

Acequias and the Future of Resilience in Global Perspective: Symposium and Workshop

Session 2: Data Integration and Modeling the Interplay of Social, Cultural, Economic, and Environmental Factors in an Acequia Community

“Acequia Perspectives on Climate-Change and Population Growth and the Perspectives of Preparedness and Adaptation”

Panelist: Brian H. Hurd, PhD
NMSU, Dept of Ag Econ & Ag Bus
email: bhurd@nmsu.edu
web: <http://agecon.nmsu.edu/bhurd>



Las Cruces, NM 2 Mar 2013

Outline

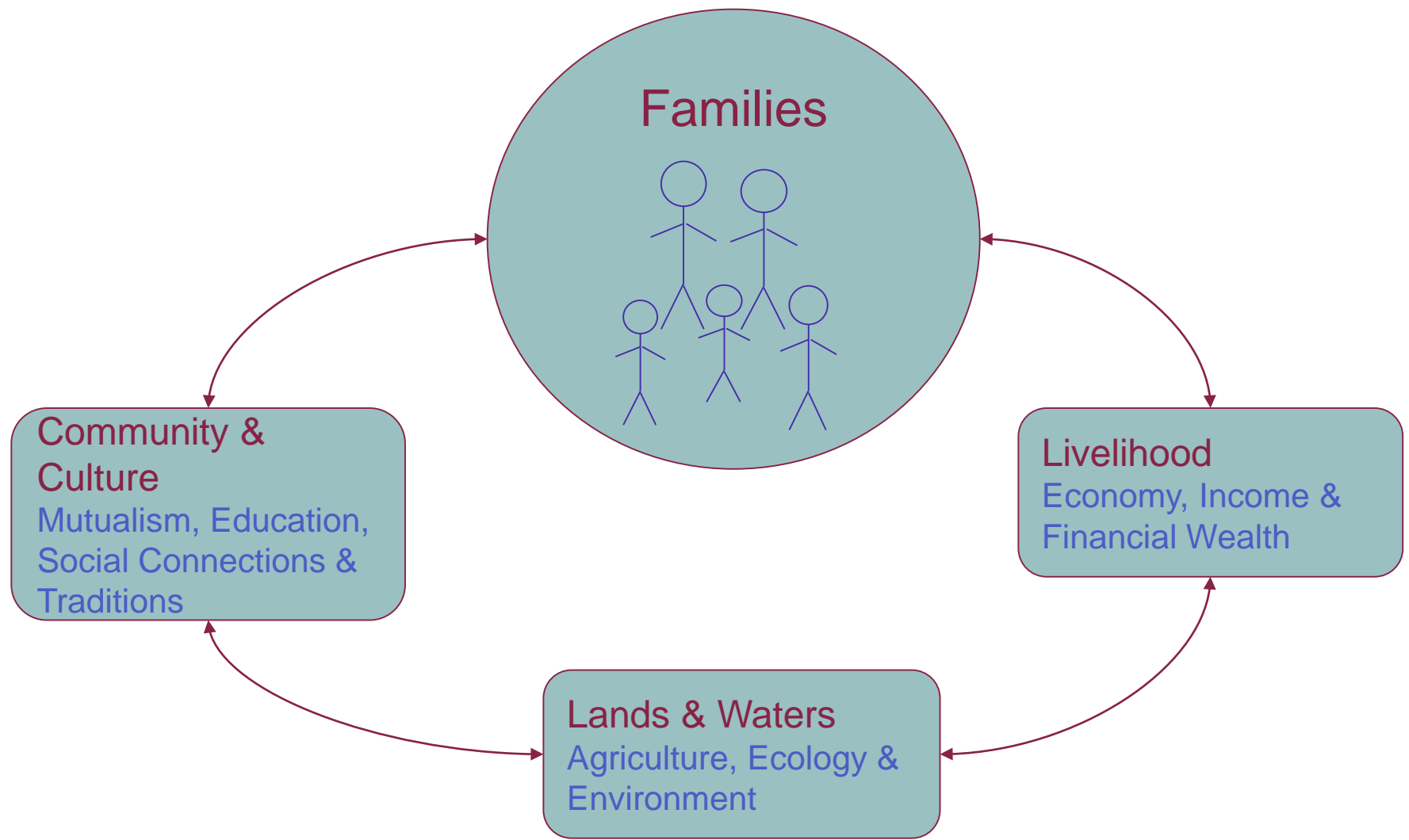
- Acequias in the context of stresses and challenges
- Community assets and sources of value, strength and wealth
- Survey highlights
 - Effectiveness of drought response and coping strategies
 - Importance of acequia activities and management
 - Helpful sources of adaptive capacity
 - Perceptions of current preparedness and adaptation capacity
 - Assessing needs for strengthening preparedness and adaptation



