

Furrow Diking: A Management Practice for Conserving Soil and Water Resources

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Abstract

Crop production in the Southeastern U.S. is water limiting. Water capture and supplemental irrigation is needed to maintain soil water levels to sustain profitable crop production. Increased water capture would efficiently improve natural water use and reduce supplemental irrigation amounts and other input costs, thus improving producer's profit margin. Furrow diking is a cost effective management practice that is designed to create a series of depressional storage basins in the furrow between crop rows to catch and retain rainfall and/or irrigation water. The objective of this study was to compare water capturing and erosion control characteristics of furrow diking by comparing infiltration, runoff, soil loss, and soil water contents diked and non-diked tilled systems. In 2006, a field study (Faceville loamy sand) was established near Dawson, GA with diked and non-diked conventional tilled systems managed to irrigate cotton. Simulated rainfall (50 mm/h for 1 hr) was also utilized on diked and non-diked plots (2x3 m) (n=3). Runoff and soil loss were measured continuously from each rainfall simulator plot. Diking reduced runoff and sediment yields by 3.5 times compared to the non-diked treatment. Diking increased infiltration by 38% resulting in 7.1 days of estimated plant available water for diked plots and only 3.9 days of estimated plant available water for non-diked plots.