

## Deep Tillage in SDI Fields (Field 3)

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**Objective:** Determine potential benefits of deep tillage around SDI tape.

**Methodology:** Soil compaction around SDI laterals due to normal field traffic over a period of three growing seasons appeared to cause problems with cottonseed germination and general soil structure in the seedbed. A TerraTill<sup>®</sup> plow (Bigham Brothers Equipment, Lubbock, TX) was used to till below and to the side of drip tapes in an attempt to shatter compacted areas in seedbeds irrigated by SDI. Plot size was 8-rows x 150 ft, with 18 replicates. Following the TerraTill<sup>®</sup> operation in treated areas, both check and treatment plots were managed identically using controlled traffic, stale-bed tillage methods. Cotton was planted and harvested in 2003.



Figure 1. TerraTill plow used for deep tillage of SDI cotton plots, 2003.

**Results:** The TerraTill<sup>®</sup> procedure appeared to greatly improve soil structure in the seedbed without damage to SDI laterals. However, in the dry spring of 2003, water movement from pre-plant irrigations with SDI in both the treated and untreated areas failed to uniformly wet seedbeds for cotton germination.

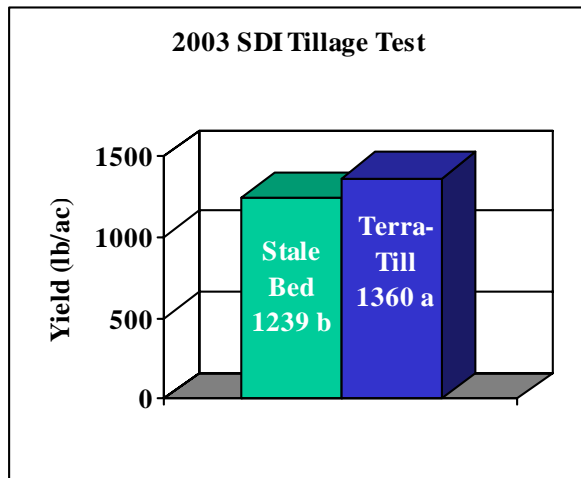


Figure 2. Cotton lint yields from non-tilled versus deep tillage near SDI laterals, Helm Farm, 2003.

Furthermore, the treated plots caused problems when planting due to implement wheels deviating from the established furrow and sliding into the loosened, wetted zone below the seedbed. Following rains in June, an adequate plant stand was established. Harvest results showed significant increases in cotton yield in treated compared to non-treated areas, Figure 1 (Paired T Test). This indicates normal traffic around SDI laterals may cause significant reductions in lint yields. Modification of the tillage equipment may improve its performance in SDI fields.