



Agriculture accounts for 92 percent of humanity's water footprint. Animal production requires a larger volume of water than crop production; however, vegetable production is a better way to sustain and preserve the habitat and water resource ecosystems for future generations. In 2005, the United States irrigation withdrawals were 37 percent of total freshwater withdrawals. Although Mississippi gets about 50 inches of annual precipitation, the temporal distribution is not uniform and farmers are forced to supplement crop-water needs via irrigation.

Testing Scheduling Methods of Irrigation in Vegetable Production for Limited-Resource Growers

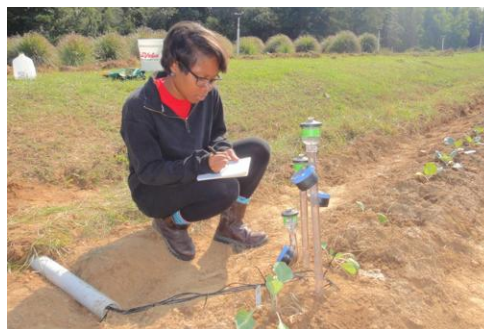
Who cares and why?

Mississippi faced extensive drought seasons in recent years (1998-2002, 2007, and 2011) increasing the risk associated with water availability to croplands. There are nearly 42,000 farms in Mississippi, of which 92 percent are classified as small. Limited-resource growers with small-scale farms produce vegetables to maximize their returns, mostly without an irrigation system. Supplemental water (irrigation) is required to increase or at least stabilize crop yields. Irrigated lands in Mississippi increased from 161,000 acres in 1978 to 1,076,000

acres in 1997. Water management through the growing season is a critical factor for production of high quality vegetables. Some farmers are unsure when to water crops or schedule irrigation. Therefore, testing scheduling methods will benefit crop productivity for limited-resource growers with small-scale farms and sustain our water resources for future generations. The objective of this research is to identify and test different scheduling methods of irrigation for small-scale farms in Mississippi.

What has the project done so far?

Alcorn State University (Alcorn) researchers have planted a 76 feet x 18 feet cabbage field at the Alcorn Experiment Station to evaluate soil moisture tension meters (tensiometers). Tensiometers were installed at 6-inch, 12-inch, and 18-inch depths and readings were taken every morning. Data collected from the project was used to develop a brochure, support Alcorn Cooperative Extension activities, and present preliminary results at various state and regional professional meetings. The project supports training limited-resource farmers in sustainable water management.



Alcorn is closely collaborating with the Alliance for Sustainable Agricultural Production Group in Holmes County and the Mid-South Progressive Agricultural Group in Marshall County to train farmers on using scientific-based irrigation scheduling methods. Students majoring in agriculture received field, laboratory, computer, and outreach training in sustainable water management.



Impact Statement

Alcorn researchers have:

Trained approximately 100 farmers how to read and evaluate soil moisture tension meters (tensiometers).

Developed brochures on the operation and maintenance of tensiometers.

Trained students in irrigation management and data analysis and assisted students with preparing presentations for scientific meetings.

Supported travel costs for three students to attend the 71st Professional Agricultural Workers Conference at Tuskegee University, AL. One of the student's, an agronomy major, won third place in the graduate-student poster competition.

What research is needed?

Further research is needed to better understand the spatial and temporal variations of evapotranspiration processes, vegetable water needs and soil water contents in Mississippi. Also, researchers need to assess the perception of irrigation use among small farmers statewide and to translate research to producers on the value of irrigation, water conservation and cost-benefit analysis.

Want to know more?

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Strategic Priority: Agricultural systems; water security

Additional links: <http://www.umes.edu/ard/Default.aspx?id=46285>

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