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NATIONAL PEANUT BOARD/SOUTHEAST PEANUT RESEARCH INITIATIVE

QUARTERLY PROGRESS REPORT FOR WORK DONE UNDER RESEARCH AGREEMENT

THE UNIVERSITY OF GEORGIA - QUARTER ENDING DECEMBER 31, 2007

PROJECT TITLE : DEVELOPMENT OF A WEB-BASED IRRIGATION SCHEDULER BASED ON LOCAL WEATHER INFORMATION

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Objective

The overall goal of this project is to improve irrigation efficiency of peanut production systems using local weather information.

Progress

Web-based irrigation scheduler

The irrigation scheduler calculates the daily water balance based on a checkbox approach. The web-based tool includes a feature that shows the daily water balance status in tabular and graphical form. The system automatically retrieves local weather data from the Georgia Automated Environmental Monitoring Network (AEMN) based on the location of the farmer's field, and uses the data to determine the water requirements of a particular crop.

The scheduler features an editable calendar (Figure 1) where a user can set the initial soil moisture content at planting or anytime during the growing season. On this page, the user will first notice a calendar set up in a monthly fashion. The color-coded calendar provides a convenient way of showing the daily soil moisture status allowing the user to decide when to irrigate.

One major challenge in designing the web application is that the system must be able to handle variable starting dates for which water balance calculations and soil moisture levels will be based on. We found a few problems in the initial design of the database that stored the data, after we added the editable calendar. Our initial database only stored weather data from a few stations. The system became slower as we increased the number of available stations and the corresponding weather data in the database. For the past quarter, a computer programmer worked on the database structure and file handling operations. It was determined that it was faster to retrieve the data from text files instead of creating a data table for each year of data. All corresponding water balance calculations are stored in temporary data tables that can be retrieved faster during a session when a user accessed the web application. We will continue to find ways to increase efficiency and allow the system to handle concurrent sessions.

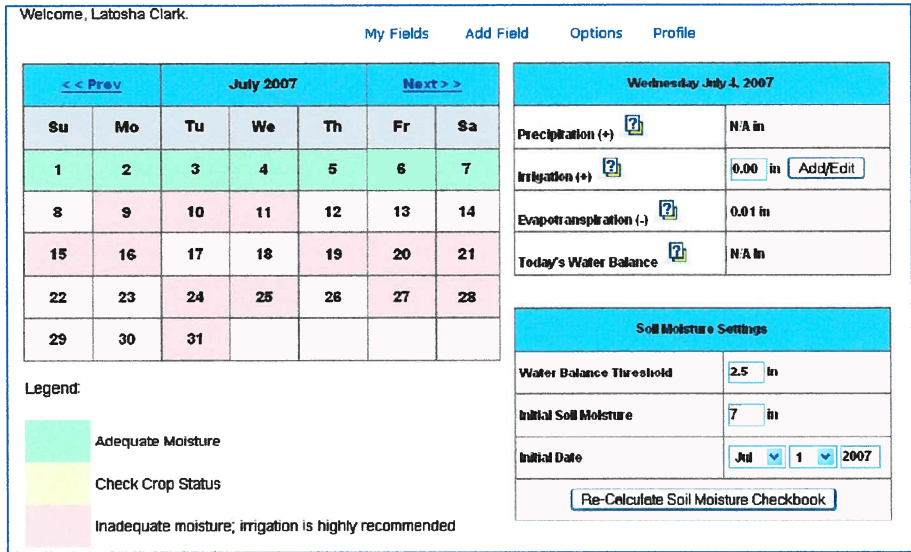


Figure 1. The color-coded calendar of the irrigation scheduler shows the water balance and soil moisture status of a sample field.