

PALMER AMARANTH CONTROL PROGRAMS
Andy Kendig, Robert Cobill, Britton Hinklin, and Paula Ezell
University of Missouri Delta Center
Portageville, MO

Abstract

Palmer amaranth (*Amaranthus palmeri*) continues as one of the most common and troublesome weeds in Mid-South Cotton. Roundup Ready (glyphosate resistant) cotton has become extremely popular- partly due to glyphosate's excellent postemergence activity. However, Palmer amaranth is widespread as a late-season weed and hand hoeing for large escaped weeds is still a common practice, partly due to the lack of residual activity of glyphosate.

Cotton herbicides have been extensively tested for their Palmer amaranth efficacy, and many provide excellent, short-term control. However, these herbicides do not provide acceptable stand-alone, season-long control. Although growers can build weed control programs with good Palmer amaranth herbicides, many still complain of problems after using several good herbicides.

In research, when one part of a herbicide program is manipulated while other parts provide excellent Palmer amaranth control, differences are often undetectable. To evaluate program approaches, studies were initiated to evaluate herbicides within good (but not excellent) weed control programs. In these studies preemergence herbicides were applied to BXN (bromoxynil resistant) cotton, followed with a broadcast-blanket application of Buctril (bromoxynil) and then followed with Cotoran (fluometuron) plus MSMA. Early postemergence tank mixtures were evaluated in a system where Prowl (pendimethalin) was applied PRE, and where Cotoran + MSMA were applied as a post-directed/layby. Post-directed applications were tested following Prowl PRE and Roundup UltraMax (glyphosate) early POST. Normal labeled rates were used in all studies.

Common preemergence herbicides (Prowl, Treflan [trifluralin], Dual Magnum [s-metolachlor], Caparol [prometryn], Zorial [norfluzon]) and experimental herbicides (Reflex [fomesafen], and Lasso [alachlor]) at typical rates provided 35 to 85% Palmer amaranth control; however, the Buctril and Cotoran + MSMA follow up treatments provided inadequate control of the Palmer amaranth that escaped, and the test was unharvestable. Buctril and post directed applications must be extremely timely in a BXN system.

Programs with common post-directed (PD) herbicides including Roundup (glyphosate), MSMA, Cotoran, Cobra (lactofen), Aim (carfentrazone), Goal (oxyfluorfen), Reflex (fomesafen), Staple (pyrithiobac), Dual and the experimental PD use of Valor (flumioxazin) provided 85 to 95% control of Palmer amaranth. Tank mixtures of Roundup and Dual provided excellent Palmer amaranth control and resulted in the highest yield at the one harvested location.

In additional experiments, preplant applications of Goal, Reflex, and Valor resulted in poor Palmer amaranth control when added to a program of Gramoxone (paraquat), Cotoran, Prowl, PRE, followed by Roundup, followed by Cotoran + MSMA. In Liberty Link (glufosinate-tolerant) cotton, sequential Liberty applications provided poor Palmer amaranth control; however programs with either Prowl or Prowl plus Cotoran PRE followed by Liberty resulted in good Palmer amaranth control.

In spite of efforts to design programs to differentiate between herbicides within a program, the results were largely the same as earlier research: No single herbicide is the key to Palmer amaranth control. Several good programs exist; however, in many cases, even these programs may fail to provide complete Palmer amaranth control.

Acknowledgment

This research was funded, in part, by the Cotton Incorporated Missouri State Support Program.