EVALUATION OF COTTON GROWTH AND YIELD IN RESPONSE TO FURROW IRRIGATION PATTERN S.S. Davis D.M. Dodds C.A. Samples M.T. Plumblee A.B. Denton L.X. Franca Mississippi State University Starkville, MS

Abstract

Agricultural irrigation practices constitute a large percentage of groundwater usage across the Mid-South. Officials from the Yazoo Mississippi Delta Joint Water Management District (YMD) have been monitoring the aquifer in Mississippi and have seen an overall decline in groundwater levels over the past 30 years. In addition questions have arisen regarding every furrow versus alternate furrow irrigation on soils that often seal after an irrigation or rainfall event. Therefore, an experiment was conducted to evaluate cotton growth and yield in response to furrow irrigation patterns. This experiment was conducted at Bush Farms in Money, MS in 2015. Two furrow irrigation patterns were implemented in this study; one being every furrow and the other being alternate furrow irrigation.

Cotton in which every furrow was irrigated produced significantly greater yields when mechanically harvested compared to cotton in which alternate furrows were irrigated. Data collected from box mapping showed that cotton in which alternate furrows were irrigated yielded similar to cotton in which every furrow was irrigated. Inconsistencies in yield response could be attributed to a variety of factors. Nodes five through eight on cotton in which every furrow was irrigated held a higher percentage of the weight when compared to alternate furrow irrigation. However, on nodes nine through 12 as well as 13 and above, irrigation pattern had no effect on percent of total weight located in each zone. Lint was also pulled from all cracked bolls when box mapping, including immature bolls which would not have been harvested by the picker due to the spindles inability to secure lint. Although cotton in which every furrow was irrigated significantly produced higher yields when machine harvested, approximately 50% more water was used compared to alternate furrow irrigation. Based on these data, alternate furrow irrigation is recommended.