



# The Ogallala Water Coordinated Agricultural Project

## *Lessons Learned Across State Lines*

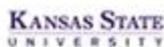
Meagan Schipanski  
Department of Soil and Crop Sciences  
**Colorado State University**

December 4, 2019  
Oklahoma Governor's Water Conference



# Roadmap

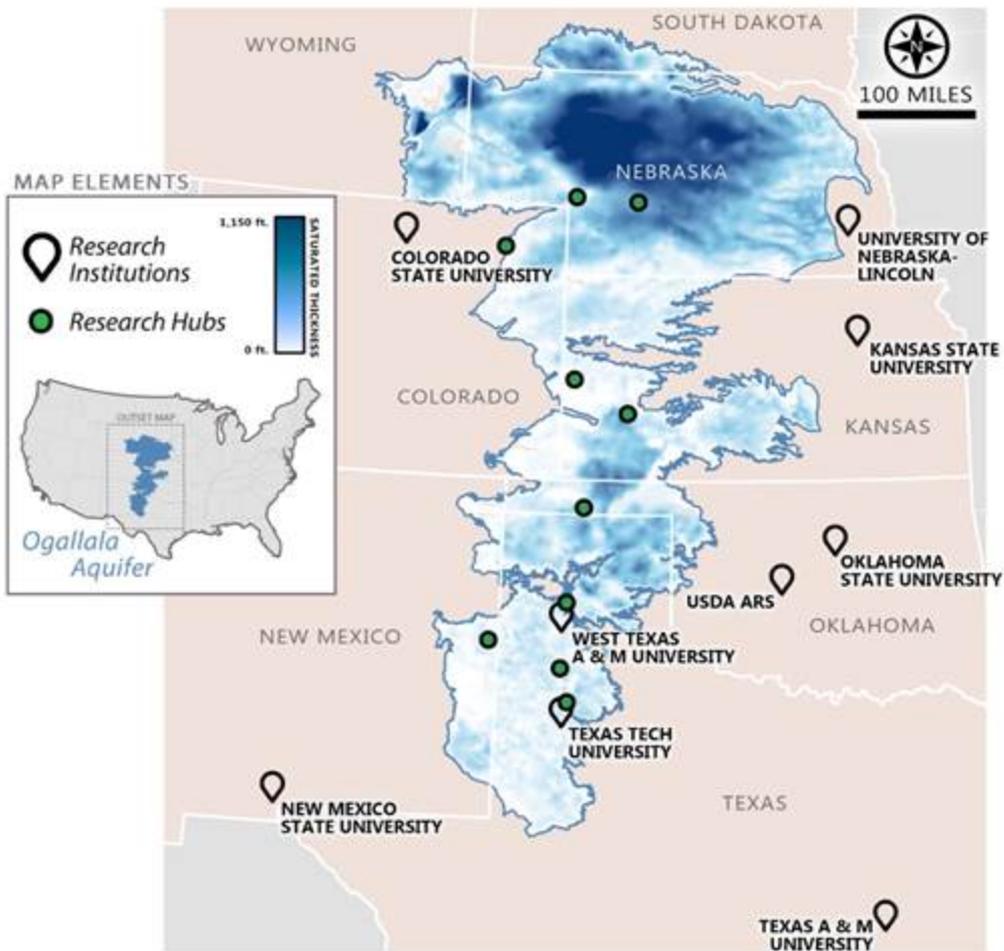
- The Ogallala Water Coordinated Agricultural Project
- What have we learned?
  - Part 1. Social values of water: Why conserve it?
  - Part 2. Practices and policies with potential improve conservation and profitability
  - Part 3. Sharing successful strategies across state lines



- USDA-NIFA funded "Coordinated Agriculture Project" (2016-2020)
- ~70 people: faculty, post-docs, grad students, techs, staff
- 10 institutions - work is based in 6 of 8 Ogallala region states
- Stakeholder Advisory Board grounds our science



