

TAKEAWAYS



Implementing No-Till and Cover Crops in Texas Cotton Systems

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- Conservation agriculture is growing across the United States, but conservation tillage in cotton lags behind that in other major commodities (40% versus 65–70%).
- Most of the research presented on cover crop management was conducted at the Chillicothe Research Station in northern Texas. The cover crops were planted after cotton harvest.
- *Seeding rates*: Higher seeding rates did not translate into higher biomass production or greater canopy coverage.
- *Transitioning to a no-till system*: It may take 3–5 years for the net economic returns of no-till systems to be greater than the returns for conventional-till systems.
- *Water extractable organic carbon*: No differences were found between tillage treatments for continuous cotton and cotton following sorghum, but the latter had higher levels of water extractable organic carbon.
- *Physical soil properties*: The infiltration rate was significantly higher for no-till with a cover crop. Alleviated compaction was observed for no-till systems with and without a cover crop. Stored soil moisture was consistent across all systems during the cotton-growing season.
- *Lint yields and irrigation water use efficiency*: Across a 6-year period, average lint yields increased for no-till with and without a cover crop; no-till with a cover crop had the greatest yields. During the same 6 years, irrigation water use efficiency mirrored the lint yield results.
- *Cover crop options*: A small-grain wheat and a mixture of species were planted as cover crops; the best mixture was determined to include rye, wheat, Austrian winter pea, and hairy vetch. Across a 6-year period, slight improvements in lint yields were noted for the wheat and the mixture cover crops versus no-till and conventional till.
- *Cost and net return*: The cost of the mixture cover crop was highest; the cost of the wheat cover crop was higher than the cost of no-till but not the cost of conventional tillage. Net returns were consistent across all four treatments.
- *Dryland scenarios*: Infiltration rates were enhanced by cover crops. Across a 4-year period, no differences in lint yields were found across treatments. Net returns were consistent among cover crop treatments. However, cover crop treatments had numerically lower but not significantly lower returns than conventional and no-till treatments.
- Growers should manage cover crops for their own systems and goals.