

**ANNUAL WEED CONTROL IN IRRIGATED  
ROUNDUP READY® COTTON  
WITH TILLAGE AND HERBICIDE  
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**Abstract**

Cotton (DP 5415RR) was planted in late-April or early-May 1998-2000, on a silt loam soil with pH 6.6 and 0.8% organic matter. The area was furrow irrigated 4 or 5 times each year with approximately 2 to 3 inches of water each time. The preplant tillage operations are listed in Table 1. Weed counts in late-May 1998 resulted in a very low weed population except one treatment without preplant incorporated (PPI) or preemergence (PRE) herbicides before the application of over-the-top herbicides. In 2000, the late-May weed counts were high with several treatments that did not include the PPI and/or PRE herbicide usage. The late-May counts were made before the postemergence over-the-top applications with Roundup® or conventional over-the-top or postemergence directed (PO-DIR) applications were made. Weed counts in mid-June 1998 also resulted in high counts where PPI or PRE herbicides had not been used and the over-the-top treatments had not been given time to have full effect. Many of the treatments, which had either PPI plus PRE or PRE, only recorded very low weed plant numbers. Weed counts in mid-June 2000 performed similarly to 1998 with PPI or PRE herbicide usage. The cultivation techniques employed were several treatments with a 4-row shielded cultivator leaving a 12-inch band centered on the row undisturbed and with a rolling tine cultivator, which threw untreated soil toward the cotton plants covering small weeds. Weed counts did not seem to be influenced by either of these methods of cultivation. A visual estimate of weed control was obtained in mid-May to early-June of each year. In 1998, mid-May ratings indicated less control from treatments, which did not include a PPI or PRE herbicide. In 1999, ratings were similar while early-June 2000 ratings gave generally higher values. Early ratings in these three years resulted in poor to very poor control with over-the-top applications of the conventional herbicides Staple® and Assure® as tank-mix treatments. A visual estimate of weed control was also obtained in early July of 1999 and 2000 to represent the long-term effects from previous applications of herbicides. These ratings resulted in applications of half-rate of Cotoran® plus Staple PRE followed by conventional over-the-top treatments or conventional over-the-top treatments alone giving poor results each year. Generally, the type of cultivation employed did not affect the overall rating, nor did plots, which had no cultivation. Weed control was affected more from herbicide application than from the type of cultivation technique or no cultivation. Cotton response was measured by stand count and seed cotton yield each year. The cotton stand was not affected by any of the treatments other than a reduction with one treatment in 2000 where annual grasses were not controlled allowing severe competition to "smother" plants. The cotton stand with all treatments in 1998 and 1999 were less than the number, which is considered appropriate for maximum yield. Cotton stand in 2000 was very adequate to produce maximum yield. Seed cotton yield in 1998 was less with shielded than with rolling tine cultivation where Cotoran plus MSMA early followed by Bladex® plus MSMA late PO-DIR were used. In 1999, seed cotton yield was reduced with Roundup applied over-the-top later than is labeled for use. This treatment also produced low yields in 2000. Very low yields were harvested from treatments that did not include PPI or PRE herbicides and relied totally upon conventional over-the-top applications of Staple and/or Assure and from applications of Cotoran plus MSMA early followed by Cy-Pro® plus MSMA late PO-DIR in conjunction with the rolling tine cultivation system. The average seed

cotton yields for treatments with the three tillage systems (no cultivation, shielded cultivation, and rolling tine cultivation) were 2012, 1877, and 1966 lb/A in 1998; 3030, 2920, and 2709 lb/A in 1999; and 1963, 1943, and 1722 lb/A in 2000, respectively.

Table 1. Preplant operations for a cultivation/herbicide use experiment, 1998-2000, Delta Research and Extension Center, Stoneville, MS.

Operation	Year		
	1998	1999	2000
	------(mo/day)-----		
Shredded	--	9/30/98	10/4/99
Subsoiled <sup>1/</sup>	--	10/9/98	10/11/99
Hip <sup>1/</sup>	2/9, 3/24	2/9, 2/25	10/11/99, 3/8, 4/19
Bed conditioner <sup>1/</sup>	2/9, 3/24	3/1	10/11/99, 3/7, 4/26
+ Trts. 4, 5, 6 (1999- 2000, 10 (1998), 11, 12 (1999, 2000)	3/4, 3/12 (2X)	2/24, 2/25	3/6
Apply PPI	3/23	2/25	3/6
Apply Roundup 1.0 lb ai/A Burn-down <sup>2/</sup>	3/24	2/5	2/9
Apply Gramoxone 0.93 lb ai/A Burn-down	4/16 <sup>1/</sup>	4/14 <sup>2/</sup>	--
Plant Deltapine 5415RR	4/27	5/3	5/2
Apply Preemergence	4/27	5/3	5/2
Furrow Irrigate	6/23, 6/30, 7/29, 8/18	6/24, 7/19, 8/2, 8/10, 8/19	7/20, 7/18, 7/27, 8/2
Liquid UAN (lb/A N)	100	100	100
Applied 10" to each side of drill	5/20	5/28	6/7
Soil pH	6.0	6.6	6.6
Soil O.M. %	0.75	0.76	0.87

<sup>1/</sup>Treatments 4-20 (between rows with subsoil)

<sup>2/</sup>Treatments 1-3

<sup>3/</sup>Treatments 1-3, 7-10, 13-20