



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2003KS31B

Title: Reduced Irrigation Allocations in Kansas from Grain Yield -- ET Relationships and Decision Support Model

Project Type: Research

Focus Categories: Irrigation, Water Use

Keywords: Irrigation, water allocation, decision support

Start Date: 03/01/2003

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Federal Funds: \$16,800

Non-Federal Matching Funds: \$42,723

Congressional District: 2nd District

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Abstract

Many irrigators in Kansas are facing immediate challenges with declining water yields from their wells. Estimates have been made that 30-50 % of irrigation wells in western Kansas are pumping below original capacity. Irrigators in Kansas also face the possibility of shrinking water allocations with changes in water policy or simply enforcement of current water policy. Any of these scenarios will mean more limited irrigation than has been used in the past.

To make these reductions in water use, irrigators will need to consider shifts in cropping patterns. Irrigators who have shrinking water supplies need to know what cropping combinations to select and in what proportions for best water use and profitability. Not every combination of every cropping pattern that an irrigator dreams up can be examined

experimentally with research. An agronomic/economic model is needed to predict results for an individual irrigator's situation.

Nature, Scope, and Objectives

This project is designed to deliver a tool to irrigators for making decisions about allocating scarce water on their land and among their crops. An irrigator's questions might be:

"I have a limited amount of water, should I put it all on one crop or on two or three crops, how much acreage in each crop, and how much water on each crop?"

"I have a limited amount of water, should I use deficit irrigation on all of my cropped land or should I try to meet the full irrigation needs of my crops on less land?"

The answers to these questions are not straightforward and have many economic and policy-based implications. In order to help agricultural irrigators with these questions and to improve on their beneficial use of our limited water resources, the following objectives have been developed:

1. Develop a computerized tool for irrigators to assist in their decisions regarding the best use of limited water supplies or reduced water allocations.
2. Update irrigation and grain yield relationships for corn, wheat, soybean, grain sorghum, and sunflower crops using current varieties and no-till management to support the continued implementation of the decision tool.