

**PALMER AMARANTH (*Amaranthus Palmeri*) CONTROL**  
**Andy Kendig, Anthony Ohmes, Britton Hinklin and Paula Ezell**  
**University of Missouri Delta Center**  
**Portageville, MO**

**Abstract**

Recent weed surveys have listed Palmer amaranth among the most troublesome weeds in cotton. Producers often complain of trying numerous herbicides and programs and without success. Additionally, the label of the herbicide Staple (pyrithiobac) used to list Palmer amaranth as a weed that could be controlled. However, that designation was recently changed as Palmer amaranth has been observed to Staple and other ALS-inhibiting herbicides.

The herbicides Caparol (prometryn), Dual Magnum (s-metolachlor), and Zorial (norflurazon) have been advertised as providing better control than older herbicides such as Prowl (pendimethalin) and Cotoran (fluometuron). Approximately 15 years ago, smooth and redroot pigweed (*Amaranthus hybridus* and *Amaranthus retroflexus*) were the predominate pigweed species and they were controlled easily with a wide range of herbicides. Palmer amaranth data were less available. A cotton registration for Reflex (fomesafen) has been considered for control of nutsedge and pigweed species; however, Reflex can cause significant cotton injury if heavy rainfall occurs near the time of cotton emergence.

Several preemergence herbicides were evaluated for their relative efficacy on Palmer amaranth. Reflex was applied at 0.062, 0.125, 0.188 and 0.25 lb/A. A target rate of 0.25 lb/A has been suggested for broader-spectrum weed control. However, a reduced rate might be able to control pigweed and also reduce the risk of cotton injury. Caparol was applied at 1, 1.5 and 2 lb ai/A. Traditionally, Caparol rates were in the 2-lb/A range; however, again, reduced rates have been considered for Palmer amaranth control. Dual II Magnum (s-metolachlor) was applied at 0.6 and 1.2 lb/A preemergence and postemergence, over-the-top, at cotyledon stage. Preemergence Dual has a significant injury potential, especially on sandy soils, where Palmer amaranth especially troublesome; however, cotyledon-stage applications have shown a lower injury potential. The 1.2 lb/A rate is approximately double of what is recommended, but was intended confirm that cotyledon state applications were relatively safe. Finally, selected, two-way combinations of Caparol, Cotoran, Dual, Prowl, Staple and Zorial were evaluated. Mixtures of Zorial with Caparol, Dual and Prowl, and mixtures of Prowl and Dual and Cotoran and Caparol were not evaluated. Studies were conducted on a Tiptonville fine sandy loam and on a Boskett sand in 2000 and 2001. Data were averaged across all studies.

No crop injury was observed from any treatment, including Reflex and double-rate Dual treatments. Palmer amaranth control increased from 76 to 96% as Reflex rates increased from 0.063 to 0.25 lb ai/A. Dual Magnum at 0.6 lb ai/A provided 74% and 69% Palmer amaranth control when applied preemergence and postemergence at the cotyledon stage respectively. Caparol provided 70 to 79% Palmer amaranth control. Dual plus Caparol was the best combination, providing 92% control. Caparol plus Staple, Caparol + Prowl, Cotoran + Prowl, Cotoran + Staple and Dual + Zorial all provided 90% or greater Palmer amaranth control. The best single-herbicide treatment was Reflex at 0.25 lb/A. The second best single-herbicide treatment was Cotoran which provided 83% Palmer amaranth control. This conflicts with other data showing Caparol slightly better than Cotoran for Palmer amaranth control; however, this does suggest that Cotoran may be used for control of other broadleaf weeds without significantly weakening Palmer amaranth control in a program.