

Update on the Economic Impact of the Sheridan #6 LEMA

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Kansas Water Office



Governor's Ogallala Aquifer Initiative #2

2. Support legislation to provide a process for proactive conservation plans (called Local Enhancement Management Plans, or LEMAs).

LEMAs are to be:

- Proactive
- Supported by the Groundwater Management District (GMD)
- Have corrective measures that address conservation needs
- May include mandatory water use reductions; and
- Approved by the Chief Engineer

LEMAs

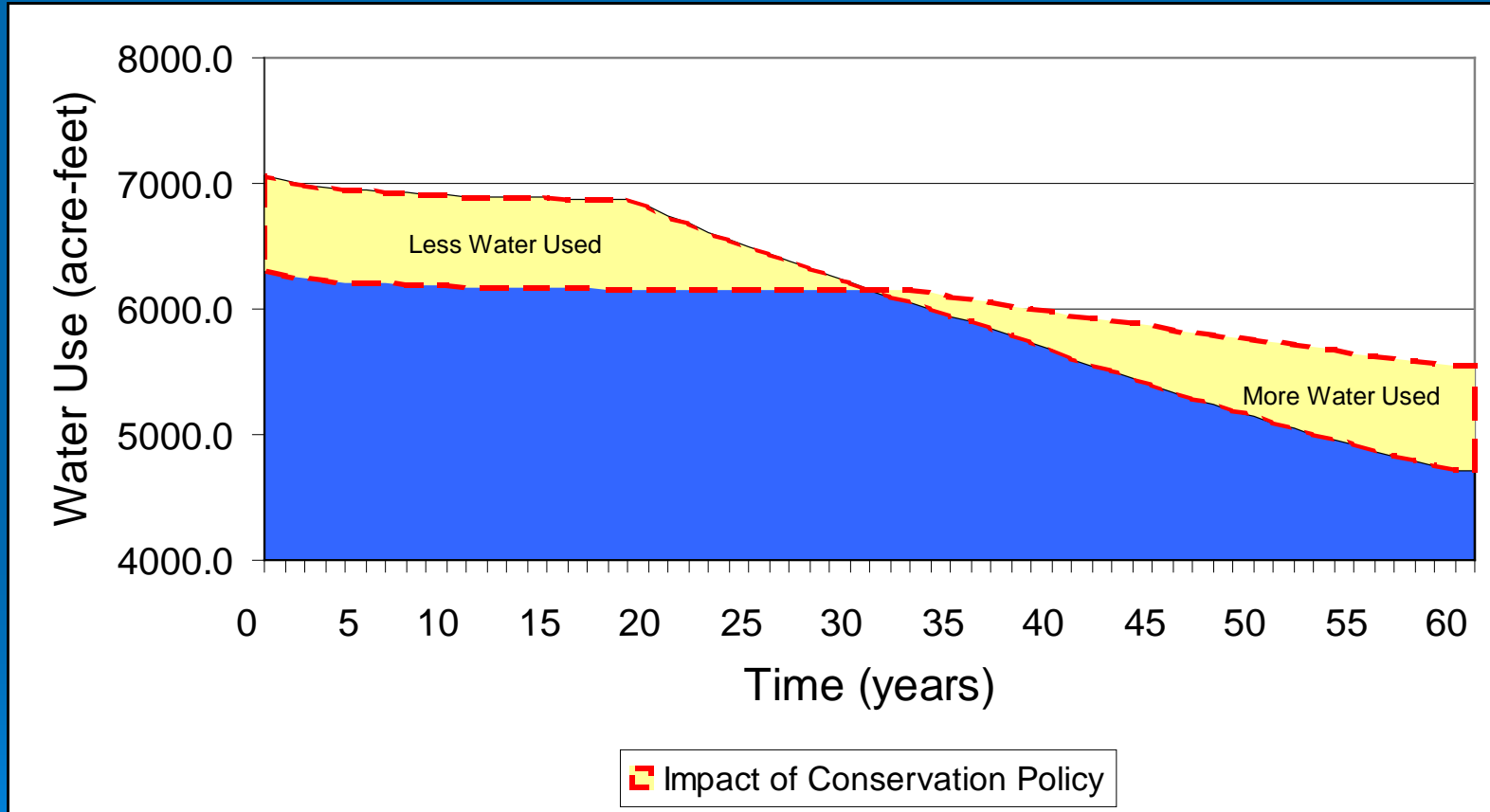
- LEMA's are initiated by local producers – but after enactment carry the weight of law
- LEMA's are voluntary
- LEMA's set their own rules
- LEMA's are reversible
- Sheridan #6: 5 year 55" allocation => about a 20% reduction

