Producer Reactions to the Sheridan County 6 Local Enhanced Management Area

Report for 2013 – 2016

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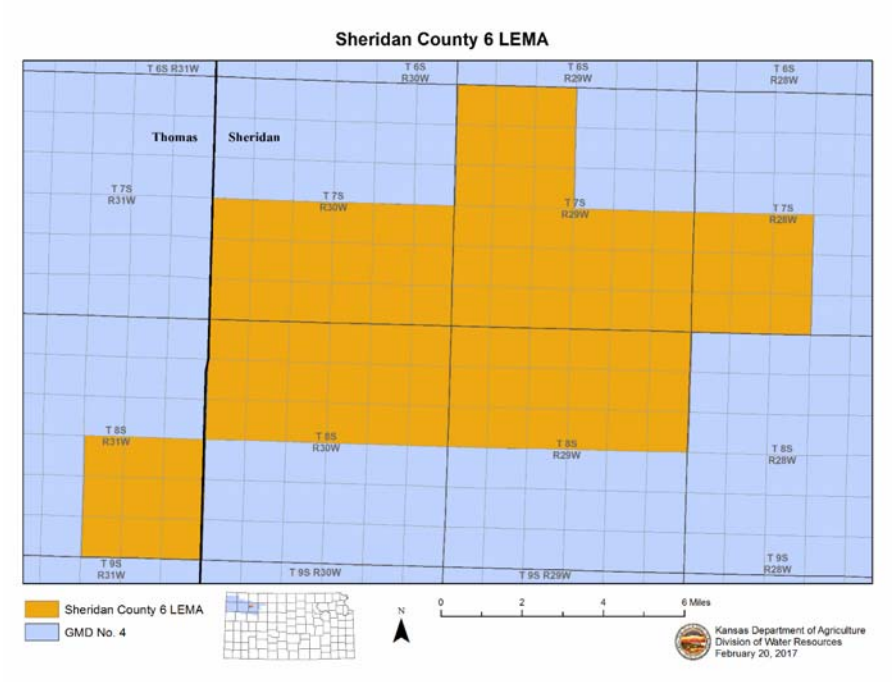
Sheridan County #6 LEMA



LEMAs

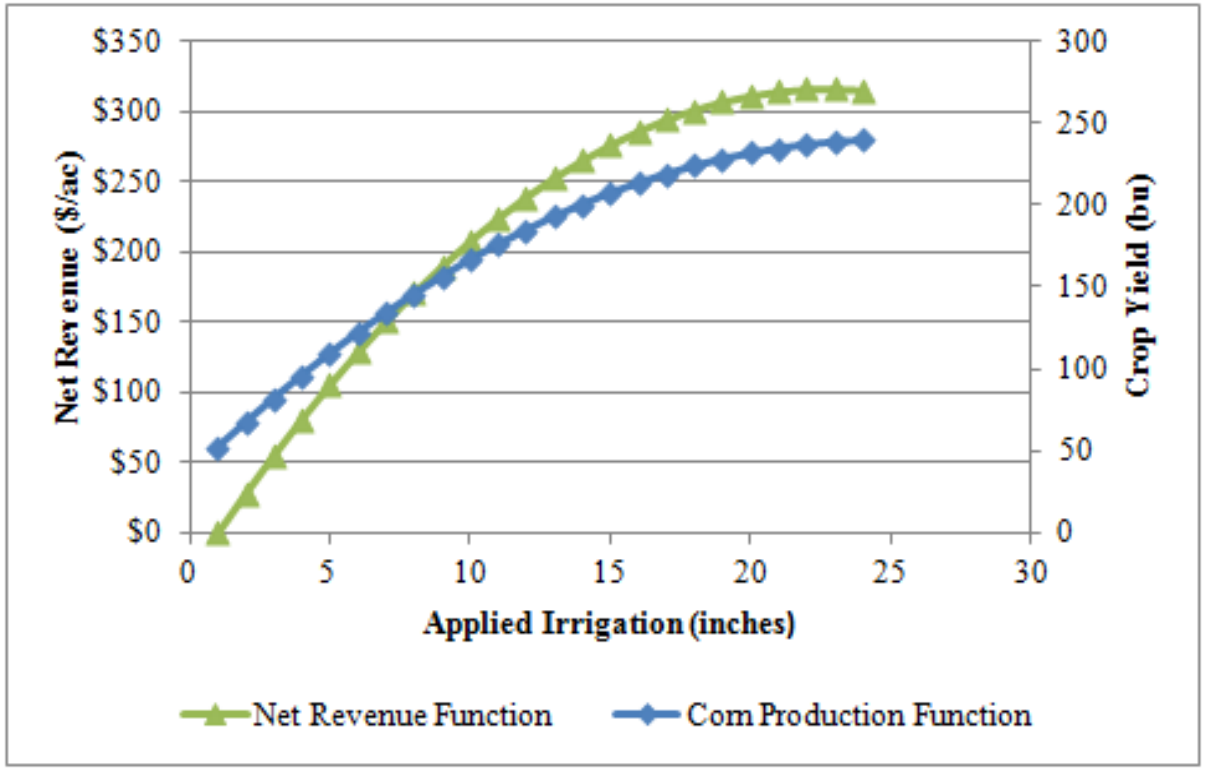
- LEMA's are structured to reduce groundwater consumption in order to extend the life of the Ogallala Aquifer
- LEMA's are initiated by local producers – but after enactment carry the weight of law
- LEMA's set their own rules
- LEMA's are reversible
- Sheridan #6: 5 year 55" allocation => about a 20% reduction

