

**NO FLEX-IBILITY FOR GLYPHOSATE RESISTANT PALMER AMARANTH
CONTROL IN COTTON****R. C. Doherty****K. L. Smith****J. A. Bullington****J. R. Meier****University of Arkansas Division of Agriculture****Abstract**

Palmer amaranth (*Amaranthus palmeri*) is known to be glyphosate-resistant and one of the most common and troubling weeds in Arkansas cotton production. Roundup Ready® Flex cotton was introduced and grown on 2 million acres nationwide in 2006. In 2008, 99% of cotton grown in Arkansas was Roundup Ready® or Roundup Ready® Flex varieties. The value of the flexibility that Roundup Ready® Flex provides has been drastically decreased by a growing glyphosate-resistant Palmer amaranth problem in Arkansas.

In 2008 a trial was established in Lee Co. Arkansas on a farm known to have a glyphosate-resistant Palmer amaranth population. The trial was established in a Robinsonville sandy loam soil in a RCBD with four replications. Palmer amaranth control was recorded on a 0-100 scale with 0 being no control and 100 being complete Palmer amaranth control. Herbicides used in this experiment were Cotoran at 0.75 lb ai/A, Direx at 0.5 lb ai/A, Dual Magnum at 0.95 lb ai/A, Reflex at 0.25 lb ai/A, Suprend at 0.8 lb ai/A, Valor at 0.064 lb ai/A, MSMA at 2.0 lb ai/A, and Roundup PowerMax at 0.95 lb ai/A.

Seven days after the one leaf cotton application Roundup PowerMax applied at 1 leaf (1f) provided less than 75%, while all other treatments provided greater than 95% Palmer amaranth control. Seven days after the four leaf cotton application Cotoran applied preemergence (PRE) followed by (fb) Roundup at 4 lf fb Roundup plus Dual at 4 lf, Reflex fb Roundup plus Dual at 1 lf fb Roundup at 4 lf, and Reflex fb Roundup at 1 lf fb Roundup plus Dual at 4 lf all provided 100% control of Palmer amaranth. Eight days after eight leaf application Reflex fb Roundup plus Dual at 1 lf fb Roundup at 4 lf fb Roundup plus Suprend at 8 lf provided 100% control of Palmer amaranth. Thirty-four days after layby Reflex fb Roundup plus Dual at 1 lf fb Roundup at 4 lf fb Roundup plus Suprend at 8 lf fb Roundup plus Valor at layby provided 100% control of Palmer amaranth, while Roundup at 1 lf fb Roundup at 4 lf fb Roundup at 8 lf fb Roundup at layby provided 70%. Residual herbicides in combination with glyphosate provided greater than 90% Palmer amaranth control.