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Improving the Efficiency of Water and Energy Use in Nebraska's Irrigation Soybean Production Systems

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Water, Energy and Agriculture Initiative

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ABSTRACT. The use of irrigation in Nebraska's soybean production systems has steadily increased to the extent that irrigated soybean acreage in recent years has accounts for about 45% of State total soybean acreage. Technological advances in irrigation equipment can greatly improve on-farm water application efficiencies (with respect to both energy and water). However, producer adoption of these advances is very slow because of the capital expenditures required for irrigation system upgrades. An alternative approach is greater producer adoption and use of irrigation water management strategies that ensure that water is scheduled and applied in a *just-in-time* fashion, which also optimizes water and energy use efficiency. However, producer adoption of crop irrigation scheduling (IS) methods has also been slow, mainly because of the huge personal time commitment that is generally required to generate the daily updates in a soil water balance sheet, and each field in the farm enterprise requires the creation and daily update of a separate sheet. The only apparent solution to this problem is to create internet-accessible websites that are capable of quickly outputting IS-based water balance sheets that the producer simply view or print out. Relieving the producer from a daily focus on generating multiple field-specific daily water balance sheets would likely increase producer adoption of IS methods, simply because producer could now focus instead examining those sheets to determine what specific fields should be irrigated today. The goal of the activities proposed in this project is to provide the Nebraska producer with the means to accomplish that shift in focus.

The Water, Energy and Agriculture Initiative funds research to maximize the efficiency with which water and energy resources are used to sustain economic development and water conservation in Nebraska agriculture.

The Nebraska Center for Energy Sciences Research administers the initiative, which was created in 2008 through a partnership of the center, the Nebraska Public Power District, the Nebraska Corn Board, the Nebraska Soybean Board and UNL's Agricultural Research Division