Big Question

- What happens to producer cropping practices and income as we reduce groundwater usage?

- Past evidence is not consistent !!!

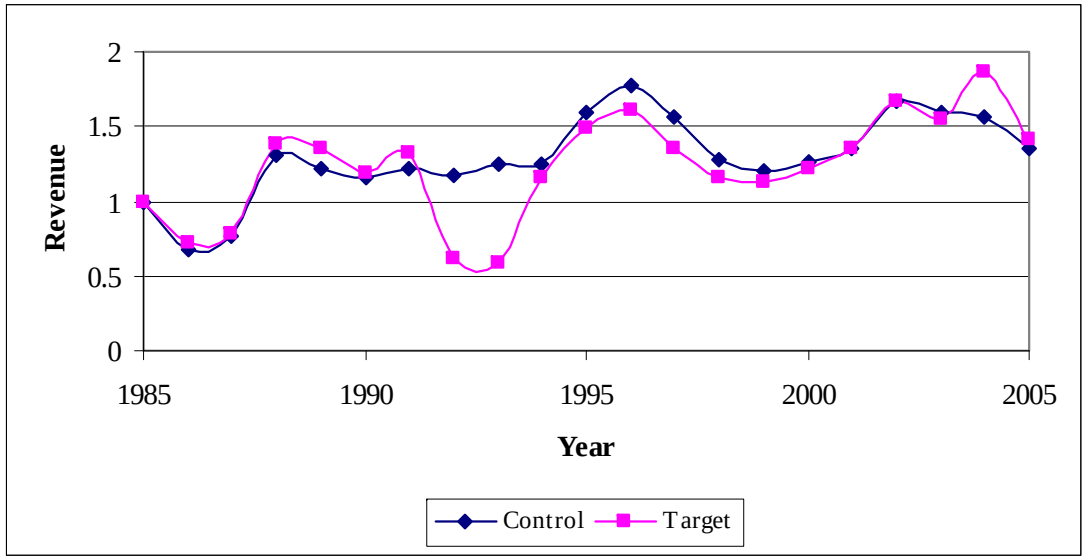
What We Think We Know



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

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.