Big Question

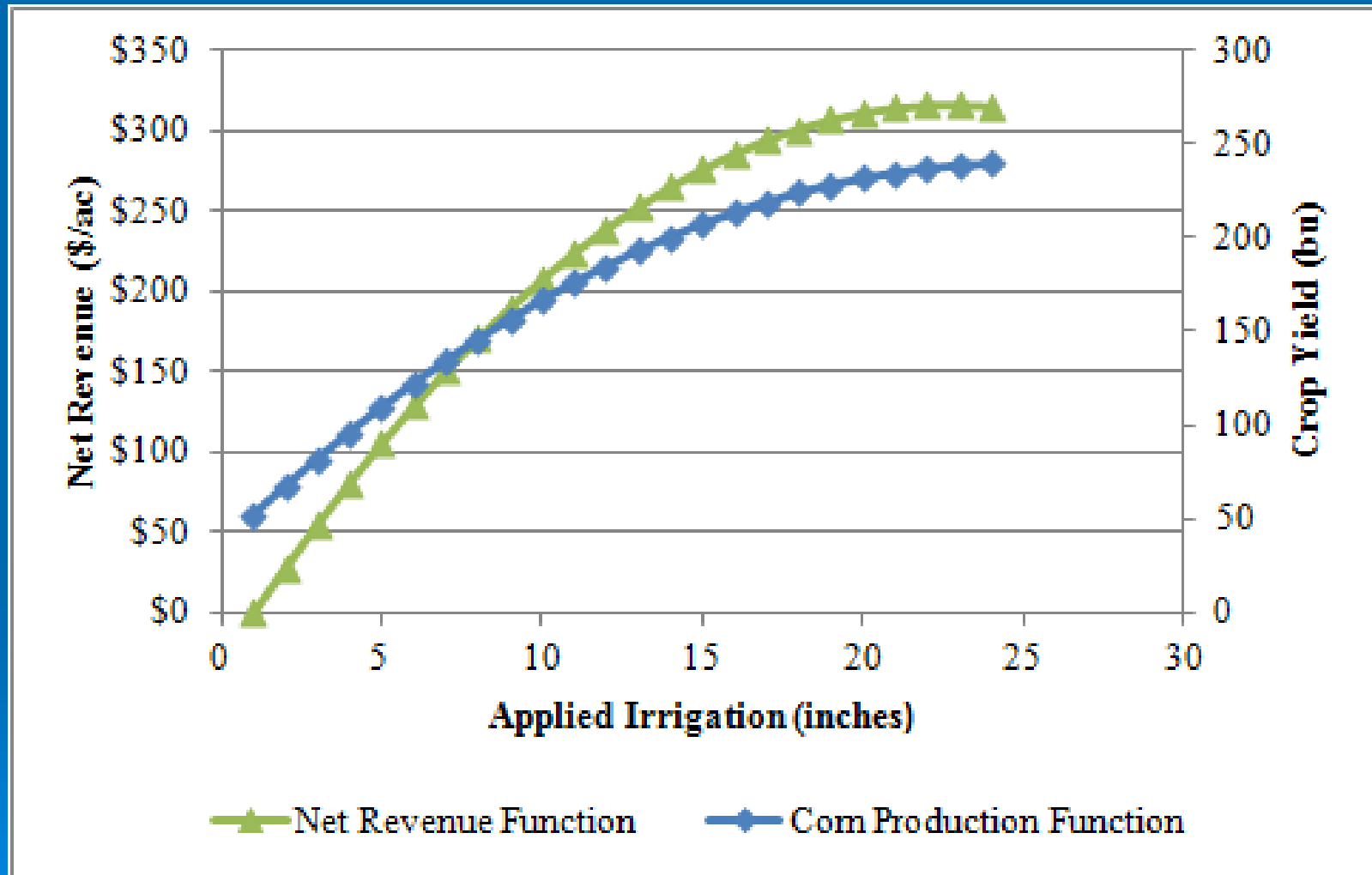
- What happens to the economy as we reduce groundwater usage?
- Past evidence is not consistent !!!



Conventional Water Use Constraint



What We Think We Know

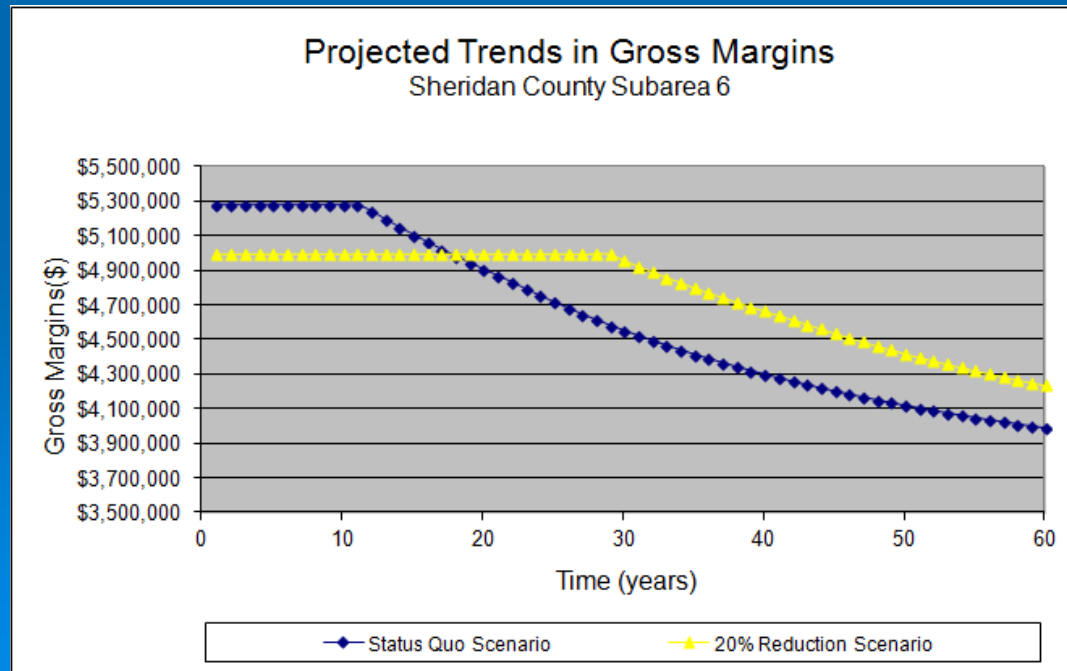


Example from Southwest Kansas. Both curves exhibit diminishing marginal returns to applied groundwater. Curves vary by crop, location, precipitation, and time

