



2008 USDA-CSREES National Water Conference
Sparks, NV

Land Value Premiums for Effective Irrigation Retirement Programs: Phase I: Mapping Land Sales and Modeling the Determinants of Sale Prices

Steven Shultz and Nick Schmitz

Abstract Text:

This research summarizes the successful completion of the first phase of a USDA-NRI (Water and Watersheds) funded project titled: 'Land Value Premiums for Effective Irrigation Retirement Programs'

The value of irrigation in the Republican River Watershed of Nebraska has been quantified using a Geographic Information System (GIS) parcel-level cropland sales database from 2000 to 2005 (1,100 sales of which almost half are irrigated). Sale parcels were mapped based on legal descriptions of sales from the State property transaction database and satellite imagery.

A hedonic valuation model has been estimated under the assumption that the buyers and sellers of agricultural land are able to accurately assess the value of irrigation when negotiating sale contract prices and that irrigation equipment can be distinguished from land and irrigation values.

Alternative model specifications were estimated using various combinations of explanatory variables (all measured at the parcel level of analysis). These include: soil productivity measures, topography precipitation, parcel size, cropping patterns, topography, aquifer thickness, well pumping capacity, distances to elevators and towns, and irrigation systems.

Our final model explains the variation in agricultural land sale prices across the watershed with an R2 value of 0.74, and 99% of the explanatory variables are statistically significant.

The value of irrigated cropland across the watershed is on average \$615/acre (this is the value of irrigated cropland only and does not include the value dryland corners within pivot systems). As well, there are numerous areas and site-specific parcels within the watershed with both lower and higher irrigation values. In fact, we have calculated irrigation values for all of the NRD's and the QRQ areas in the Republican watershed: they range from \$488/acre to \$948/acre. These estimates are still considered 'preliminary' and may be subject to revision.

Impact Statement:

This geo-spatial approach to valuing the contribution of irrigation to agricultural land values information is considered essential to the longer term goal of quantifying the price premiums received by landowners in the Republican Watershed of Nebraska in June of 2006 to retire 2400 acres of irrigation rights. This in turn will allow the State of Nebraska to design cost-effective irrigation retirement strategies that are required for the state to increase water transfers to the State of Kansas.