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Design of an Irrigation Scheduling Tool for the Mississippi Delta

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Abstract:

Unlike other areas of the South, Mississippi enjoys plentiful ground water resources and rainfall in excess of 40in. per year. In the past, dry land agriculture has been profitable in the region, but row crop producers are becoming increasingly reliant on supplemental irrigation to ensure adequate yields and reduce risks of production. Increasing use of ground water throughout the Mississippi Delta has begun to deplete the aquifer. The challenge for agriculture in the region is to manage water resources appropriately, and provide sufficient water for crop production during droughty periods that occur during the growing season. However, no irrigation scheduling guidelines are available for crops under the humid growing conditions of the region. The goal of our research is the development of an accurate, easy to use irrigation scheduling tool and its delivery to producers. A critical measure of the success of production tools is the extent of their adoption. Education and economic benefits enhance the adoption of technology, and hence are being incorporated into the initial design and delivery of the system. Equally important to adoption of new technology is its ease of use. To this end, we are exploring interfaces that are intuitive to use, rely on seamless data transfer, and require minimal end-user inputs. Because the robustness of any model depends on the accuracy of the data used, we are exploring alternative data sources that will allow greater accessibility while maintaining an acceptable level of accuracy. Automated downloading and seamless integration of data, such as weather data, will improve usability and reduce the work load of the end user. The design of the scheduling tool and the supporting infrastructure for its delivery will be presented.

Impact Statement:

The output of this research will be an accurate, easy to use irrigation scheduling tool for use by producers in the humid Mid-South. The system will improve water use by providing guidelines for timely and accurate irrigation applications for various crop systems and through enhanced adoption of scheduling and application guidelines. To complete this project and transfer the technology to producers, ARS scientists have developed collaborations with University and Extension scientists, NRCS, and Industry personnel.

Category: Conservation and Resource Management
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