Future Projections for Sheridan #6 LEMA

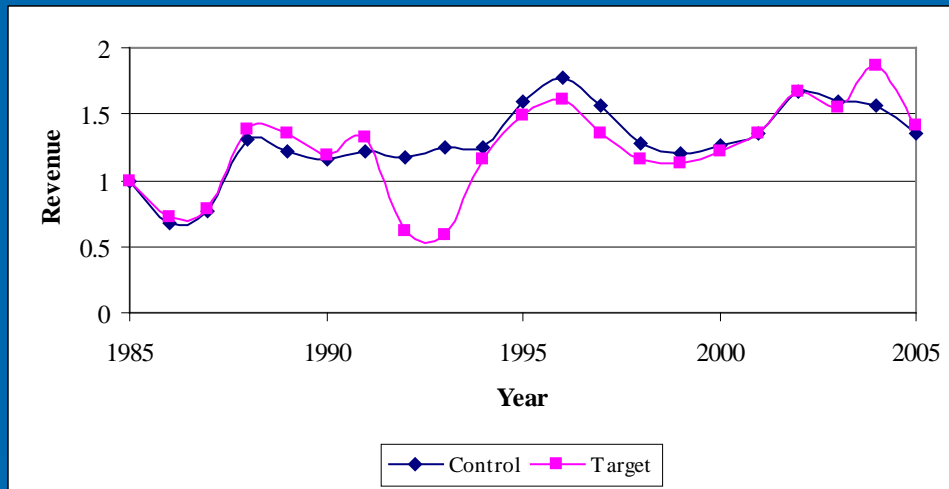
➤ 20% Reduction by Limiting Water Use

Discount			
Rate	Status Quo	20% Reduction	Difference
-5.00%	\$1,776,655,690	\$1,884,890,069	\$108,234,379
-2.50%	\$633,322,787	\$664,525,199	\$31,202,412
0.00%	\$277,433,415	\$286,059,253	\$8,625,838
2.50%	\$148,725,231	\$150,258,264	\$1,533,032
5.00%	\$93,979,870	\$93,204,691	-\$775,180



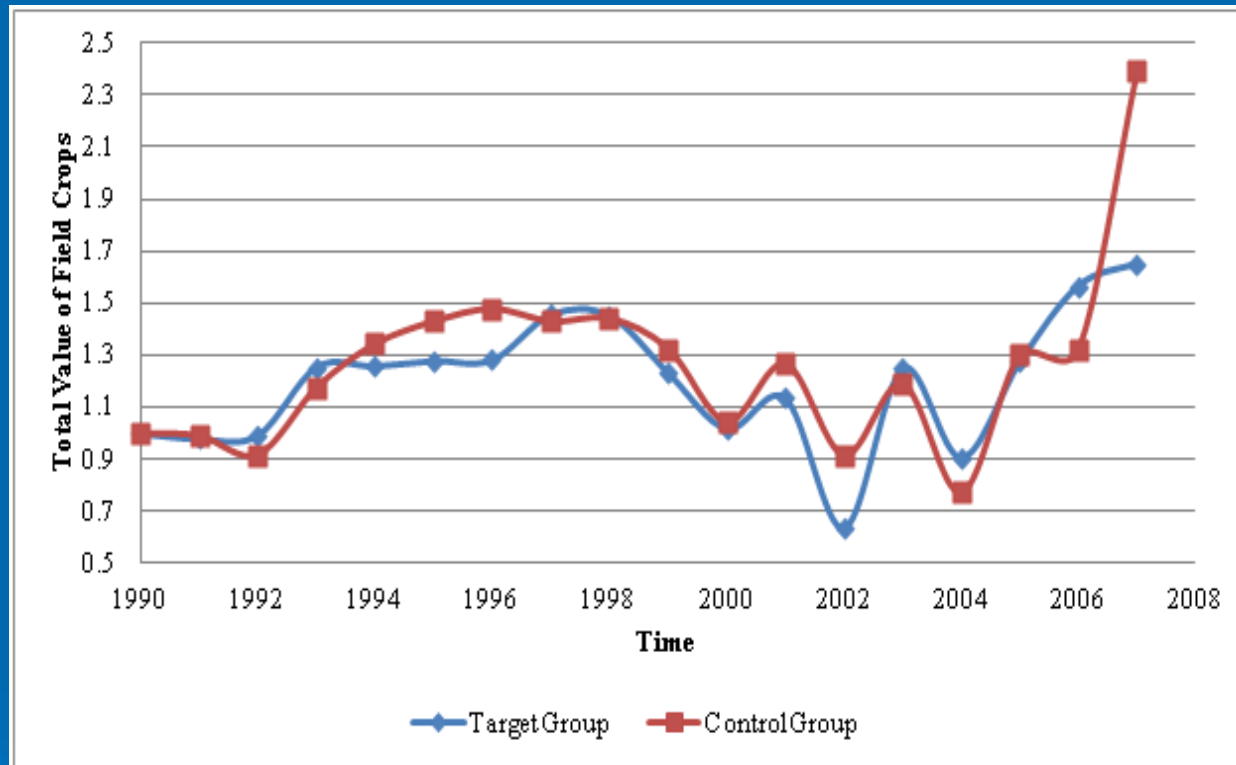
What We Have Observed: Wet Walnut Creek IGUCA: Irrigated Crop Revenue

Figure 6. Time Series Comparison of the Indexed Values of Irrigated Crop Revenue



- Statistically significant short-run and a statistically insignificant long-run reduction in annual irrigated crop revenue.