Since the Evidence is Not Consistent

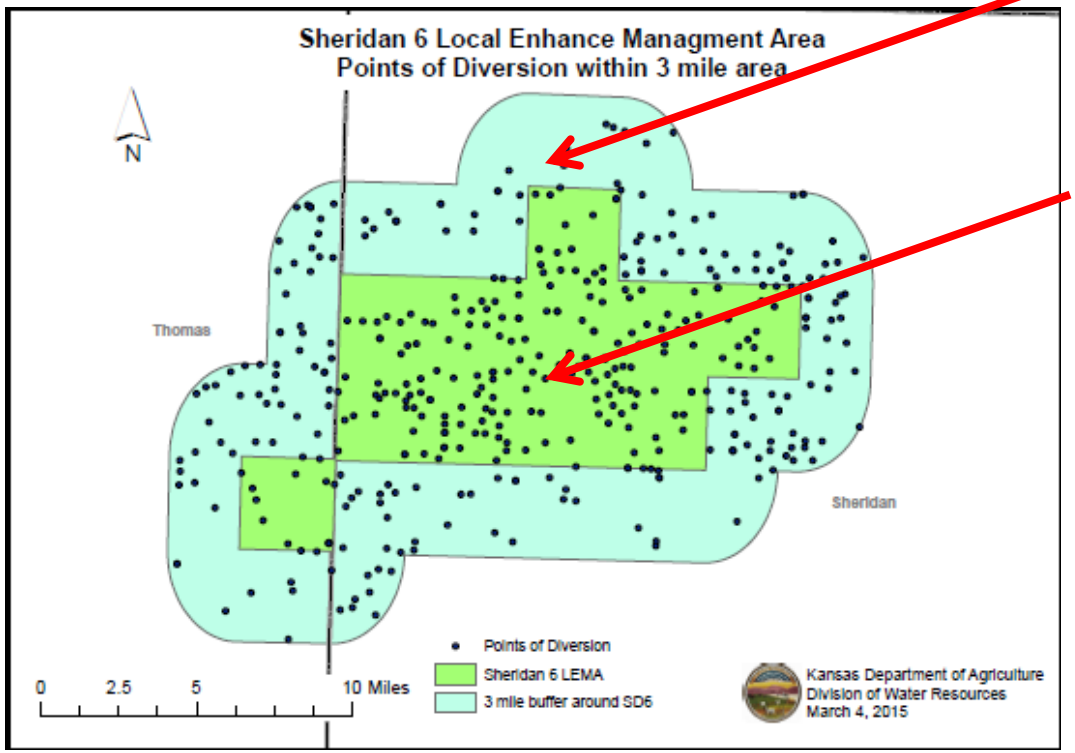
- We need to monitor irrigated acreage and water use in Sheridan #6 LEMA in real time. Will producers:
    - Shift acres to dryland production
    - Maintain crop mix and reduce water use per acre
    - Shift to crops that require less water
- What are the economic consequences of these changes

Research Question

- How did the production decisions the producers inside the LEMA made, compare to the production decisions the producers outside the LEMA made

- This is a 5 year study. We have 5 years of data. We may continue this research for another year.

