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.

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, CtCornCt, resulted in much higher yield than treatments of continuous cotton, CtCtCt, and cotton 2 years out of corn, CtCtCn (909, 653, and 609 lb/ac on average, respectively). The NG2448R cotton variety resulted in much higher yields that 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.