Changing Conditions, Acequia Challenges



Community Assets and Sources of Value, Strength and Wealth



Effectiveness of Drought Response and Coping Strategies

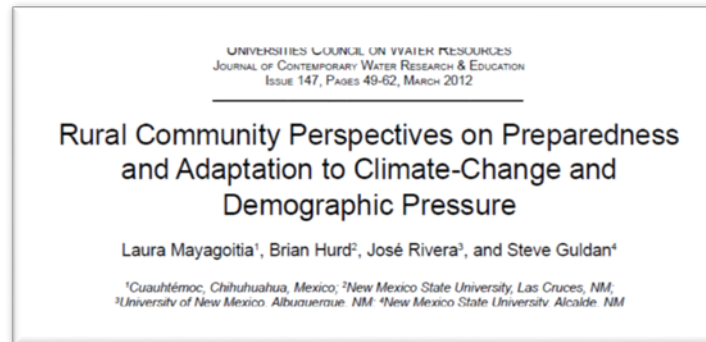
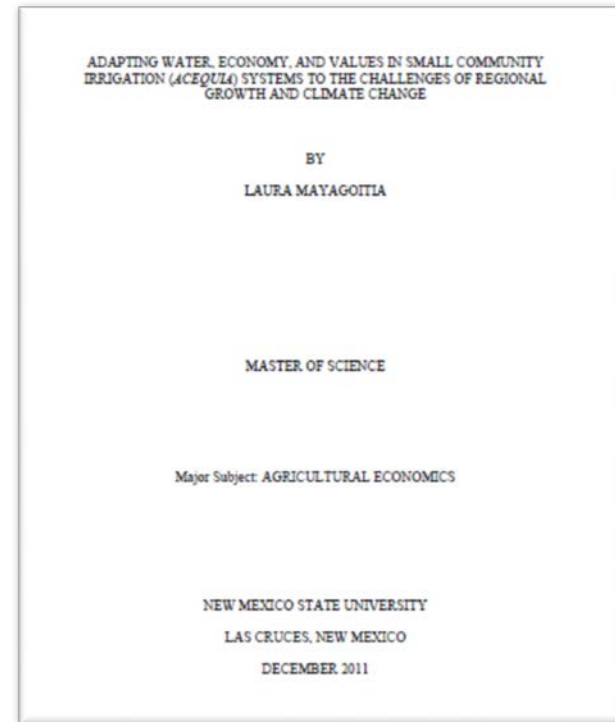
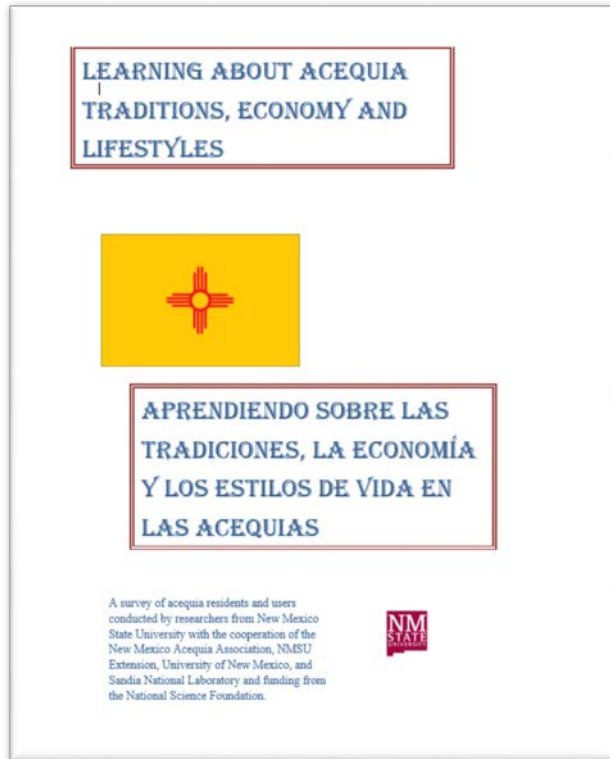
Q12 If a drought is expected, some farmers try to change crops and other practices to help provide some income even with water shortages. Some of the possible changes in activities and practices that could be helpful during periods of drought or water shortage are listed below. For those applicable to your farm or ranch, please indicate your opinion on the effect you believe it would have on your ability to cope with drought and water shortages? (circle a number for each)