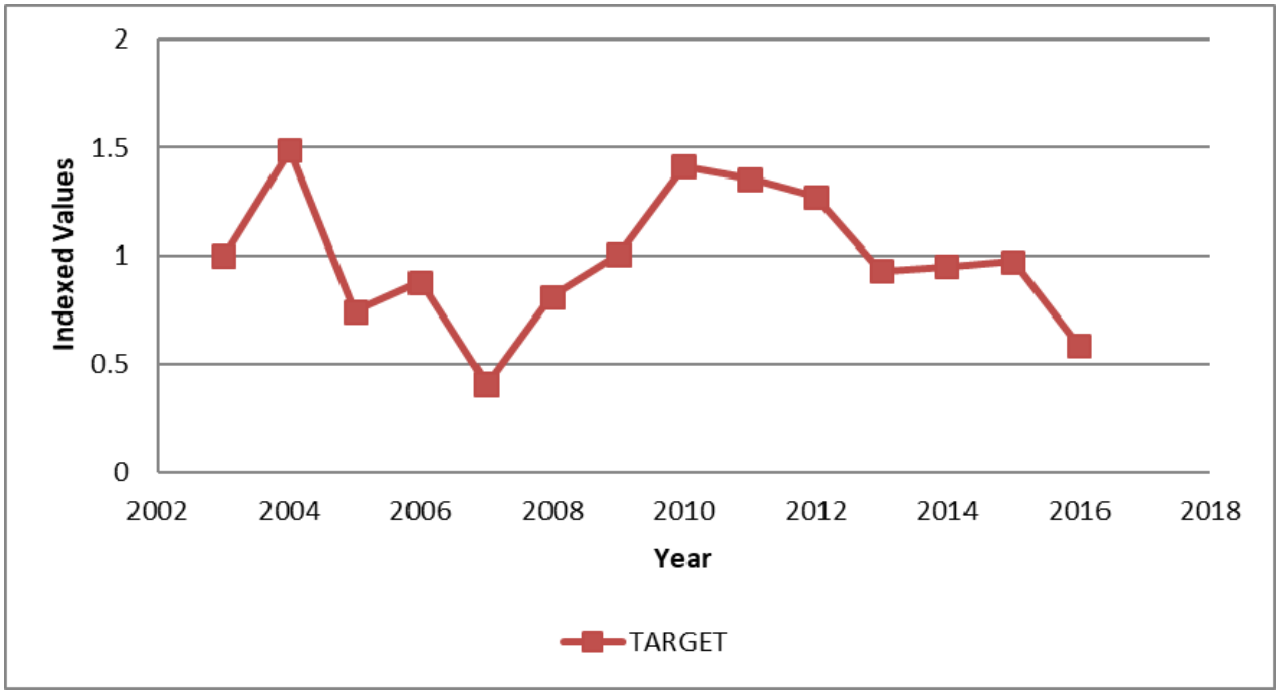
Sheridan #6 LEMA



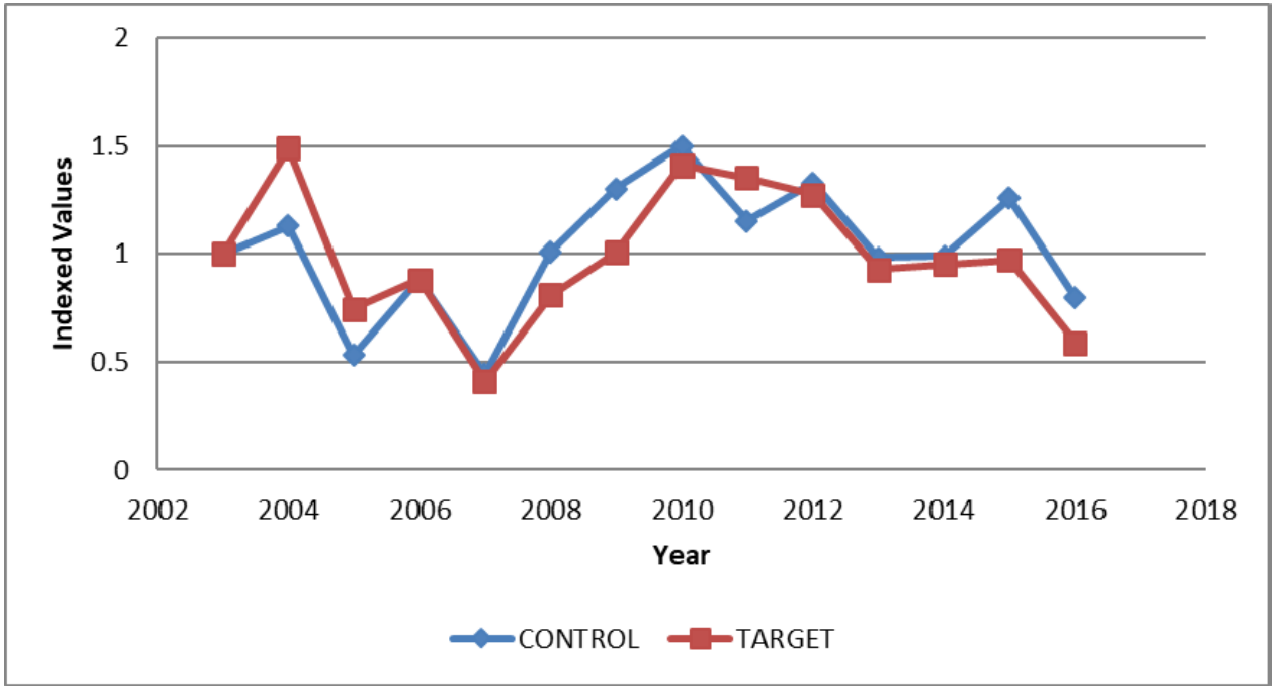
Control Area

Target Area

Why Do We Compare Decisions ?