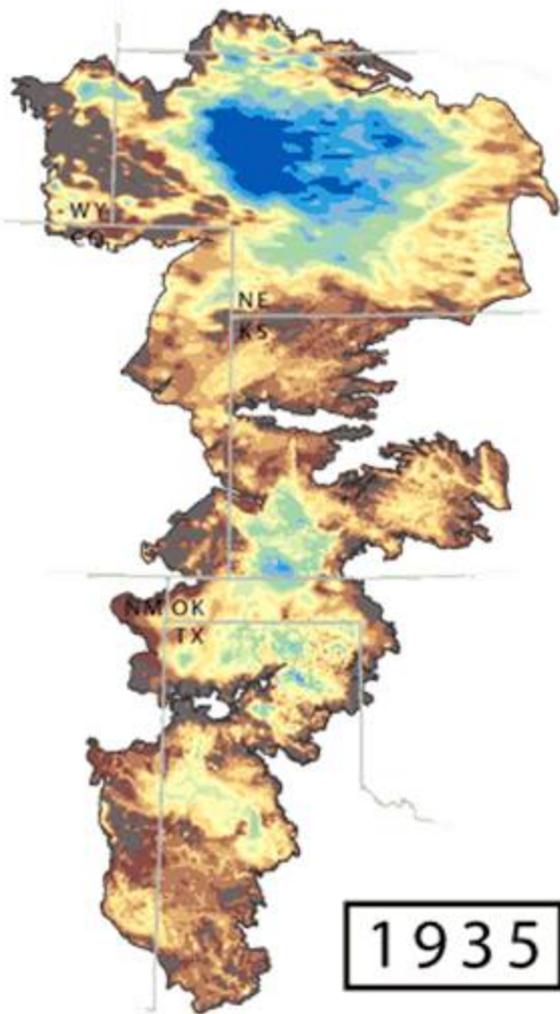
# Our approach



L. Moore



## Our approach

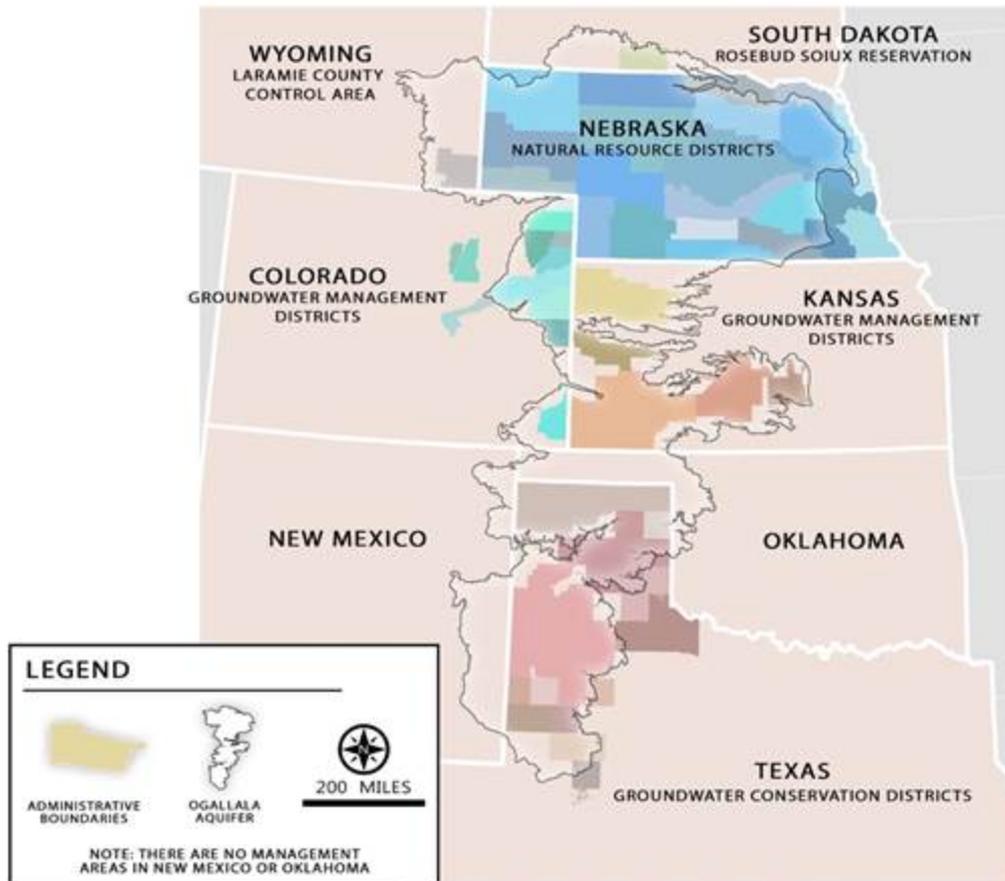


- Recognize that each state is different yet most are grappling with similar issues

Haacker et al. 2015



# Our approach



- Recognize that each state is different yet most are grappling with similar issues
- Management is local: Work from the ground up with producers and groundwater management groups
- Foster partnerships for innovation around water tech for conservation
- Ask the difficult questions

L. Moore



# Part 1. Why conserve groundwater? What is the value of the groundwater today and tomorrow? What are we conserving?

**Matthew R. Sanderson**  
Randall C. Hill Distinguished  
Professor of Sociology  
Kansas State University

**Stephen Lauer**  
Doctoral student,  
Sociology  
Kansas State University

# Data and Methods

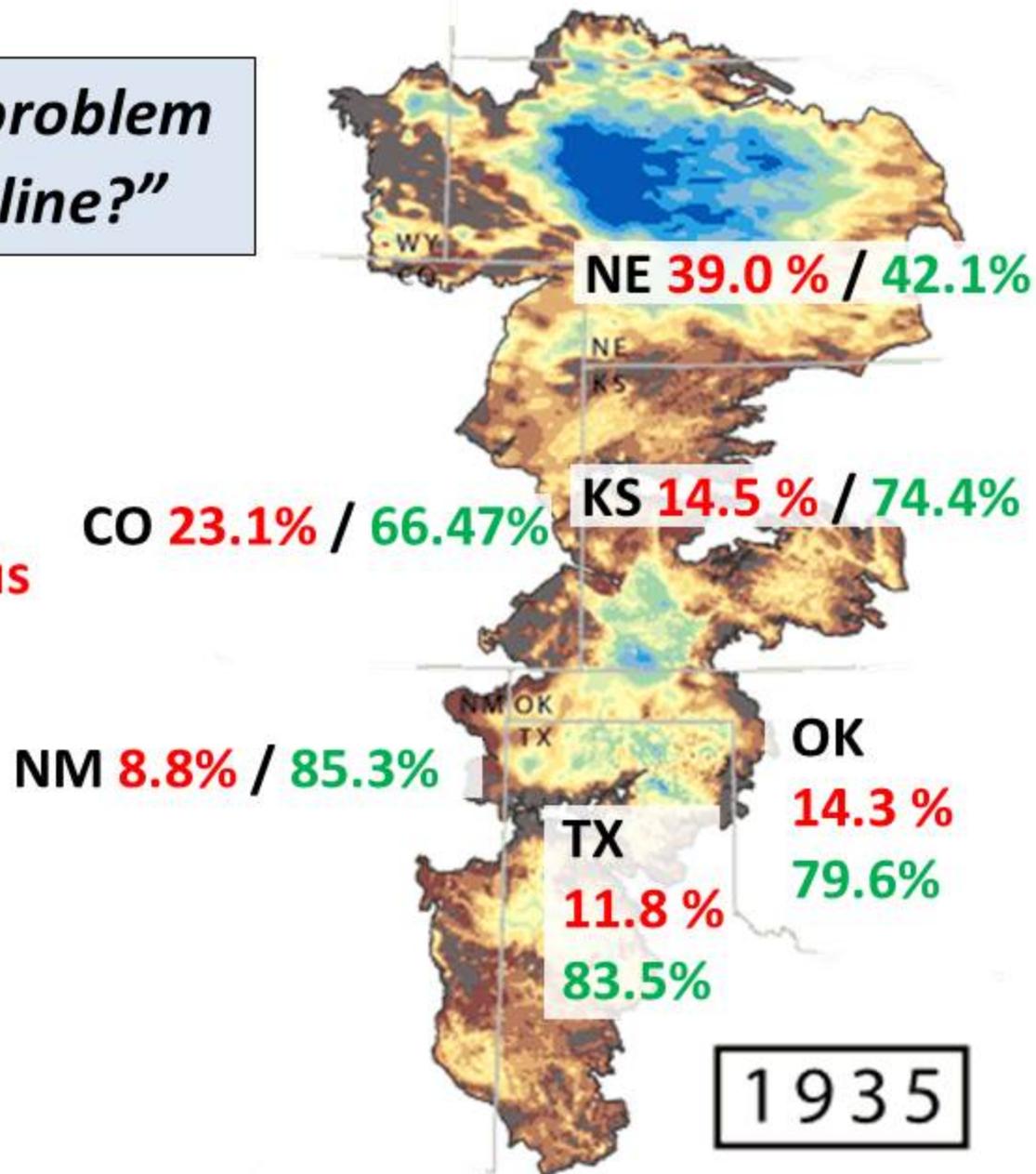
- Survey goal: representative sample of producers
- 227 counties in 6 states
- January – July, 2018
- 7,712 eligible
- 1,226 responses = 15.9% response rate



