

COTTON YIELD AND FIBER PROPERTIES AS INFLUENCED BY RESIDUE COVER, TILLAGE, AND ALDICARB

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Coastal Plain fields generally contain several soil map units, and crop variability within a field is due in large part to differences in soil map units. Identifying crop responses to management inputs on the different soil types will be useful for site-specific farming applications. The objective of this experiment was to determine the effect of soil management techniques and in-furrow application of an insecticide/nematicide on cotton yield and fiber properties.

Data in this report are from the second year (1988) of a six-year study. Treatments were residue cover (corn stubble, rye winter cover crop, or cotton stubble), tillage (conservation or conventional), and aldicarb application (1.07 lbs a.i./acre or none). 'DPL Acala 90' was planted into large plots (ranging in length from approximately 400 to 800 feet, plots were six, 38-in-wide rows) that spanned across several soil types. Two harvesting methods were used to determine variability. First, the large plots were subdivided into 44-ft-long sections, two of the rows in each section were harvested with a spindle picker, and average yield and fiber property values were calculated for the entire plot. Second, a 10-foot sample was hand-harvested from each of three soil map units (Bonneau sand, Eunola loamy sand, and Norfolk loamy sand) within each plot.

For both methods of harvesting, residue cover did not influence cotton yield or fiber properties. A significant tillage X aldicarb interaction occurred for lint yield in the machine-harvested data. Without aldicarb, lint yield for conservation tillage was about 150 lbs ac⁻¹ higher than for conventional. With aldicarb, yield for conservation tillage

was about 200 lbs ac⁻¹ higher than for conventional tillage. The cotton grown with conventional tillage had higher micronaire than cotton grown with conservation tillage. Otherwise, neither tillage nor aldicarb had an impact on fiber properties.

Although lint yield was greater for conservation tillage than for conventional tillage when harvested with a spindle picker and averaged over entire plots, the hand-harvested data revealed that the yield increase with conservation tillage was soil map unit specific. For the hand-harvested data, yield for conservation tillage was only 35 lbs lint ac⁻¹ greater than for conventional on the Bonneau soil map unit, while the average yield increase for conservation tillage was 170 lbs lint ac⁻¹ on the Norfolk and Eunola soil map units. Similarly, the response of cotton micronaire and fiber strength to tillage was dependent on soil map unit with the responses on the Bonneau differing from the responses on the Norfolk and Eunola. Cotton grown with conservation tillage had fibers that were 0.02 inches longer than cotton grown with conventional tillage, regardless of the soil type. Aldicarb treatment did not significantly affect yield or fiber properties of the hand-picked cotton as it did for the spindle-picked, possibly because of fewer data points in the analysis.

In this second year of the study, conservation tillage did not appear to affect yield variability, but fiber properties were more uniform in conservation tillage than in conventional.