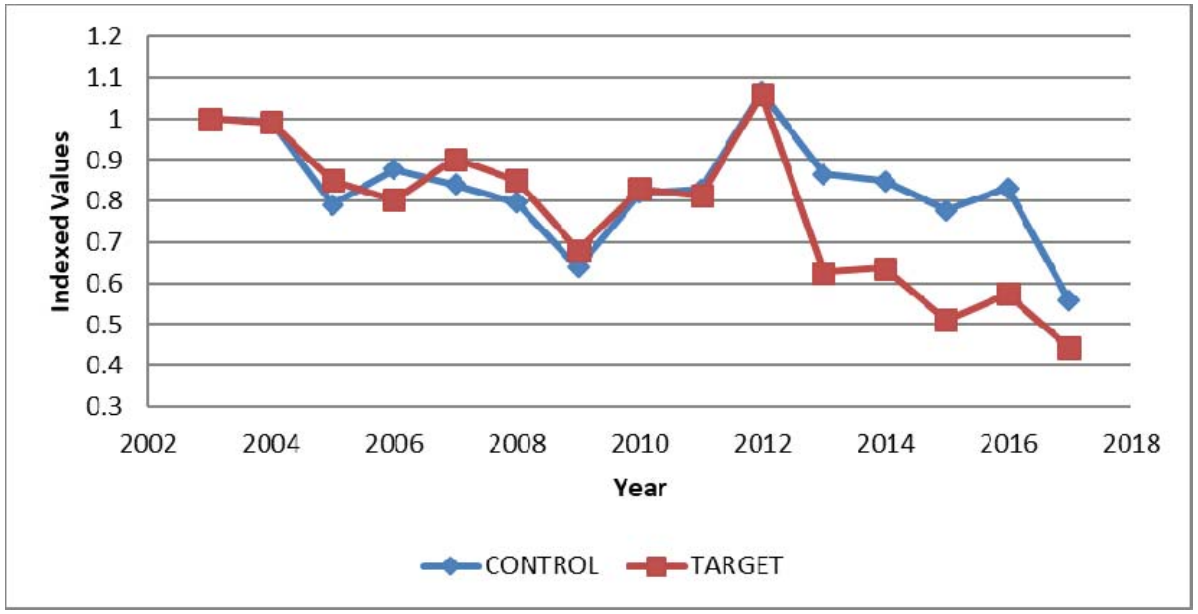


Why Do We Compare Decisions ?



Results

Total Water Use (all crops)

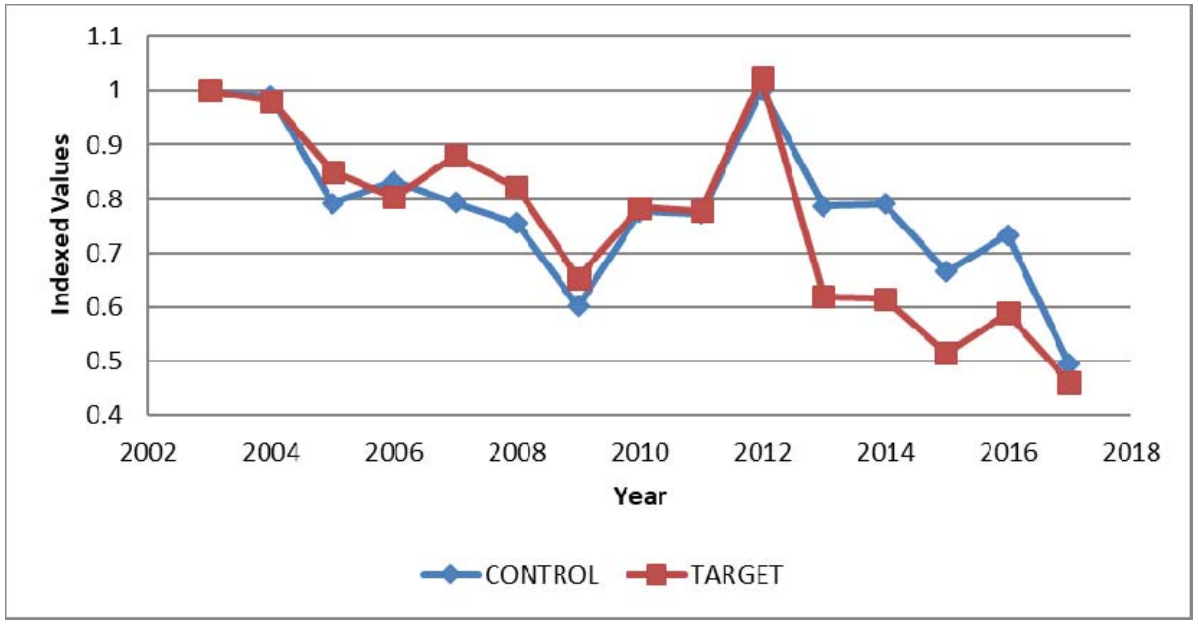


Approximately 23.1% reduction; statistically significant

Based on KDA water use reports

Results

Average Water Use per Acre (all crops)