Total Value of All Crops

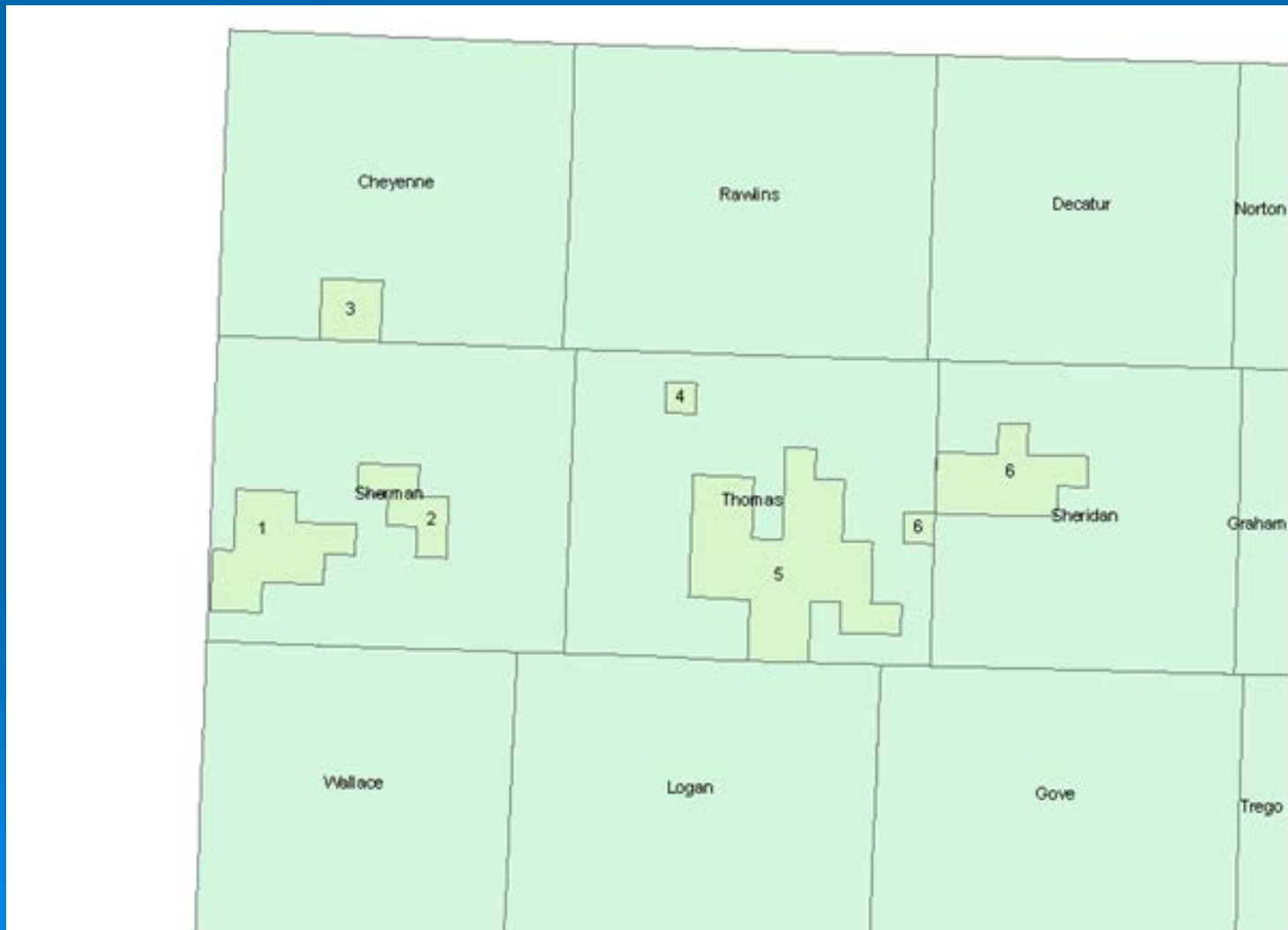


- No statistically significant reduction in the annual total value of all crops.

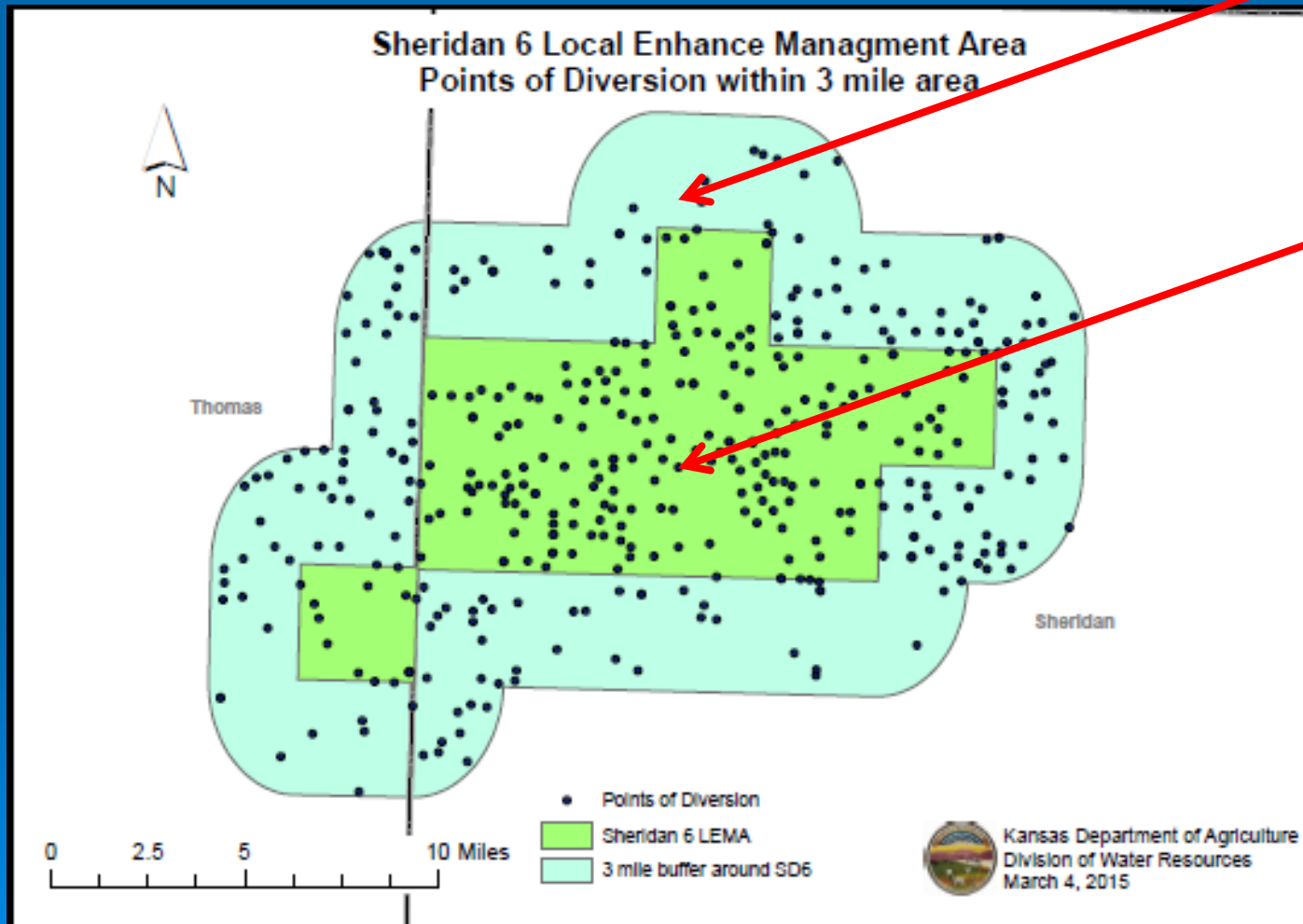
Since the Evidence is Not Consistent

- We need to monitor irrigated acreage and water use in LEMA #6 in real time. Will producers:
 - Shift acres to dryland production
 - Maintain crop mix and reduce water use per acre
 - Shift to crops that require less water
- What are the economic consequences of these changes

