

**LONG-TERM WOOLLYLEAF BURSAGE (*AMBROSIA GRAYI*)
MANAGEMENT IN ROUNDUP READY COTTON**

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weed control costs as compared to cultivation alone or the commercial standard system.

Abstract

Producers on the Texas Southern High Plains use preplant incorporated and preemergence herbicides to control many annual weed species. However, these herbicides are not effective on perennial weeds including woollyleaf bursage (*Ambrosia grayi*). The use of glyphosate (Roundup Ultra) in glyphosate-tolerant (Roundup Ready) cotton varieties offers new options to control many perennial weeds in-season. The objectives of this research were to: 1) evaluate woollyleaf bursage control following glyphosate applied alone or in combination with cultivation, 2) determine the impact of weed control systems on cotton yield and economic returns, and 3) evaluate woollyleaf bursage control in the subsequent years following applications to determine the long-term population reductions.

Field studies were established in 1998 and plots were retreated in 1999 at the Texas Agricultural Experiment Station at Halfway, TX. All herbicide treatments were used with and without cultivation. Glyphosate at 0.75 lb ae/A was applied postemergence-topical (PT) and postemergence-directed (PD). These applications were made to cotton at the 1-2 leaf, 3-4 leaf, and first bloom stages of growth. A commercial standard weed control system was compared to the Roundup Ready system. The commercial standard system consisted of an early PT application of MSMA at 1.5 lb ai/A and a fall application of dicamba at 1.0 lb ai/A. Weed control ratings were recorded 14 days after all applications.

In 1998, glyphosate controlled woollyleaf bursage 72% at the end of the season, and control increased to 89% when cultivation was added. The commercial standard system controlled woollyleaf bursage 20%, while woollyleaf bursage control was 35% with cultivation alone. After cotton harvest, the commercial standard treatment of dicamba was applied.

The Roundup Ready system reduced weed densities by 45-50%, while the dicamba fall treatment reduced woollyleaf bursage densities 75%. However, by the end of the 1999, season the dicamba fall treatment provided 12% control of woollyleaf bursage. At the end of the second season, glyphosate controlled woollyleaf bursage 94%, while control increased to 98% when cultivation was added. Cultivation alone provided 15% woollyleaf bursage control.

Prior to any treatments in the 2000 growing season, woollyleaf bursage densities were recorded to determine the effects of both the 1998 and 1999 treatments. The Roundup Ready system reduced woollyleaf bursage densities by 77% after two years of in-season treatments. Woollyleaf bursage densities were reduced 60% after two years of the commercial standard treatments. The Roundup Ready system provided effective reduction of the woollyleaf bursage population. Therefore, only two in-season applications of Roundup Ultra were needed in the 2000 growing season to maintain 90% woollyleaf bursage control. The Roundup Ready cotton weed control system increased cotton yields and net returns over