Comparison of Conventional and Conservation Tillage Systems for Cotton (Field 5CDE)
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Objective: The objective was to investigate the potential water savings and management problems of conservation versus conventional tillage of cotton.

Methodology: Stoneville 4892BR and 4646B2R were planted in four tillage treatments in two rotations including corn (2002)-cotton-cotton, and corn (2003) - cotton. These treatments included conventional tillage (shred, disc, list, rolling cultivator, rod weed, in-season cultivation) alone or in combination with a para-till and no-tillage alone or in combination with a para-till. ST4793RR was planted in an adjacent conventional tillage, continuous cotton area. Herbicide treatments in the no-till system included Roundup WeatherMax preplant for winter weeds, Prowl at 3.5 pt/A applied and water incorporated prior to planting, two postemergence topical and postemergence directed Roundup WeatherMax applications during the season.

Fig. 1. Crop tillage study at the Helms Research Farm, June 2004.

Table 1. Cotton yield and gross returns as influenced by tillage systems and variety.

System	Variety	Yield (lb/A)		Gross Returns ($/A)	
Continuous cotton					
Conventional	ST 4793 RR	1374	bc	662	a
Corn(02)-cotton					
Conventional	ST 4892 BR	1304	c	573	b
Limited	ST 4892 BR	1318	c	627	ab
Alternate	ST 4892 BR	1447	bc	636	ab
No-till	ST 4892 BR	1394	bc	662	a
	Average	1366		624	
Corn(03)-cotton					
Conventional	ST 4892 BR	1515	ab	667	a
Limited	ST 4892 BR	1436	bc	652	ab
Alternate	ST 4892 BR	1598	a	705	a
No-till	ST 4892 BR	1405	bc	638	ab
	Average	1488		665	

Results: Average yields across tillage systems were similar between continuous cotton and the rotations. Average yields were 120 lb/A greater and gross return $41/A greater in the corn(02)-cotton rotation than the corn(03)-cotton (Table 1). Within rotations, no difference in yield between tillage treatments existed in the corn(02)-cotton-cotton rotation. Significantly lower no-till yields resulted in the corn(03)-cotton rotation compared to the alternate tillage system.