Sheridan #6 LEMA

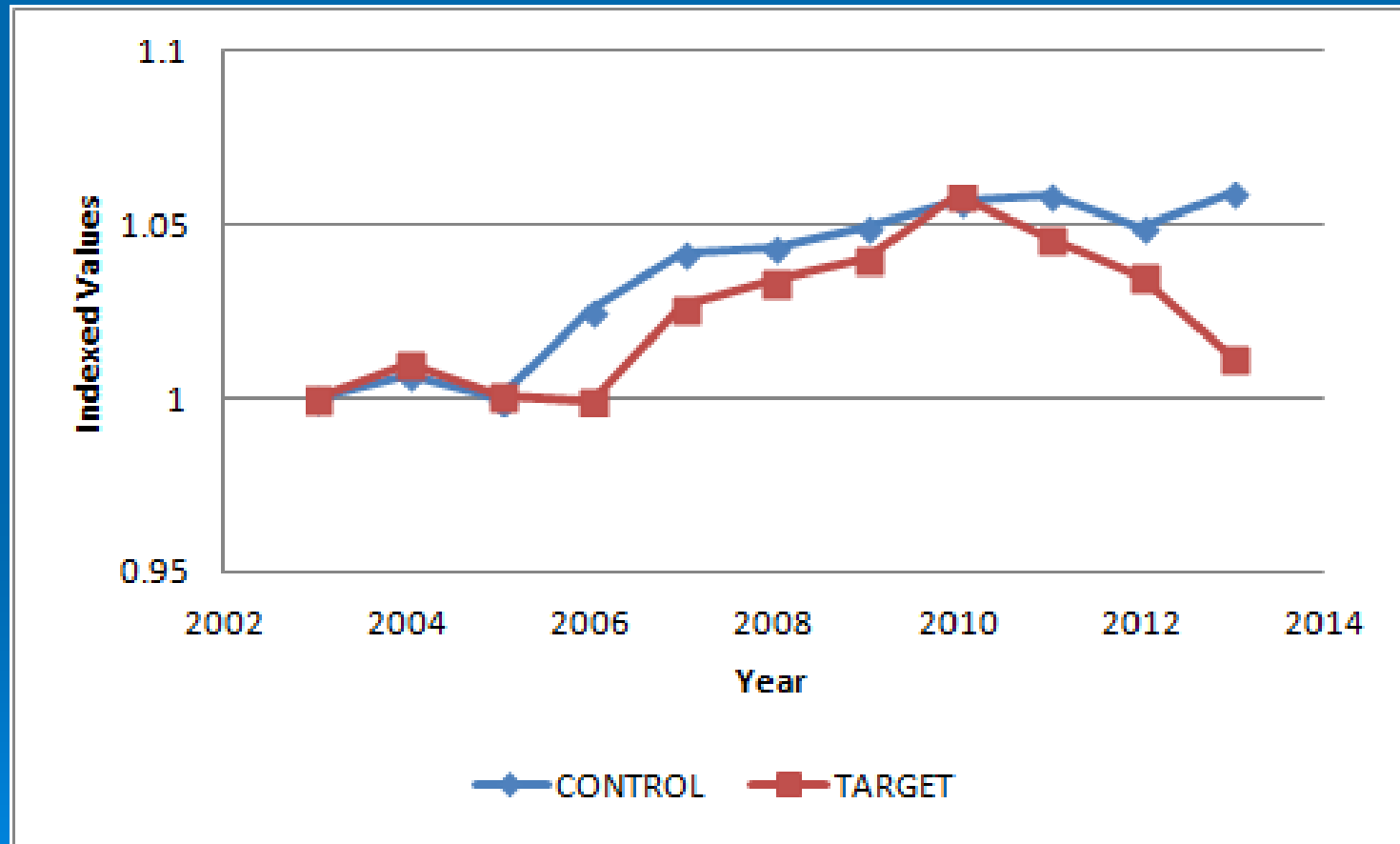


Sheridan #6 LEMA



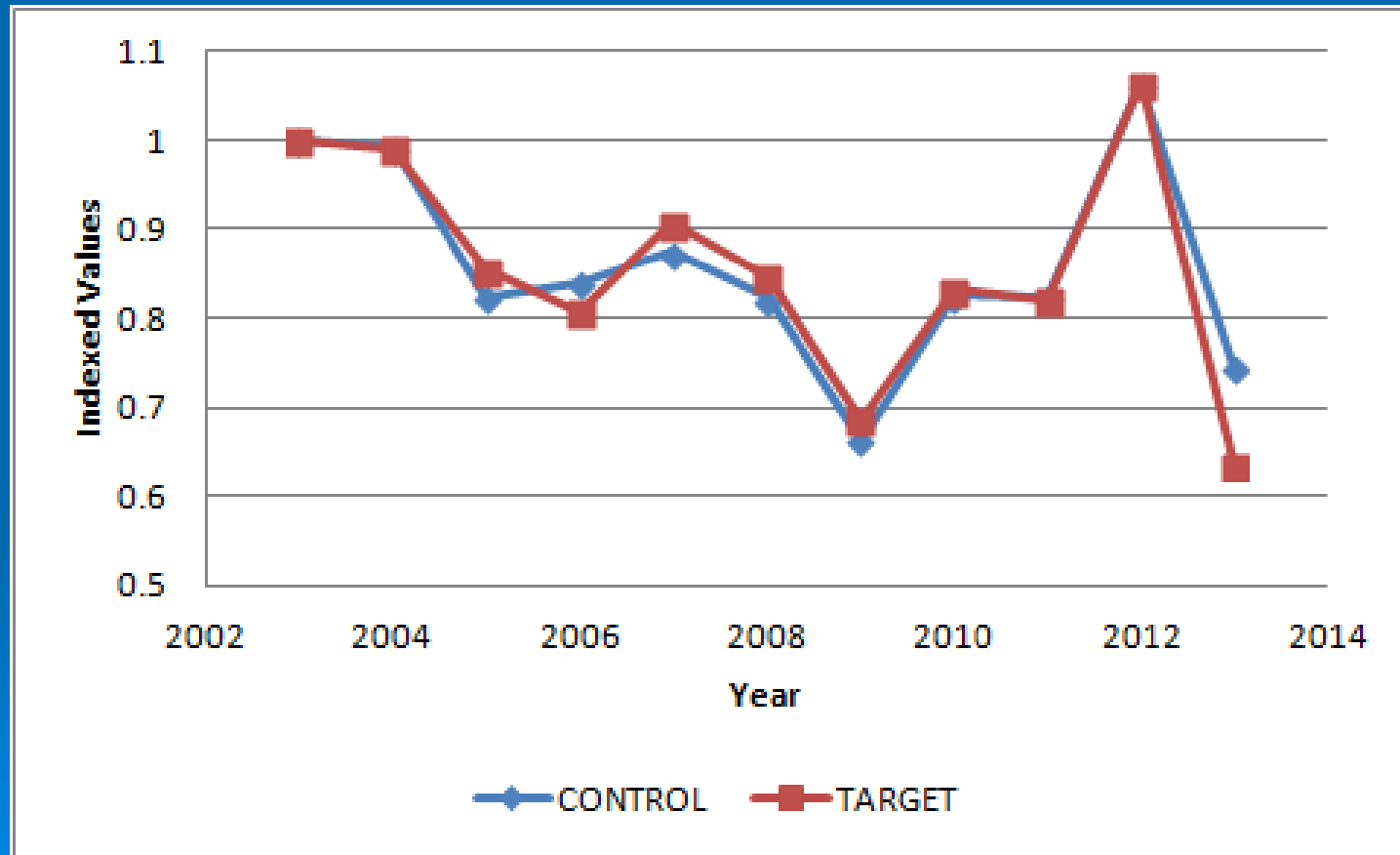
Preliminary 2013 Results