Qi, 2010

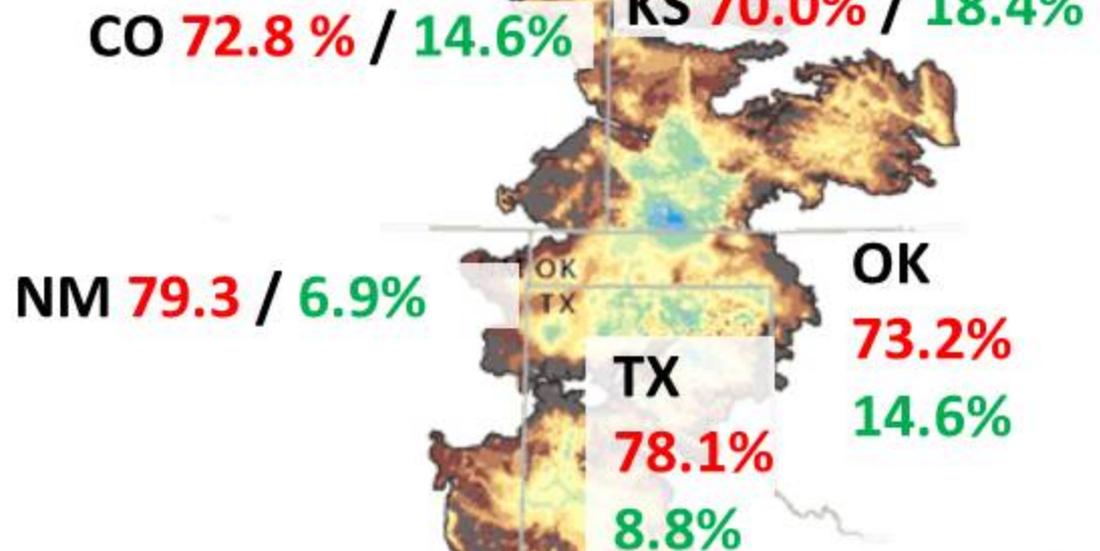
*“How serious of a problem is groundwater decline?”*

Generally not serious  
Generally serious



*“How certain are you that you could reduce groundwater use beyond what you are using now?”*

**Probably cannot do**  
**Probably can do**



1935

<b>Most people do not save more groundwater because...</b>	<b>Generally disagree</b>	<b>Generally agree</b>
...it would decrease their production.	2.7%	<b>85.6%</b>
...they do not want to change their irrigation practices	12.9%	<b>64.7%</b>
...it takes too much effort to conserve groundwater.	<b>48.7%</b>	21.1%
...if they do not pump the water, someone else will.	21.9%	<b>48.6%</b>

*“Most people do not save more groundwater because water use regulations are not strict enough.”*