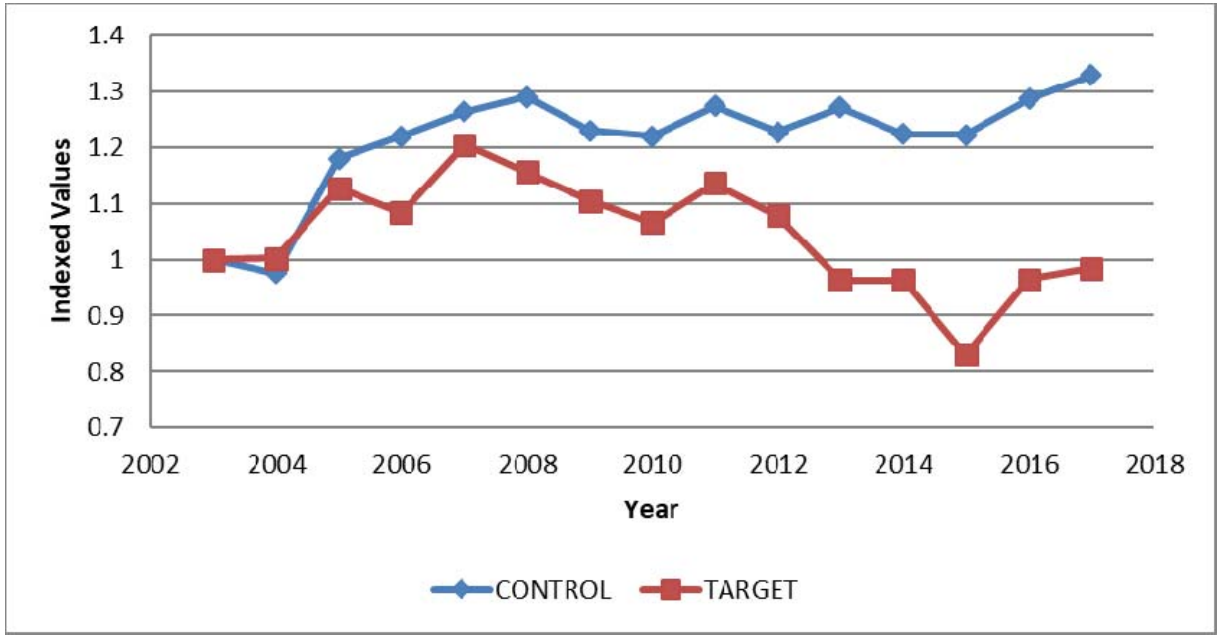


Approximately 16.0% reduction; statistically significant

Based on KDA water use reports

Results

Total Irrigated Corn Acreage

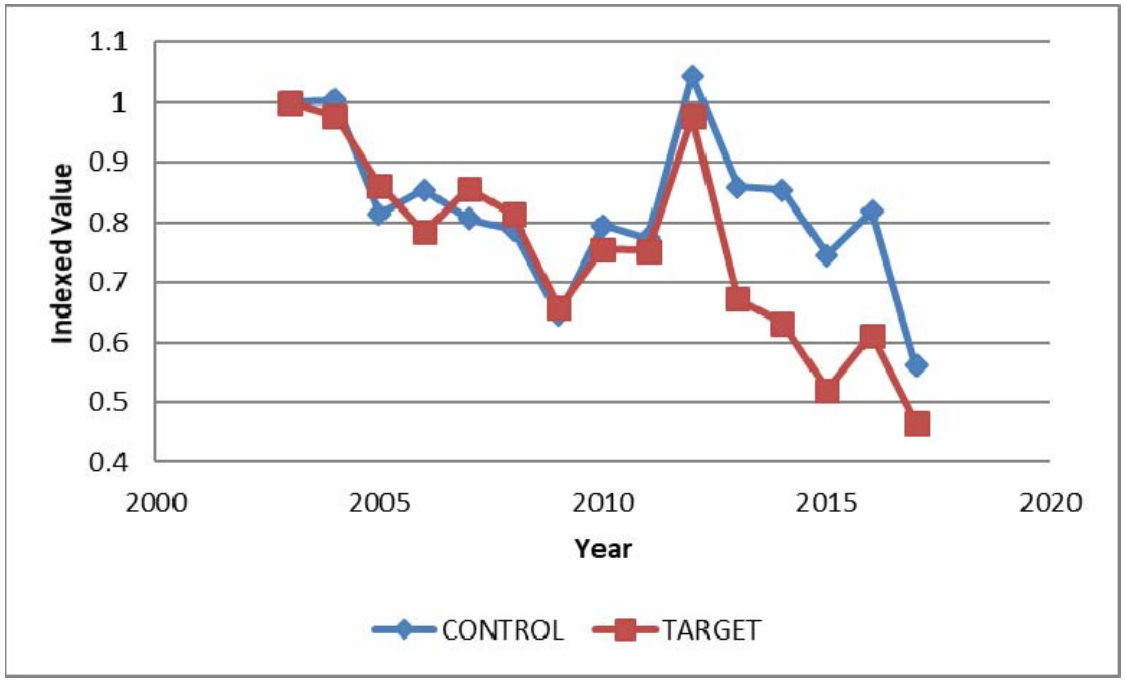


Approximately 23.3% reduction; statistically significant

Based on KDA water use reports

Results

Irrigated Corn Acreage Water Use



Approximately 17.8% reduction; statistically significant

Based on KDA water use reports

2013-2017 Producer Reported Economic Data

Item	Observations	Water Use (in/ac)	Yield (bu/ac)	Cash Flow ($/ac)	Cash Flow ($/in)
Corn Weighted Average - Inside LEMA	20	10.3	218.0	$375	$36
Corn Weighted Average - Outside LEMA	11	13.4	220.6	$360	$27
Sorghum Weighted Average - Inside LEMA	4	4.3	152.6	$361	$83
Sorghum Weighted Average - Outside LEMA	1	11.0	177.0	$226	$21
Soybeans Weighted Average - Inside LEMA	5	9.5	59.6	$315	$33
Soybeans Weighted Average - Outside LEMA	4	9.7	70.0	$358	$37
Sunflowers Weighted Average - Inside LEMA	0	NA	NA	NA	NA
