leaf or 4-leaf cotton, regardless of PP/PRE treatment. However, the addition of Suprend PD improved Palmer amaranth control in herbicide programs containing Reflex PP. Seed-cotton was not harvested due to Palmer amaranth infestation. This research shows the importance of effective early-season herbicide programs for season-long Palmer amaranth management.