Total Irrigated Acreage (all crops)



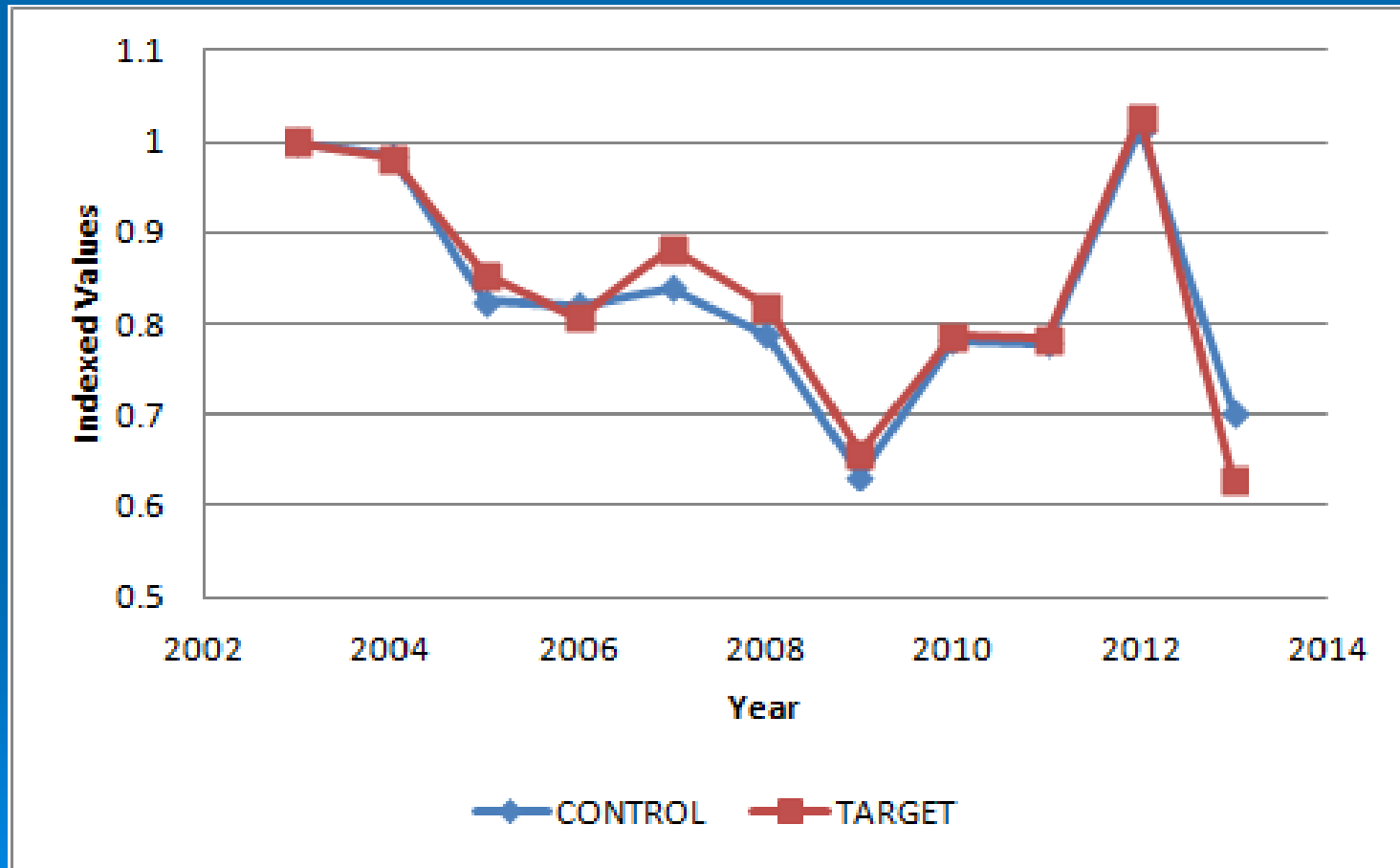
Preliminary 2013 Results

Total Water Use (all crops)



