

Deep Tillage in SDI Fields (Field 3)

James P. Bordovsky, Doug Nesmith, Joe Mustian, and Cody Mull

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. Prior to the 2003 growing season, a TerraTill[®] 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[®] 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. Without any additional TerraTill[®] operations, cotton again was planted and harvested in 2004.



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

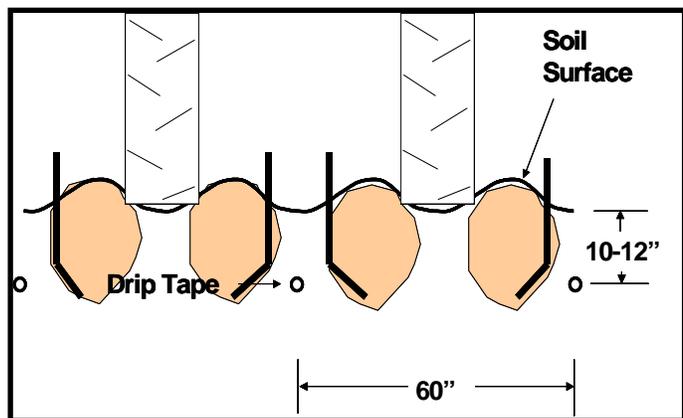


Fig. 2. Profile schematic of drip tape and TerraTill deep tillage depth, 2003.

Results: In 2003 the TerraTill[®] 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. 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. 2003 harvest results showed significant increases in cotton yield in treated compared to non-treated areas, Fig. 1 (Paired T Test). This indicated normal traffic around SDI laterals caused reductions in lint yields. However, any benefit associated with the 2003 tillage operation had no beneficial carryover affect on yield in 2004 as yields in treated and untreated areas were not different at 2121 and 2139 lb/ac, respectively.

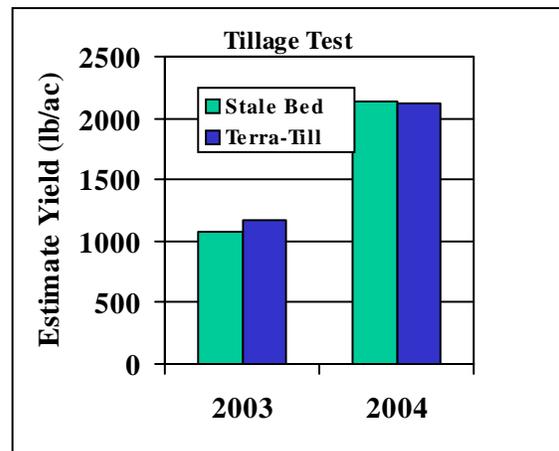


Fig. 3. Differences in lint yield caused by deep tillage in 2003.