Generally disagree  
Generally agree

CO 29.0% / 38.3%

NM 26.7% / 36.7%

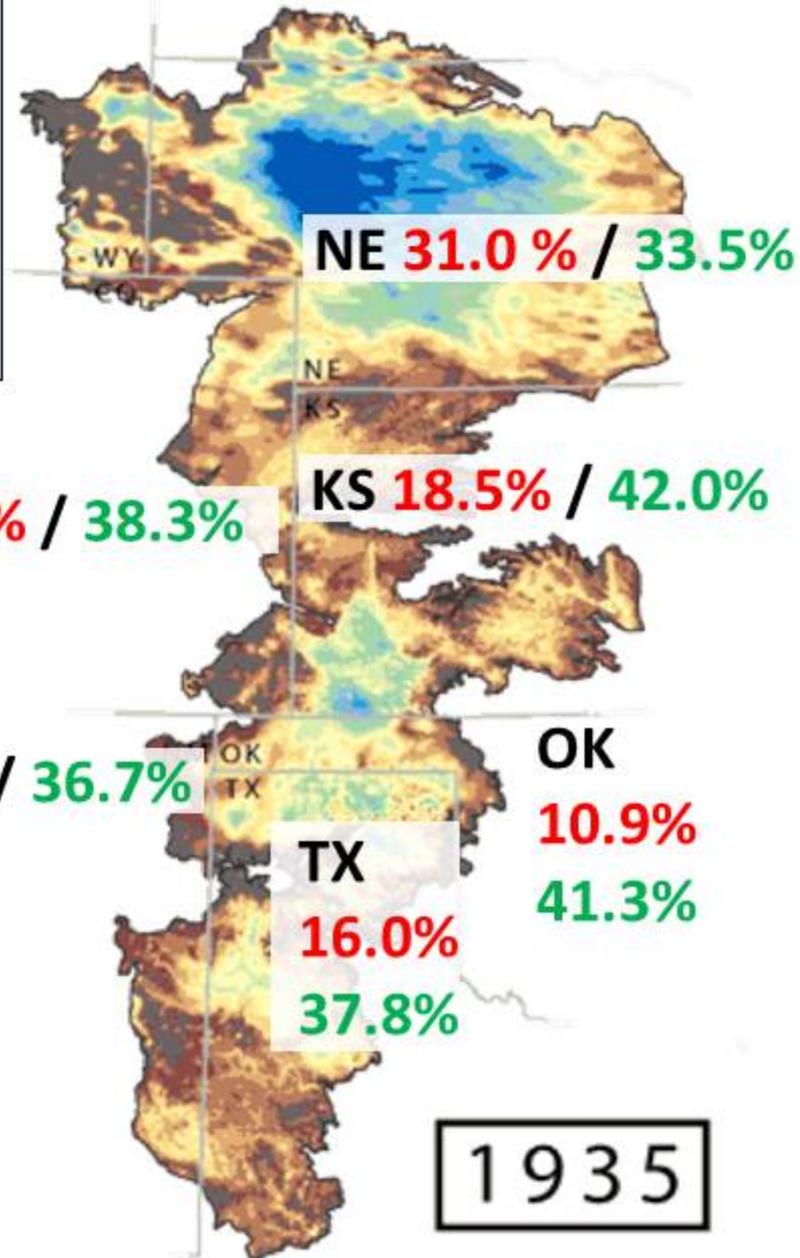
NE 31.0% / 33.5%

KS 18.5% / 42.0%

OK  
10.9%

TX  
16.0%  
37.8%

1935



Groundwater should be conserved today so that...	Generally agree
...it is available to producers if <b><u>drought</u></b> becomes more frequent in the future.	73%
... <b>jobs and business</b> opportunities continue to be available in my <b>community</b> in the future.	66%
... <b>my children and grandchildren</b> can enjoy the benefits I have experienced.	86%
.... <b>future generations in my area</b> can enjoy the benefits I have experienced.	85%

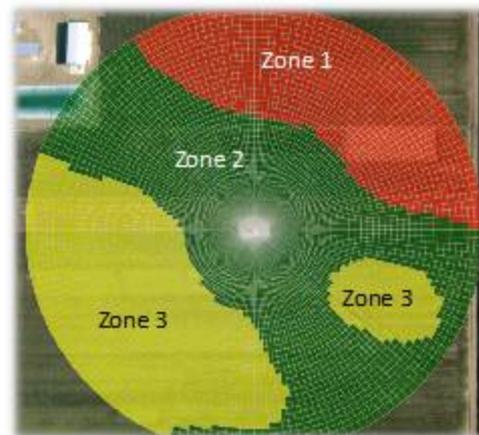
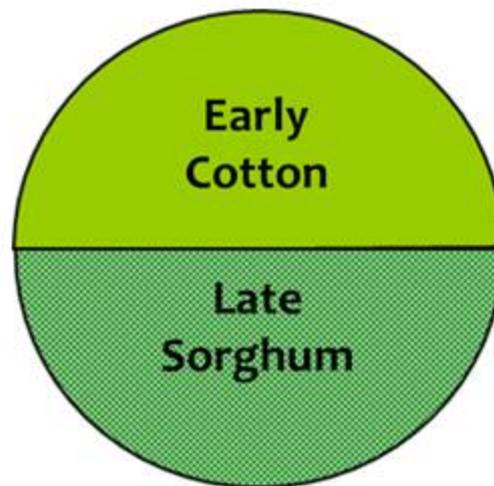


***So, if there is a desire to extend the life of the aquifer, what can be done from a management perspective and a policy perspective?***

**Part 2. Evaluating policies and practice options**



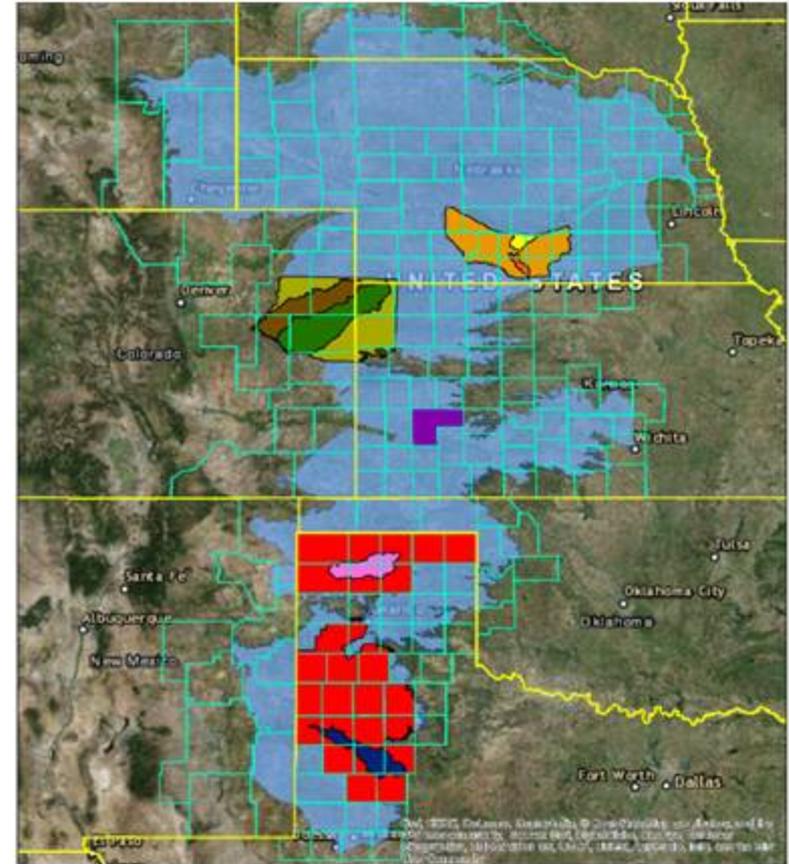
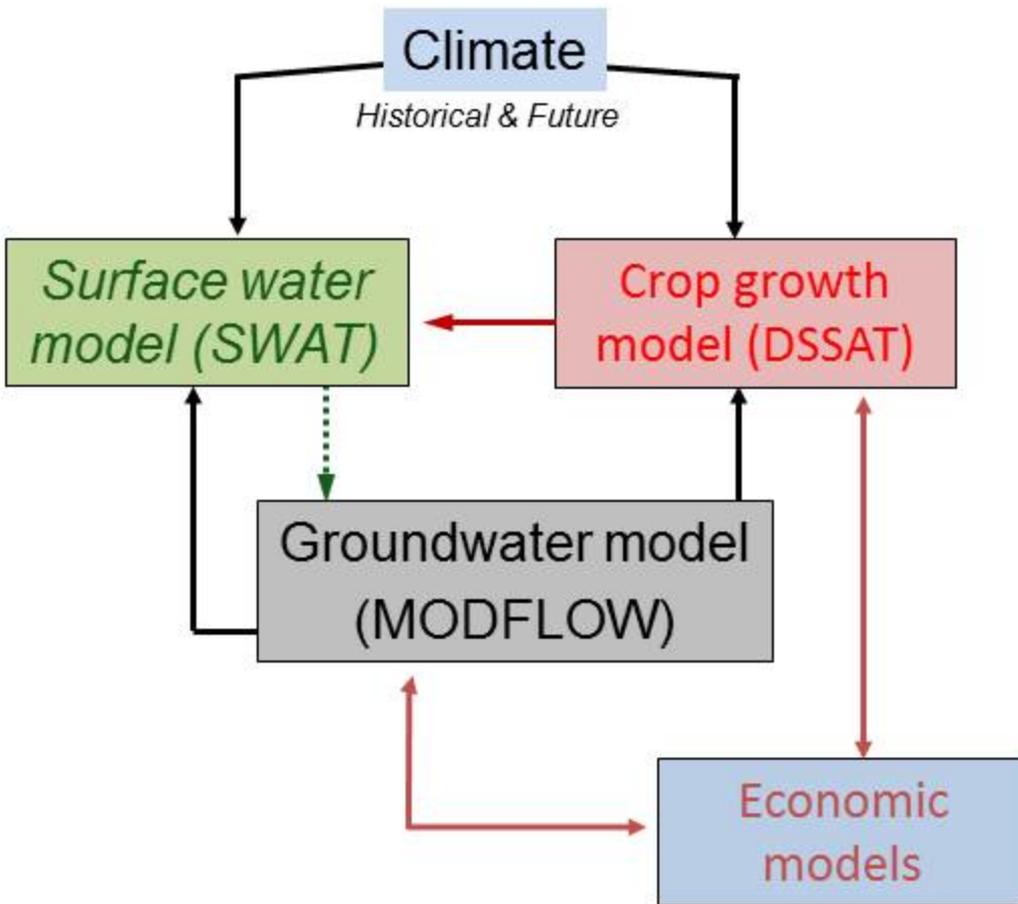
# Innovations in irrigation, crop and soil management