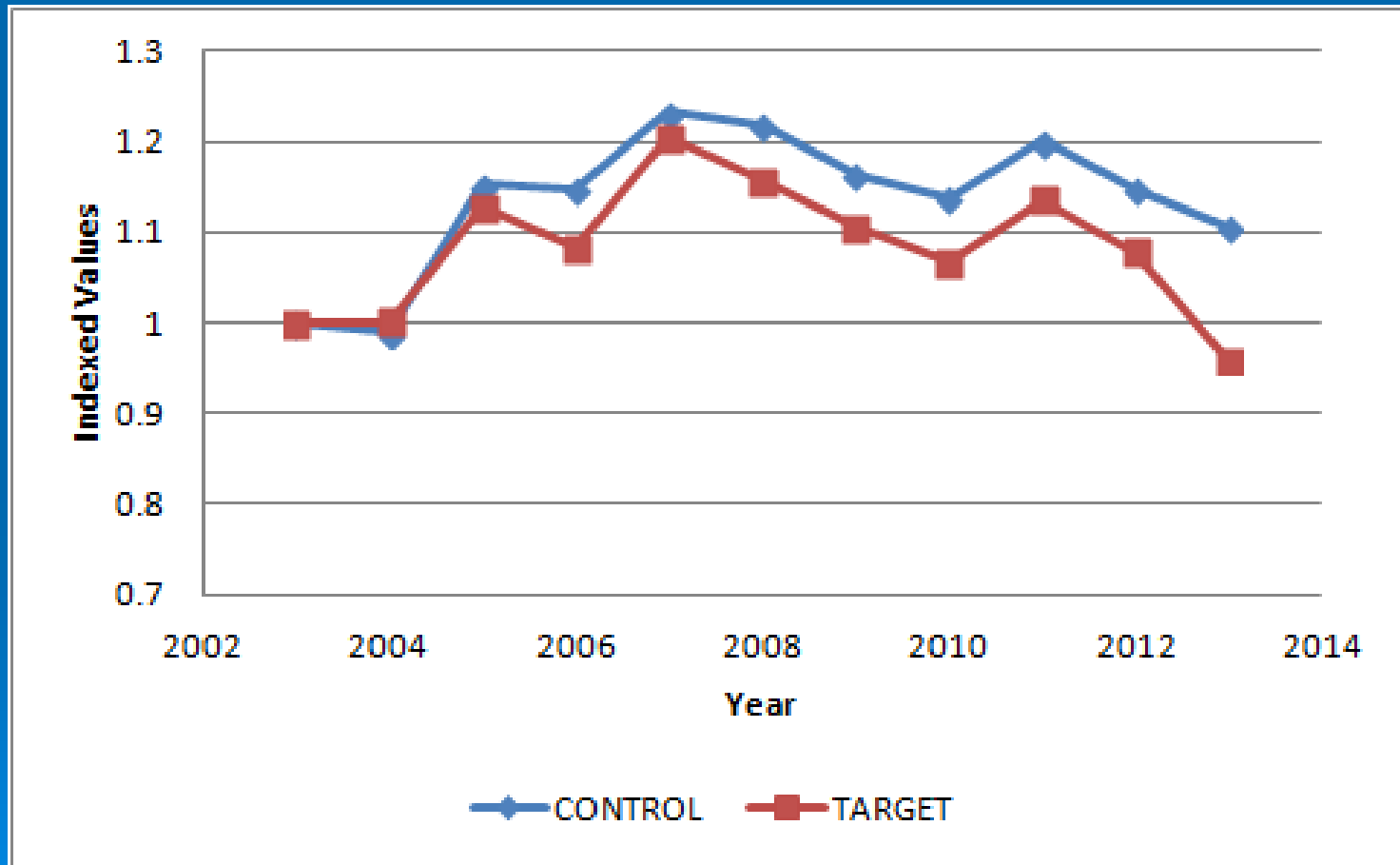
Preliminary 2013 Results

Average Water Use per Acre (all crops)