		<i>Not applicable</i>	<i>Very positive</i>	<i>Positive</i>	<i>Neutral</i>	<i>Negative</i>	<i>Very negative</i>	<i>Do not know</i>
a	Decrease planted area and fallow some acres or parcels	1	2	3	4	5	6	7
b	Switch some acres or parcels to dry land farming	1	2	3	4			
c	Plant higher yield cash crops on fewer acres or parcels	1	2	3	4			
d	Plant native or heirloom crops on some acres	1	2	3	4			
e	Reduce livestock numbers	1	2	3	4			
f	Consider alternative irrigation technology such as drip or sprinkler systems	1	2	3	4			
g	Improve soil to reduce evaporation	1	2	3	4			
h	Use cold frames to start seedlings or plants	1	2	3	4	5	6	7

Share of Responses

	Pos	Neutral	Neg
a	71%	15%	15%
b	54%	29%	18%
c	72%	19%	9%
d	74%	21%	6%
e	72%	19%	9%
f	84%	11%	5%
g	90%	8%	3%
h	86%	14%	0%

Acequia Survey



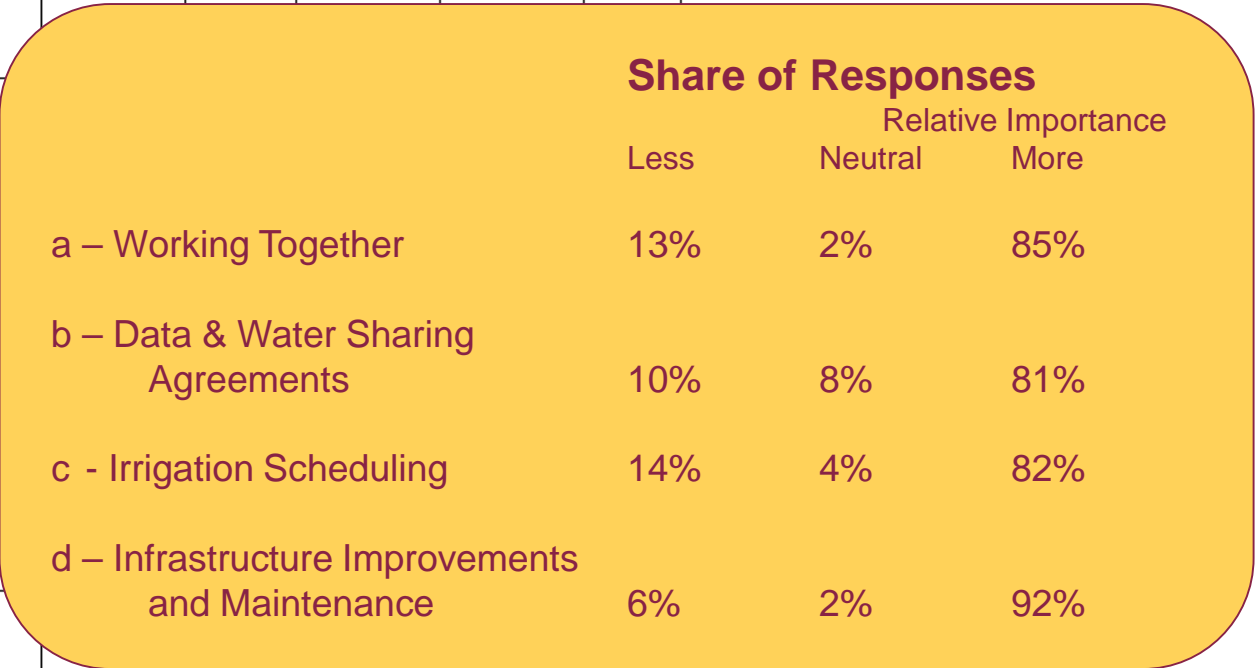
With special thanks and appreciation to the acequia leaders and parciantes, team members and the folks at the NMSU Alcalde Science Center who helped Laura Mayagoitia in the execution of our survey.

