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Project Title.

Improving Irrigation Water and Energy Use Efficiency through Accurate Spatial and Temporal Management

Abstract.

State of the art technologies for irrigation provide producers the ability to vary water application rates across center-pivot irrigated fields to address spatial variability. Research aimed at developing management strategies to reduce crop water use while maximizing crop productivity has been identified as a critical need for the future use of these systems.

The overall goal of this project is to build on the information gained from the WEAI – Phase 1 project entitled *Optimization of Irrigation Efficiency of Center-Pivot Systems using Spatial and Temporal Data Integration* and to develop a decision support system for site-specific irrigation using multiple spatial data layers. This will be accomplished by collecting and analyzing spatial data (terrain, soil property, climatic, irrigation, yield data, etc.) to determine which data layers would be most useful in determining irrigation application rates across the landscape.

The project team will also simulate the performance of pivots in the field to predict the spatial variability of soil water and crop yields. The team will include strategies in the decision support system to contemplate electrical load management impacts during peak electric demand periods and to develop strategies to minimize the impact of electrical load management.

Results of this project will contribute to an improved decision support system that producers will be able to use for irrigation scheduling. Findings from the project will be distributed through UNL Extension circulars, as well as workshops and web-based programs. A recently completed handbook on center pivot management will also be updated to include research findings from the project.

Co-Investigators.

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