Sunflowers Weighted Average - Outside LEMA	1	6.0	2818	$788	$131
Wheat Weighted Average - Inside LEMA	5	5.7	76.3	$219	$38
Wheat Weighted Average - Outside LEMA	3	7.4	81.8	$178	$24

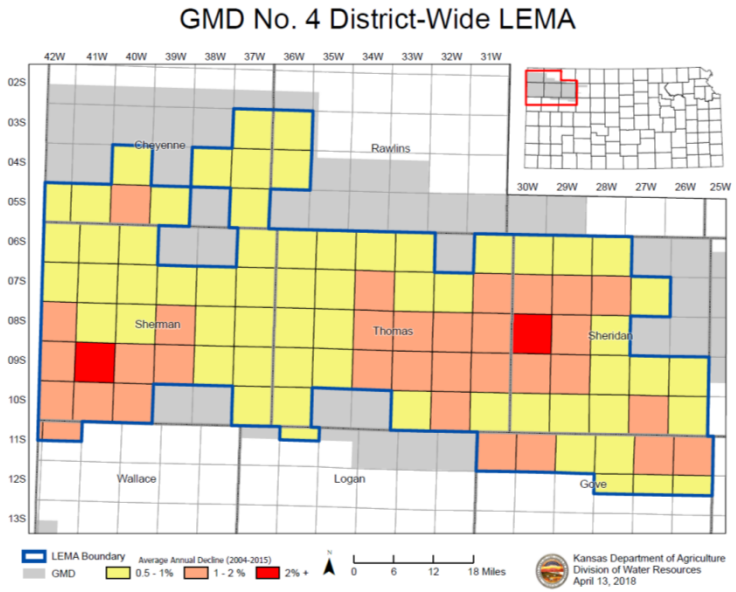
- Cash Flow = Revenue less variable expenses less land rent
- This is not a statistically valid sample
- This table may change as new producer financial data is obtained

Are the Producers Satisfied?

- August 24, 2017 - the Chief Engineer, upon review of the record from the public hearing of May 31, 2017, issued an order formally accepting the proposed Sheridan 6 Local Enhanced Management Plan (LEMA) for the period 2018-2022.

Is GMD #4 Satisfied ?

- On Thursday, March 8 2018, the Chief Engineer issued an order accepting the GMD's modified LEMA plan.



What Next

- Analysis of RMA data
- What is the yield risk of limited irrigation?

Questions

- The full report will be posted at http://agmanager.info/