Importance of Acequia Activities and Management

Q13 Careful management of water supplies and infrastructure is an important responsibility of acequia governance. How important are each of the following activities to you in the management of your acequia?

(circle a number for each)

		Not important	Somewhat important	Neutral	Very important	Extremely important	Do not know
a	Working together to share ideas about traditional water conservation practices	1					
b	Gathering data about stream flows and implementation of water sharing agreements by acequias	1					
c	Hold an acequia meeting with commissioners and <u>mavordomos</u> to review the irrigation schedule, timing, and system of water sharing turns	1					
d	Improving and repairing acequia infrastructure including <u>presas</u> , <u>compuertas/headgates</u> , gates, or ditch lining	1					
e	OTHER (specify): _____ _____	1					



Helpful Sources of Adaptive Capacity

Q23 From the list below, circle the characteristics of your acequia that you believe have helped you and your neighbors adapt to economic downturns, population growth, increased development, and droughts in the past. Circle as many choices as you would like that apply to your acequia community.
(circle all that apply)

- A. SHARED VIEW OF “AGUA ES VIDA”
- B. CONNECTION TO THE LAND, WATER AND COMMUNITY
- C. LOCAL KNOWLEDGE
- D. FAMILY VALUES
- E. CULTURAL AND/OR RELIGIOUS TRADITIONS
- F. BELIEF IN SHARED RESPONSIBILITY
- G. EQUITY IN WATER SHARING (repartimiento)
- H. SPIRIT OF COMMUNITY AND COOPERATION
- I. SHARED SYSTEM OF GOVERNANCE
- J. SOLIDARITY AND MUTUAL HELP
- K. LAND OWNERSHIP
- L. LOCAL AUTONOMY IN DECISION MAKING
- M. OTHER (specify) _____
- N. DO NOT KNOW

