

**STUDYING COTTON YIELD RESPONSE TO IRRIGATION REGIMES AND SPATIAL SOIL
VARIATION IN A HUMID REGION**

Amir Haghverdi

B.G. Leib

Paul D. Ayers

Michael J. Buschermohle

University of Tennessee

Knoxville, TN

David Verbree

University of Tennessee

Jackson, TN

Timothy J. Grant

University of Tennessee

Knoxville, TN

Abstract

Cotton is one of the major crops in west Tennessee which is also vital for US economy since it is an essential export-oriented product. Cotton supplemental irrigation is growing fast at west Tennessee. The temporal pattern of rainfall changes from year to year when unexpected drought periods likely occur within each growing season. The spatial soil variation is also significant and is expected to happen under a single irrigation system. These variations make irrigation management a complicated dynamic problem hence crucial to study. A two year experiment was conducted at 2013 and 2014 in a 70 ha field located along Mississippi river where two center pivot systems were available. The main objective was to study cotton yield response to irrigation regimes under drastic soil spatial variation. Irrigation was varied across the field of study by programming center pivots and renozzling some spans to apply more/less water than the prime irrigation decision by farmer. The soil maps were generated by sampling and running a veris EC machine. Soil water status was monitored during cropping season and weather data was obtained from a within-field weather station. The spatial arrangement of average yield across years matched the spatial distribution of soil. The result, also, showed that different irrigation levels maximized cotton lint yield across the field of study.