Response Of Irrigated And Non-Irrigated Cotton To Furrow Diking Tillage

DR. L. JASON KRUTZ

STONEVILLE, MISS.

There is concern over the decline in the Mississippi alluvial aquifer and the impact that irrigation management has on this phenomenon. Today, 70% of the acreage within the Mississippi Delta is irrigated, and researchers have suggested that the decline in the alluvial aquifer can be stabilized if a 25% reduction in the application of irrigation water is adopted running alongside row crops, is a management practice with potential to save irrigation water and reduce irrigation costs. This management practice, however, has received little research attention in the Mid South. Cotton furrow diking experiments were initiated by USDA-ARS and Mississippi State University researchers near Elizabeth, MS to determine if this practice could potentially reduce irrigation levels by the targeted value, 25%, while maintaining and/or improving yields when compared to a conventional tillage system. Physiological data were collected at early bloom, cut-out and harvest for both irrigated and non-irrigated studies. Twenty-six percent less irrigation water was applied to furrow dike systems when compared to the conventional tillage system. At early bloom, no difference between plant heights, number of main stem nodes, leaf area index, stem weight and total plant weight were noted between tillage systems. Similarly, at cut-out, no difference in aforementioned physiological measurements was observed, nor did we detect differences in boll or square weights between tillage systems. At harvest, box mapping indicated no difference in plant height, node number, number of occupied positions or seed lint weight within position. Consequently, cotton lint yields between tillage systems were not different, averaging 989 lbs/acre. Similar results were noted for our non-irrigated cotton furrow diking experiments. Our

preliminary data indicate the potential for furrow diking to reduce irrigation levels by 25% while maintaining yields equivalent to that of conventional tillage/irrigation systems. Δ

DR. L. JASON KRUTZ: Research Soil Scientist, USDA-ARS, Crop Production Systems Research Unit, University of Mississippi