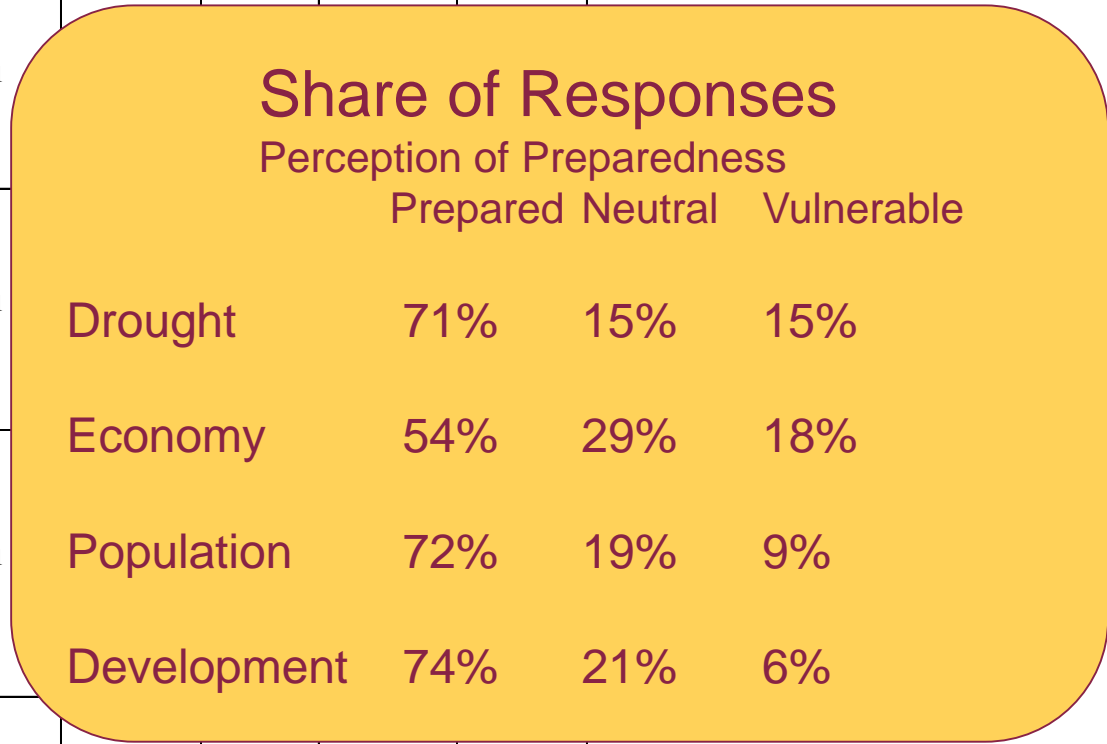
Share of Yes Responses

a	63%
b	77%
c	56%
d	65%
e	56%
f	65%
g	73%
h	63%
i	46%
j	46%
k	79%
l	48%

Perceptions of Preparedness and Adaptation Capacity

Q24 There are many challenges facing acequia communities and parciantes.. Please carefully read each of the challenges bolded and described in the Table below, and next to each one circle the response that best fits you and your community. (circle one number for each challenge)

		Very Prepared	Somewhat Prepared	Neutral	Somewhat Vulnerable	Very Vulnerable	Do not know
a	SIGNIFICANT DROUGHT. Are you well equipped with the knowledge, skills, and tools to manage through a significant drought - even one that lasts 2 or more years in a row?	1					
b	ECONOMIC HARDSHIPS. Are you well equipped with the knowledge, skills, and resources to manage through a significant and further downturn in the national and state economies?	1					
c	POPULATION CHANGES AND GROWTH. Are you well equipped with the knowledge, skills, and resources to manage through significant changes and increases in the <u>local and regional</u> population?	1					
d	DEVELOPMENT. Are you well equipped with the knowledge, skills, and resources to manage through significant increases in development that compete for water supplies and impacts water quality?	1	2	3	4	5	6



Assessing Needs to Strengthen Preparedness and Adaptation

Q25 In this final question, we would like to learn about possible steps, actions and activities that you think would be most HELPFUL in strengthening the ability of your acequia community to withstand the challenges described in the previous question. Consider the actions and activities in the Table below, and for each one please indicate how helpful it would be to have more attention and resources for that activity in order to better prepare your acequia in confronting the challenges of economic downturns, population growth, increased development, and drought. (circle a number for each activity)

		Not at all Helpful	Somewhat Helpful	Very Helpful	Do No Know
a	Having access to data information such as climate impacts or meteorological data	1	2	3	4
b	Maintaining traditional knowledge, such as water sharing	1	2	3	4
c	Increasing public awareness regarding the importance of the acequia knowledge and traditions	1	2	3	4
d	Providing acequia water users with hands-on training, education, and practical demonstrations including information on crop selection, irrigation scheduling and water-conservation techniques	1	2	3	4
e	Adopting alternative irrigation practices such as drip irrigation or sprinklers	1	2	3	4
f	Becoming familiar with legal aspects such as water laws in New Mexico	1	2	3	4
g	Encouraging the gathering of streamflow data	1	2	3	4
h	Developing small scale water storage facilities	1	2	3	4
i	Creating local insurances or relief funds	1	2	3	4

Share of Responses

	Not Helpful	Somewhat Helpful	Very Helpful
a	9%	34%	57%
b	2%	20%	77%
c	0%	18%	82%
d	4%	24%	71%
e	11%	36%	53%
f	7%	24%	69%
g	13%	22%	65%
h	15%	17%	67%
i	17%	17%	66%



For more information contact:

Brian H. Hurd, PhD

Department of Agricultural Economics & Agricultural Business
Gerald Thomas Hall Rm. 350
New Mexico State University

Tel : (575) 646-2674

Email: bhurd@nmsu.edu

Web: <http://agecon.nmsu.edu/bhurd>