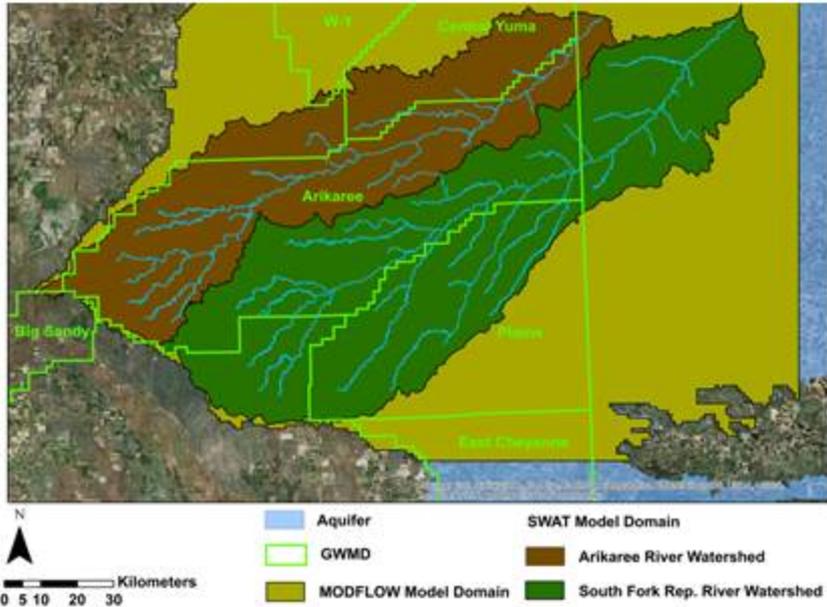
OgallalaWater.org  
OPTIMIZING WATER USE TO SUSTAIN FOOD SYSTEMS



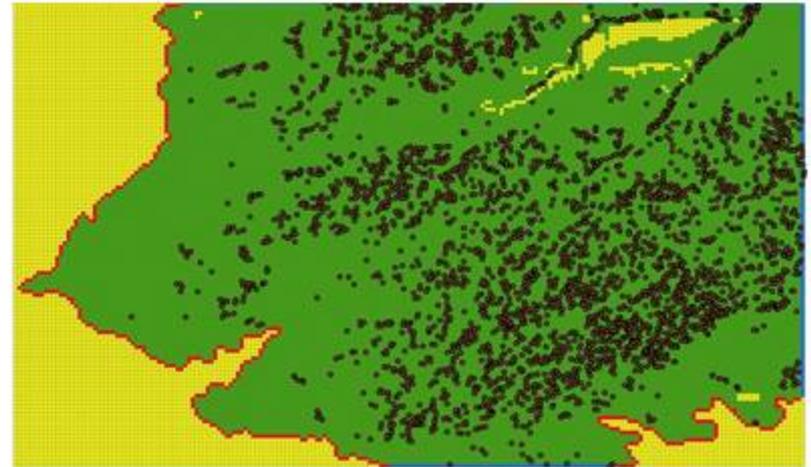
# Evaluating the relative impact of management and policy



