

**PREEMERGENCE AND POSTEMERGENCE  
WEED CONTROL SYSTEMS UTILIZING  
HERBICIDE RESISTANT COTTON**  
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**Abstract**

Although dramatic changes have occurred in weed control in many crops, few selective POST cotton herbicides have been available to producers for controlling weeds without causing injury or delaying cotton maturity. The potential of utilizing Staple, Roundup Ultra, and Buctril in a cotton weed control program include: 1) effective control of many weed species, 2) reduced herbicide usage since POST programs allow treating weeds on an as-needed basis rather than a preventative basis, 3) less reliance on PPI herbicides would facilitate minimum-tillage production practices, 4) allowing a wider herbicide application timing to control weeds, and 5) offering herbicides for in-season weed control with different mechanisms of action, which could reduce or delay development of resistance to herbicides currently used.

Field studies were conducted at Alexandria, Bossier City, and St. Joseph, Louisiana in 1996 to evaluate Staple at 1.2 oz/A, Roundup Ultra at 1.5 pt/A, and Buctril at 0.75 lb ai/A in cotton weed management programs. These herbicides were applied POST alone and in conjunction with PRE, early directed (EDIR), and/or late directed (LDIR) herbicides. Commercial PRE standards were Dual and/or Cotoran and were applied according to soil type. EDIR herbicides were Cotoran + MSMA (1.0 + 1.5 lbs ai/A) and LDIR treatments were Bladex + MSMA (0.75 + 1.5 lbs ai/A). Staple was applied to conventional cotton, and Roundup Ultra and Buctril were applied to transgenic cottons. Staple and Buctril plots without PRE grass herbicides were supplemented with Fusilade DX at 8 oz/A.

Treatments were applied in 15 GPA at Alexandria and St. Joseph and 20 GPA was used at Bossier City. EDIR treatments were applied to 4 to 6 inch Cotton at the 2 to 4 leaf stage. Pitted or entireleaf morningglory were 2 to 6 inches with 2 to 5 leaves, sicklepod was 2 to 8 inches with 4 to 6 leaves, hophornbeam copperleaf was 2 inches with 6 leaves, johnsongrass was 4 to 12 inches with 4 to 15 leaves, spiny amaranth was 4 inches with 6 leaves, hemp sesbania and common cocklebur were 2 to 5 inches with 2 to 4 leaves. POST and EDIR treatments were applied 3 wk following planting at Alexandria and St. Joseph, 5 wk at Bossier City. LDIR treatments were applied 2 wk later.

When evaluating the three weed control programs, johnsongrass control was 90% or greater following an application of Roundup Ultra or when a graminicide was used in conjunction with Staple or Buctril. Pitted morningglory control ranged from 83 to 92% when either Buctril, Roundup Ultra, or Staple were applied alone. When EDIR and/or LDIR treatments were included in the program, control increased to above 95%. Sequential EDIR/LDIR treatment combinations showed similar results to EDIR combinations, indicating the importance of directed treatments, especially when applied early. Hophornbeam copperleaf control was 93 and 85% following treatments of Buctril and Roundup Ultra, respectively, when applied alone. Poor control was obtained with Staple. EDIR and LDIR treatments increased control to above 90% in the three programs. Spiny pigweed control following Buctril applied alone was 53%, whereas control was 85 and 95% following treatment of Roundup Ultra or Staple, respectively. Remaining treatments controlled spiny pigweed 80% or greater. Sicklepod control following Buctril or Staple alone was approximately 70%, whereas control with Roundup Ultra was 94%. Sequential EDIR and LDIR treatments increased control to above 90% in all programs. Common cocklebur control was 90% or greater following all treatments except Dual PRE. Hemp sesbania control was approximately 95% following Buctril or Staple alone regardless of whether or not directed sprays were used. Although Roundup Ultra provided only 65% control of hemp sesbania when applied alone, the addition of directed treatments improved control to above 90%. Prickly sida control following Buctril or Staple was poor, whereas control with Roundup Ultra was 80%. Adding Cotoran PRE or utilizing directed treatments tended to increase control above 90%. At Bossier City, dry soil conditions contributed to poor entireleaf morningglory control.