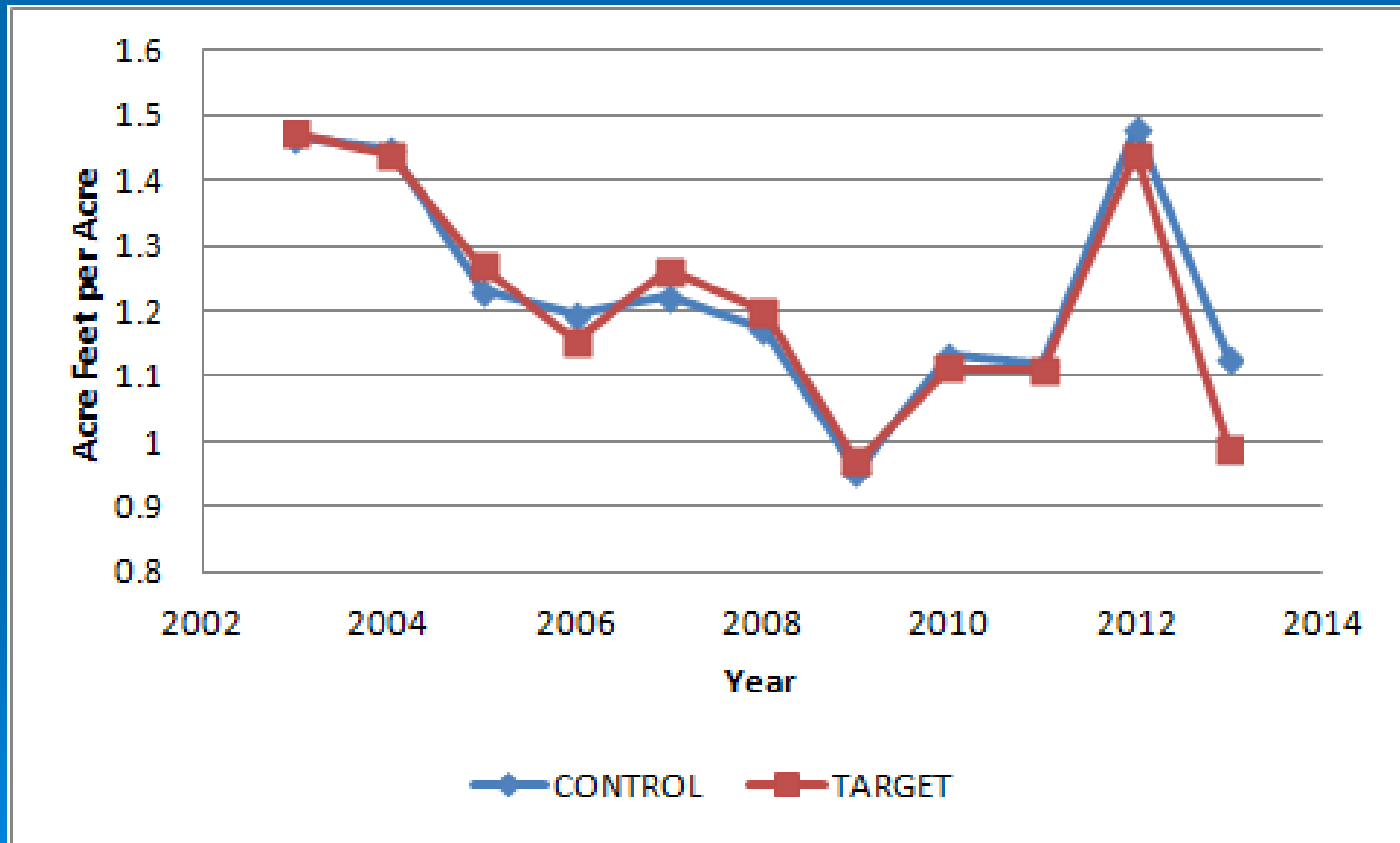
Preliminary 2013 Results

Total Irrigated Corn Acreage



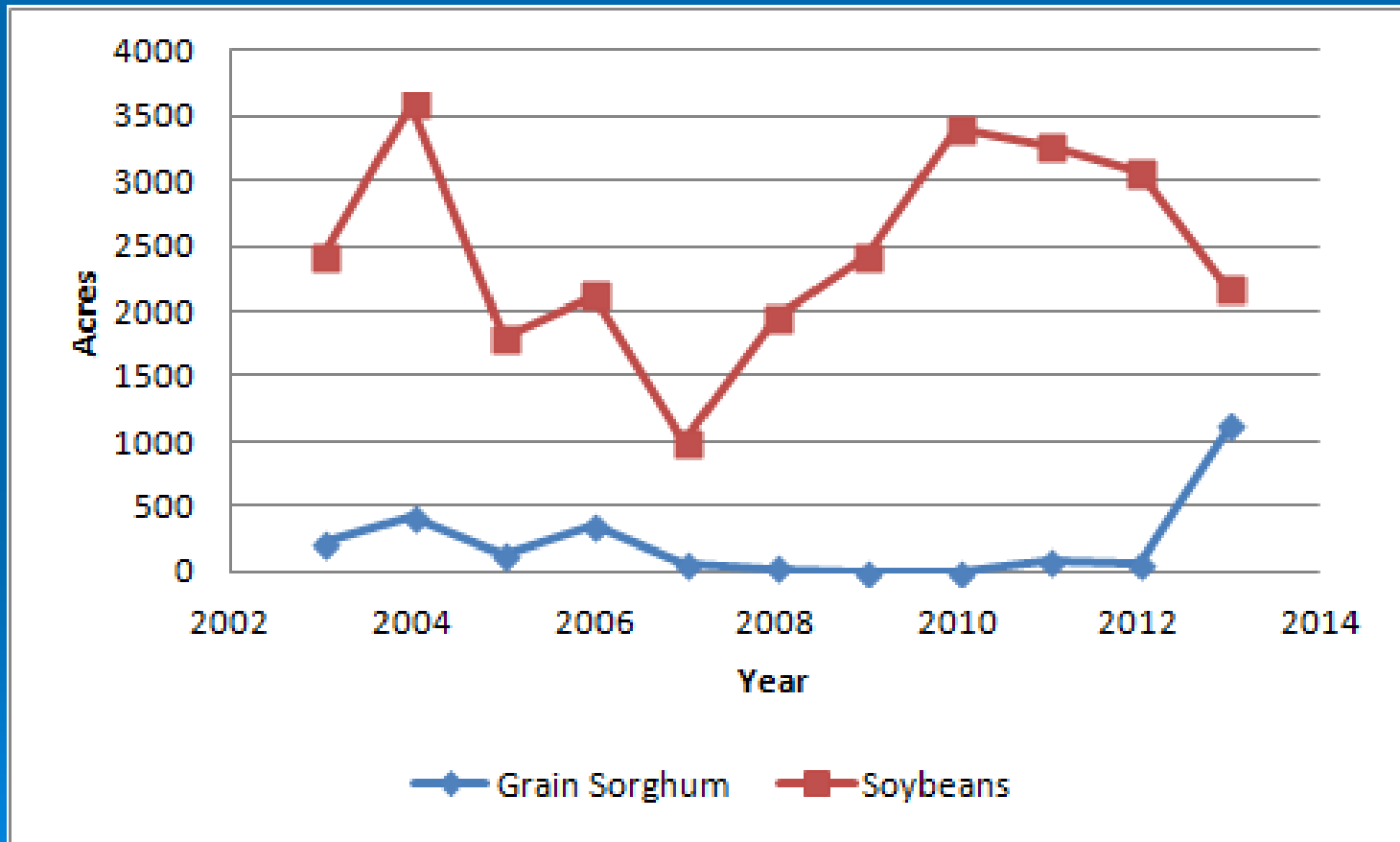
Preliminary 2013 Results

Irrigated Corn Acreage Water Use



Preliminary 2013 Results

Sorghum and Soybean Acres Within the Target Area



Very Preliminary 2013 Economic Results

Item	Water Use (in/ac)	Yield (bu/ac)	Cash Flow (\$/ac)	Cash Flow (\$/in)
Corn Weighted Average - Inside LEMA	10.7	194.0	\$463	\$43
Corn Weighted Average - Outside LEMA	13.2	197.0	\$476	\$36
Sorghum Weighted Average - Inside LEMA	4.1	152	\$446	\$110

- Cash Flow = Revenue less variable expenses
- Not all 2013 data has been received from producers
- There was no irrigated sorghum reported outside the LEMA boundary

Questions

