



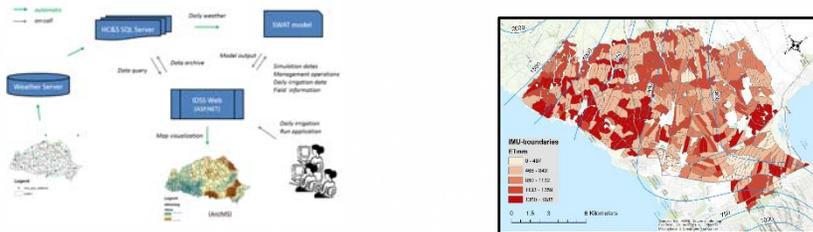
# Jaehak Jeong / Jeff Arnold

ONR Program Officer: Sharon Beermann-Curtin

## Assessment of water and environmental impacts of sugarcane and bioenergy feedstock production in Hawaii

### Description

1. Develop a decision support tool for sugarcane irrigation management
2. Investigate methods to improve irrigation efficiency and feasibility of producing bioenergy feedstock at HC&S
3. Assess water availability and water budget on Maui

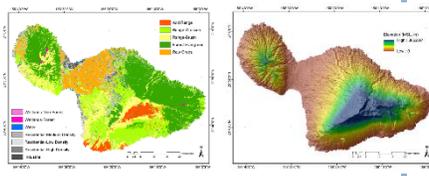


### Key Accomplishments & Findings

1. **Irrigation Decision Support System (IDSS) is developed to improve irrigation management. The technology is transferred to Hawaii Commercial & Sugar Company**
2. Hot spots for substantial improvement in crop productivity and irrigation efficiency are identified in HC&S fields
3. At 5 % water stress level, energy cane is found to be most productive while consuming the least amount of water on Maui compared with Napier grass and sugarcane
4. HC&S uses 80 BGY (Billion Gallon per Year) which claims 13 % of available water on Maui (612 BGY). Fresh water can be harvested mainly on the windward lowland area from groundwater storage

### Tools & Methods

1. A web-based real-time application is developed by linking a real-time mode SWAT to a SQL Server database and Arc-IMS using ASP.net to predict water demand in HC&S sugarcane fields
2. Different water stress levels are tested to optimize irrigation practice
3. Energy cane, Napier grass, and sugarcane are simulated to determine the feasibility of bioenergy feedstock production
4. A SWAT model for the entire Maui island is developed to assess water availability and water budgets



### Project Management Information

1. FY2011-2015 Funding: \$413,670
2. Collaborators: Javier Osorio, Norman Meki, and Younggu Her

Affiliation	Email Address
Texas A&M University	jeongj@tamu.edu
USDA-ARS	Jeff.Arnold@ars.usda.gov