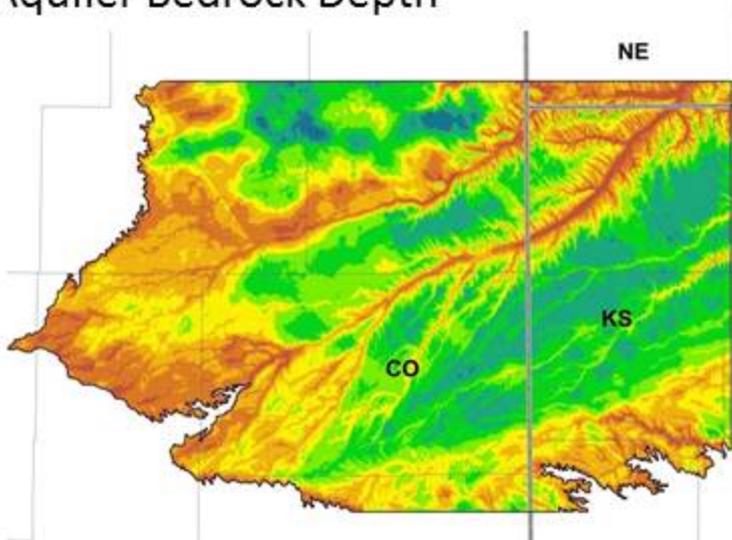
## CO Republican River Study Area



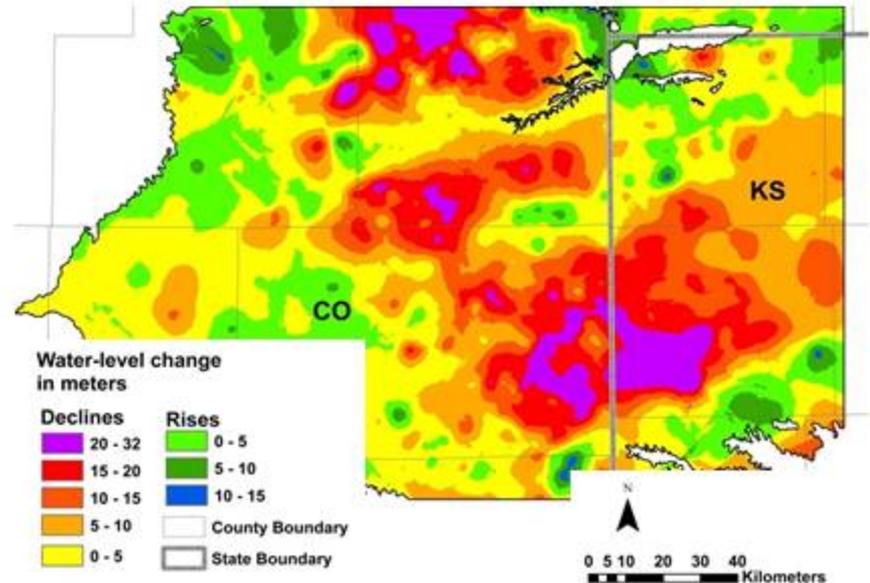
## Active irrigation wells (3808 Wells)



