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Evaluation of Policy Options Aimed at Achieving a Reduction in Groundwater Consumption in Western Kansas

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Abstract Text:

In order to reduce water consumption and extend the economic life of the Ogallala aquifer two policy alternatives are often considered: cost-share programs aimed at increasing irrigation efficiency through the adoption of more efficient irrigation technology and policies that permanently or temporally retire water rights. In order to avoid unintended consequences and make informed choices, policy makers and stakeholders in Kansas need scientifically based information on water savings, costs and benefits, and regional economic impacts associated with these policies.

This research has three primary objectives. 1) Quantify and explain the change in water-use following the adoption of new technology, funded by the current cost share program. This will make it possible to compute the reduction in the gross amount of water pumped per dollar of taxpayer expenditure on cost share programs. 2) Identify and quantify the impact of the factors determining water consumption and the value of water, and estimate hedonic land/water valuation models. These procedures will allow the estimation of the minimum Conservation Reserve Enhancement Program (CREP) payment required to insure program participation. 3) Identify companion policies necessary to insure these water conservation policies avoid unintended consequences.

This research suggests that the adoption of efficient irrigation technology provides financial benefits to the producer but, in all likelihood, will not reduce groundwater consumption. After adoption, producers tend to use the 'saved' water to increase yield, produce more water intensive crops, or increase total acres. The state expended $2.7 million in taxpayer dollars and did not achieve a significant reduction in groundwater usage. Focus group responses indicate that this unintended consequence could have been avoided if a regulation limiting water use to historic levels had accompanied the cost share contract.

The research suggests that the value of water rights depends on the historical water-use, spatial location, soil quality, and irrigation technology; but does not currently depend on the seniority level of the water right. The fair market value varies from approximately $300 per acre to $1100 per acre. Focus group responses indicate, due to the common pool nature of the aquifer, that water rights buyout programs may have the unintended consequence of not reducing groundwater consumption.

Impact Statement:

The State has incorporated and cited this research in their revised CREP proposal to the USDA, in their explanation for discontinuing the cost-share program, and requested portions of this research be entered as expert testimony.