

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 in a three year rotation with corn.

Methodology: Stoneville 4892BR and NexGen 2448R were planted in two tillage treatments in a three year rotation with corn. The rotation sequence included: Ct-Ct-Cn (cotton-05, cotton-03, and corn-04); Ct-Cn-Ct (cotton-05, corn-03, cotton-04); and Ct-Ct-Ct (continuous cotton). Tillage treatments included conventional tillage (shred, disc, list, rolling cultivator, rod weed, in-season cultivation) alone versus no-till treatments (stalk-puller). Weeds were controlled with 2,4-D preplant for winter weeds in no-till areas. Prowl and Roundup WeatherMax were applied in-season. Cotton was severely damaged by hail on 16 June but was not replanted. Approximately 3.0 inches of irrigation was applied during the growing season.



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

Results: Cotton varieties responded differently to the hail, tillage treatments, and crop history. In general, no-till treatments resulted in the same or higher yields than the conventional treatments (810 lb/ac vs. 637 lb/ac on average, respectively). The cotton crop immediately following corn, CtCtCorn, resulted in much higher yield than treatments of continuous cotton, CtCtCt, and cotton 2 years out of corn, CtCornCt (909, 653, and 609 lb/ac on average, respectively). The NG2448R cotton variety resulted in much higher yields than ST4892BR (755 and 692 lbs/ac, respectively). These results are consistent with last year - cotton lint yields (ST 4892 BR) were higher in areas immediately following corn and in a no-till tillage system compared to conventionally tilled, continuous cotton. This implies that reduced tillage and crop rotation improves water use efficiencies.

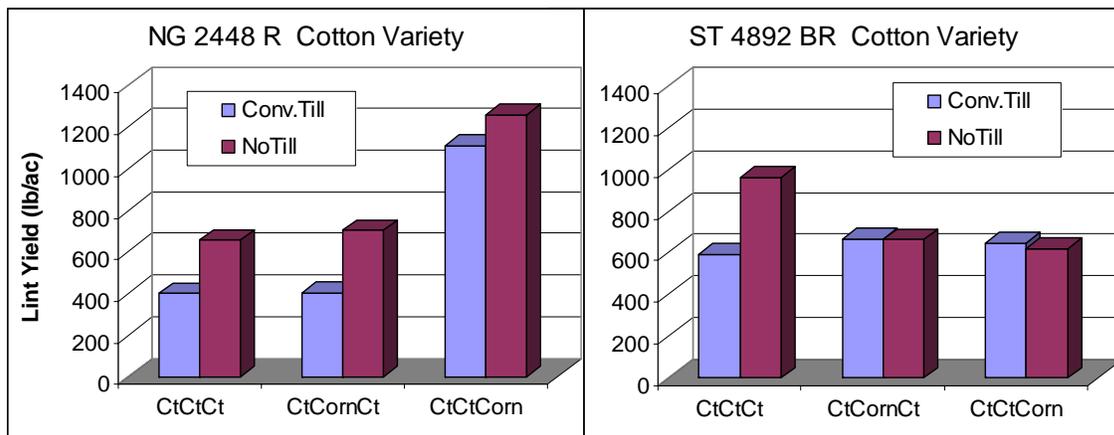


Figure 2. Cotton lint yield from a study with factors of tillage, crop rotation, and cotton variety at the Helms Research Farm, 2005.