## Aquifer Bedrock Depth

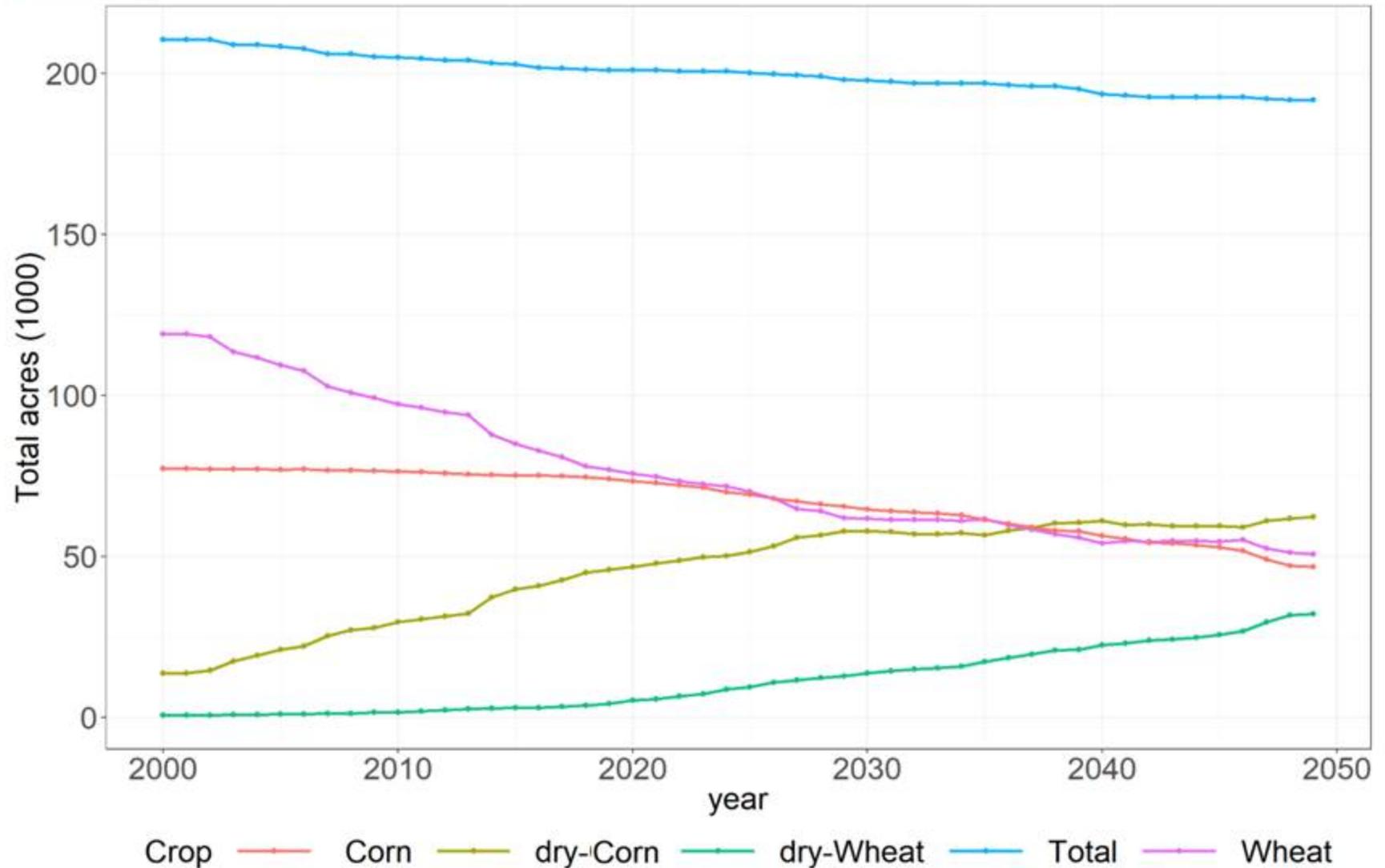


## Water level changes from 1960s to 2018



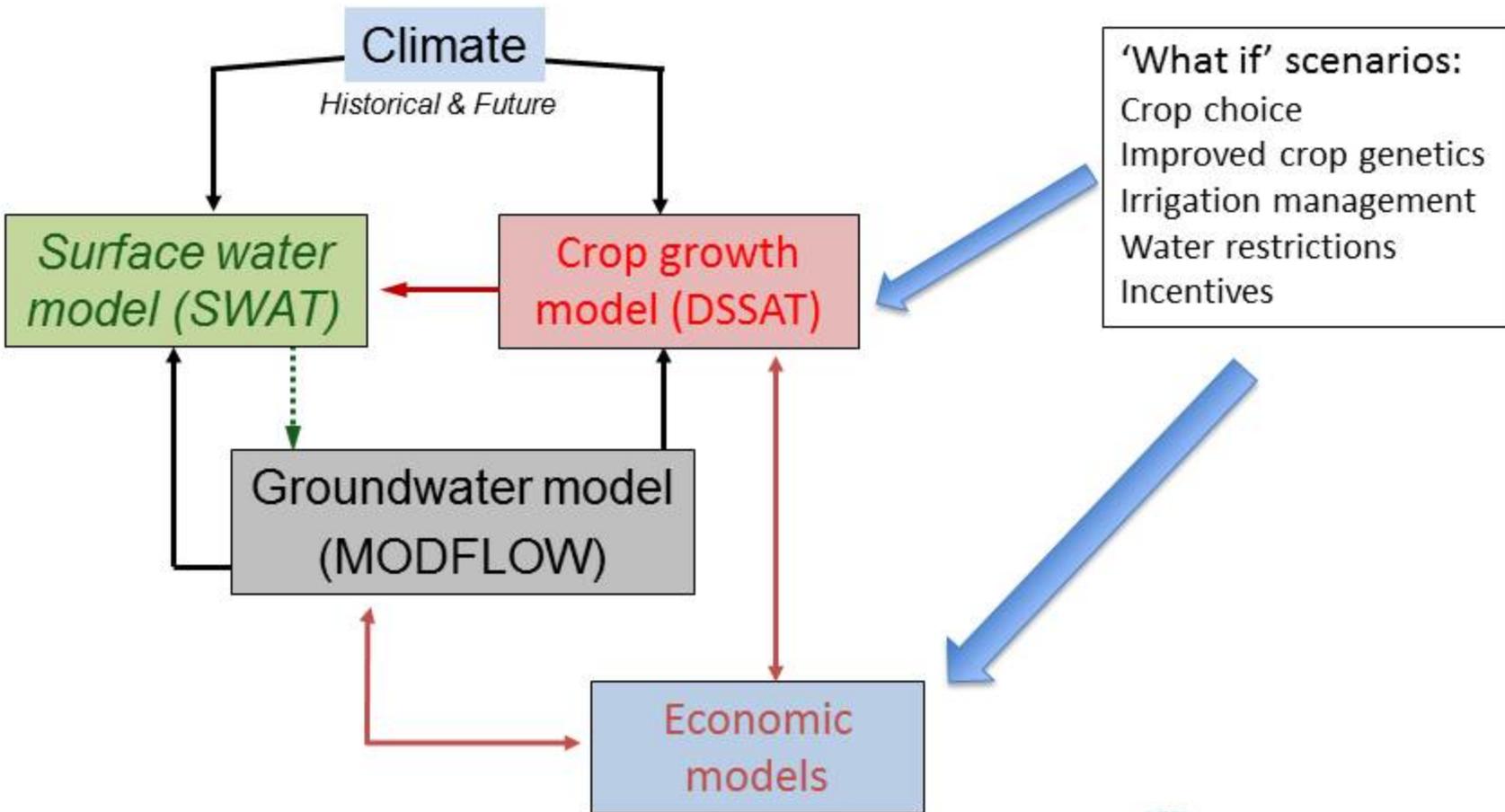


# Status quo, Finney County, KS





# Evaluating the relative impact of management and policy





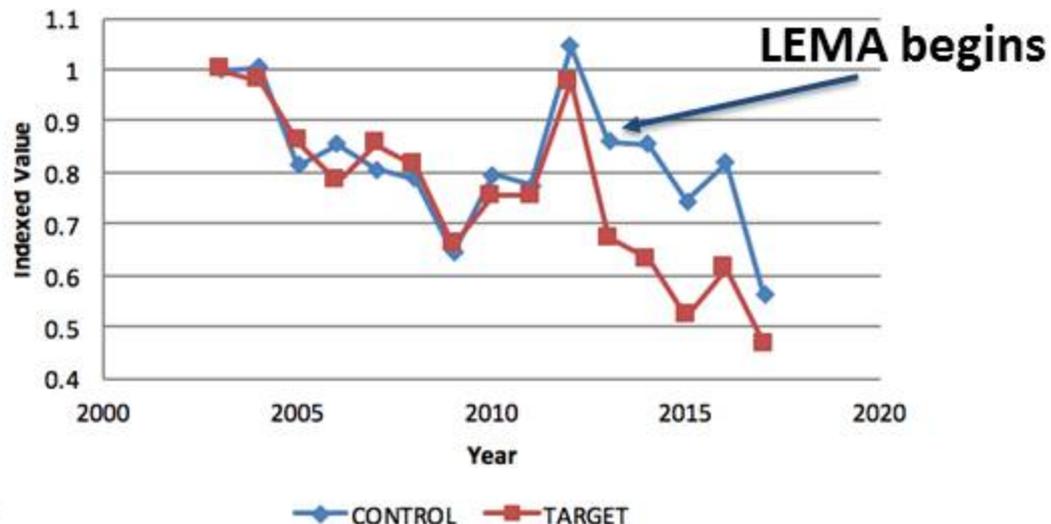
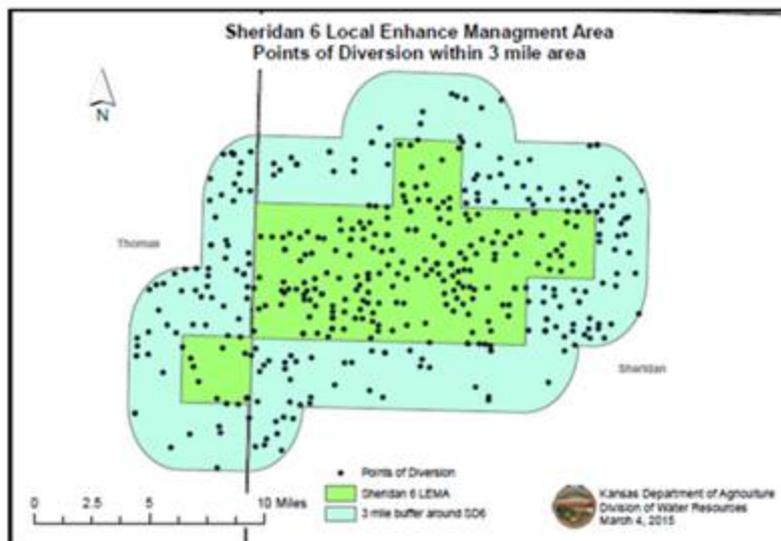
*How do we get there faster?*

