

**HORSEWEED AND CUTLEAF  
EVENINGPRIMROSE**

**CONTROL IN NO-TILL COTTON**

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**Abstract**

No-till and stalebed cotton production both require the use of herbicides to control vegetation prior to planting. The two primary preplant herbicides are Gramoxone or Roundup. There are over twenty broadleaf weeds commonly found in Arkansas reduced tillage fields. Of these weeds, horseweed (HW) and cutleaf eveningprimrose (CLEP), are the most troublesome. These two weeds can overwinter as a rosette and persist throughout the cotton growing season. Unfortunately, Roundup is effective on HW but not CLEP. Gramoxone is somewhat effective on CLEP but provides poor control of HW. The purpose of our research was to evaluate several herbicide combinations for HW and CLEP control, and to determine cotton tolerance to these herbicides.

To evaluate HW and CLEP control, several small-plot tests and large field demonstrations were conducted from 1992 to 1995 in southeast Arkansas. Standard techniques were used in the replicated small-plot tests, and the herbicides were applied with a backpack in 10 GPA. In all the small-plot tests, treatments were applied in mid to late March to 3-8 inch rosette weeds. In the non-replicated large field tests grower equipment was used.

In 1992 CLEP control with Roundup at 1 pt/A was 76% at planting. The addition of Goal at 1.25 pt/A did not improve control (75%). Gramoxone at 1.5 pt/A gave 84% control, and as with Roundup, the addition of Goal did not improve control. In 1993, several other herbicides were evaluated for CLEP control. Roundup at 1 and 2 pt/A gave 73 and 78% control, respectively. The addition of Banvel SGF at 1 pt/A to Roundup at 1 pt/A improved control to 94%. The addition of Harmony Extra at 0.5 oz/A to Roundup did not improve CLEP control (73%). Gramoxone alone at 2 pt/A provided poor CLEP control (49%). The addition of Bladex at 2 pt/A or Caprol at 1 pt/A to Gramoxone improved control slightly, 67 and 73% respectively. In 1994 Roundup at 1 and 2 pt/A provided 15 and 30% CLEP control at planting. As in previous years, the addition of Harmony Extra did not improve control (33%). The addition of Banvel SGF at 1 pt/A or 2,4-D at 1 pt/A improved CLEP control with Roundup at 1 pt/A to 95 and 98% respectively. Gramoxone plus Bladex at 2 + 2 pt/A gave poor control (18%). Gramoxone plus Cotton-Pro

at 2 pt + 1.5 pt/A gave 72% CLEP control. In 1995 Roundup at 1 pt/A and 2 pt/A gave 25 and 70% CLEP control. As in previous years Harmony Extra failed to improve CLEP control with Roundup whereas the addition of Banvel SGF or 2,4-D did improve control.

Most of our horseweed (HW) control observations have come from grower fields, but in 1995 we were successful in establishing a good small plot test. Roundup at 1 and 2 pt/A gave 76 and 87% HW control at planting. Gramoxone plus Bladex at 2 + 2 pt/A gave 83% control. Tank-mixes of Gramoxone and Bladex with Banvel or 2,4-D ester at 1 pt/A provided excellent HW control, 100 and 94%, respectively. However, in several of the grower fields the three-way tank mix of Gramoxone, Bladex and 2,4-D ester failed to provide acceptable HW control. The best program in our grower field demonstrations for both CLEP and HW control has been a late February application of 2,4-D ester at 2 pt/A followed by Gramoxone plus Bladex at 2 + 2 pt/A applied in mid March.

To evaluate cotton response to preplant herbicides tests were conducted in 1993-1995. Our concern was primarily with 2,4-D and Banvel applied in a true no-till situation. Cotton beds were formed in late February and rolled flat prior to the herbicide applications. Herbicides were applied 8,6,4,2,1 and 0 weeks prior to planting cotton on the undisturbed beds. Cotton tolerance was evaluated visually and by stand counts 2-4 weeks after planting. The soil was a silt loam with 1.6% OM and a CEC of 12.

Application timing affected cotton response to the herbicides tested. Injury with 2,4-D or Banvel SGF was most severe if application was made within two weeks of planting. Only in 1995 was injury noted when application was made four weeks prior to planting and only Banvel SGF caused injury. Banvel SGF was also the most injurious of the herbicides evaluated when applied two weeks before planting or less. With 2,4-D and Banvel, it was noted that if rainfall between application and cotton planting exceeded 1 inch the injury was not observed. It is also interesting to note that injury with 2,4-D and Banvel was manifested primarily by stand reduction with only slight leaf malformation. If the tests had been conducted on a sandy soil, we may have observed more leaf strapping with these hormone herbicides. To be safe, it is recommended to apply these herbicides at least four weeks prior to planting.