**Part 3. Sharing successful practices and policy strategies across state lines**



# Lessons learned from voluntary efforts

## Sheridan 6-Local Enhanced Management Area (LEMA) study



- 23% decrease in total groundwater use
- 11% reduction in irrigated acres
- How? Irrigated acreage shifts: ↓ corn, ↑ grain sorghum, ↑ irrigated wheat
- Having a local feedlot = important buffer
- Minimal negative impact on cash flow



**OGALLALA AQUIFER SUMMIT**

Cultivating Cross-state Conversation & Collaboration

11:30 am, April 9 to 12:30 pm, April 10, 2018 Cost: \$60  
Includes evening social featuring Kansas's Water Technology Farms

Clarion Inn Convention Center  
1911 E Kansas Ave | Garden City, KS

*Save the date!*  
APRIL 9 & 10  
2018

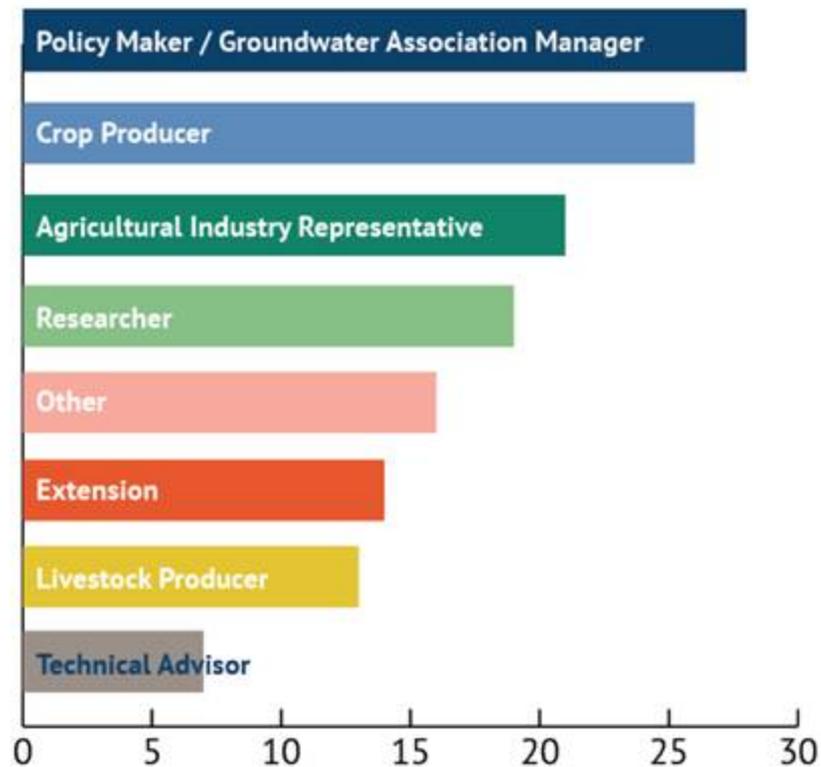



COLORADO  
Department of Agriculture

## 210 participants from all 8 Ogallala states



**PARTICIPANTS**





## 2018 Ogallala Summit key take homes

- Having **data** on water use and water levels is essential
- Prioritize maximizing **return on investment** over **maximizing yields**
- **Peer-to-peer** exchange among producers + industry engagement
- **Dynamic scheduling** of irrigation can save time, water, money
- Tech alone “will not save us”: improved ag water mgmt requires *practice + policy*

**2020 Ogallala Summit March 31-April 1, Amarillo, TX**

SCIENCE | IN ACTION

*“This idea that ‘conservation costs’ will never sell or lead to widespread adoption if it doesn’t help producers with their farming and the bottom line.”*

*Steve Walthour*

# Managing water requires bringing everyone to the table

## Management Practices

Dryland and Range	—	Rainfed
Limited Irrigation		
Full Irrigation		
Irrigation Technologies	—	LEPA
Cropping Choices and Rotations	—	LESA
		VRI
		SDI
Livestock Variety and Density		Weather
Monitoring Data	—	Soil
Cover Cropping		Moisture
Feed Production	—	Aerial Imagery
Enhanced Plant Genetics		
Irrigation Scheduling		
Tillage		

## Stakeholders

Agribusiness	—	Seed
Agricultural Lenders		Irrigation
Agricultural Technology Companies		Fertilizer Companies
Consumers		
Crop Insurance Providers		
Distributors	—	Truckers
Futures Markets		Railways
Energy Industry	—	Oil
		Gas
Groundwater Management Districts		
Importers and Exporters		
Landowners		
Local, State and Federal Elected Representatives		
Manufacturing Industries		
Municipalities		
Producers		
Public Land and Surface Water Managers		
Ranchers		
Recreational Users		
Universities		
Water Rights Holders		
Well Drillers		
Wildlife		



# Thank you!

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Ogallalawater.org**

Support comes from  
the National  
Institute of Food  
and Agriculture, U.S.  
Department of  
Agriculture, award  
number 2016-  
68007-25066.



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