



Connecting Communities: Engaging stakeholders in research

New Mexico EPSCoR Innovation Working Group Report

Synergia Ranch, Santa Fe, New Mexico

February 2-4, 2012



Background

The “*acequia* group”, part of New Mexico EPSCoR’s RII 3 project and also funded by an NSF Dynamics of Coupled Natural and Human systems grant, includes scientists from multiple institutions working collaboratively across disciplines to research the complex interactions of social, cultural, hydrological and ecosystem variables in an effort to understand the pressures on *acequia* communities.

The *acequia* group is developing a systems dynamics model to quantitatively represent and study interactions within and between sets of component systems (hydrology, ecosystem, sociocultural, and land use/economics) tied to traditional *acequia* irrigation systems. A synthesis paper describing the process of building the conceptual model and component systems has already been submitted to the online, open-access journal *Sustainability*. So far, all those involved in building the conceptual model are from academic backgrounds, albeit different disciplines. We felt that our research would be improved through dialogue with *acequia* stakeholders and extension personnel through their input into the conceptual model. Further, our research would be of more use to them if we listened to their needs for specific types of information.

Meeting Deliverables

During a breakout session at the New Mexico EPSCoR All-Hands Meeting on September 30th 2011, the *acequia* group agreed that the best way to maintain momentum in the research and to develop stronger collaboration across disciplines was to plan an IWG. The primary goal of this IWG was to create innovations in communication at the interface between natural and social science related to *acequia* community hydrology, ecology, culture and economics. It was also agreed that involving the *acequia* communities in this IWG would be critical for (i) reaching integrated understanding of the systems; (ii) bringing together academic disciplines and (iii) creating useful extension products for those most affected by this research.

We identified two deliverables associated with the primary goal:

- i. *Review paper in peer-reviewed journal*
- ii. *Grant proposal for extension activities (e.g., Western SARE)*

As usual, the *acequia* group over-achieved and produced two more outputs from their meeting. Secondary goals of the workshop included making progress on developing international collaborations and sharing information from our research with the public. The two deliverables associated with these goals are

- iii. *Travelling museum exhibit*
- iv. *International Acequia Workshop*

Review Paper in peer-reviewed journal

We planned to write a paper for a peer-reviewed journal detailing the interactions between researchers, *acequia* representatives (stakeholders) and extension personnel. The one day meeting on Friday, February 3, 2012 was structured around discussion of the causal loop diagrams describing the component systems of the system dynamics model. Sam Fernald gave an introduction “big picture overview” to start this part of the meeting. Initial reactions of stakeholders to the overview revealed where they see the need for research. For example, the need to keep the community healthy and “chase out water polluters” was raised. Another response illuminated the importance of having professional research done so that “the community” can be approved for grant money. In this case, *acequia* community leaders had approached university researchers to be included in research so that their watershed can be adequately instrumented. Without instrumentation, it was noted that it would be virtually impossible for such a small community to apply for grant money.

After the “big picture introduction” the main presentation and discussion of the causal loop diagrams began, led by Vince Tidwell. Input from stakeholders and extension personnel added valuable depth to the concepts behind the causal loop diagrams. For example, the Ecology diagram includes interactions of livestock numbers and type with vegetative habitat and natural resource management. One stakeholder’s observation added depth to this generalized interaction in that he had seen firsthand how changes in livestock grazing had affected vegetation composition. Specifically, the removal of livestock from forest service lands and the increase in elk numbers has resulted in “different types of vegetation taking over ‘in the wrong place’,” and “livestock kept noxious weeds and trees ‘in the right place’.” Also, this person added that the increase in elk numbers had affected riparian areas because of their habit of wallowing. Another stakeholder was well-versed on the effect of historical events on acequia communities. Previously, this had not played a large role in our research. The observations made by this one stakeholder triggered the idea in one of the scientists that “we can go back in time to calibrate what happens in the future”. Of course, this is a concept well-used in systems dynamics modeling, but we hadn’t yet considered how major historical events might change the way acequia systems operate.



Figure 1: Discussing the causal loop diagrams

There are abundant examples of how feedback from stakeholders and extension personnel were able to add depth and understanding to the causal loop diagrams. These examples will be the main content for the peer-reviewed paper (led by C. Steele and S. Guldán), which will be aimed at a qualitative research journal (e.g., *Qualitative Inquiry*, *The Qualitative Report*).

After discussions on the causal loop diagrams, visiting scientist, Greg Pederson presented on climate change, snow pack and stream flow in the Rockies. The presentation was expertly pitched and led to a long discussion (45 minutes) on how climate change may impact acequia communities in the Upper Rio Grande.

Grant proposal for extension activities

Part of Friday's meeting included presentations by Stephanie Walker on Western SARE (Sustainable Agriculture Research and Education) grant opportunities and by Jeff Bader on extension activities in Northern New Mexico. These presentations were fortuitously timed well to frame input from stakeholders on a very specific need in their communities. We learned that those people who have adult children now, encouraged those children to move away from the acequia community and get an education. One stakeholder recounted "*... growing up as a young kid with my dad and mom, big ranchers from Colorado would recruit people from [our community]. They had big fields [that needed to be worked]. I didn't want my kids to be doing that. I wanted my kids to get an education. We barely had enough food to put on the table back then. I'm guilty of not instilling in my kids this sense of community.*" Another stakeholder added "*living on the ranchito is very high quality of life but we erased it somehow*".

These observations have guided the direction of the grant proposal to Western SARE. C. Steele will lead a grant application collaborating with NMSU extension in northern NM and the NM Acequia Association that focuses on bridging the disconnections between generations. Grant monies applied for will be used to fund camps / and or field trips that pair children with producers in acequia communities.

Travelling museum exhibit

The *acequia* group we will be putting together a travelling exhibit (curator: S. Rodriguez) describing the sustainable nature of acequia systems. The exhibit will most likely comprise panels, sound recordings and a video display. The content will include topics such as how these traditional methods of irrigation and farming preserve ecosystem and water resources; the resilience and longevity of acequia systems and how this relates to community institutions and cultural traditions and how the acequia communities are threatened by land use, climate and population change. The focus will be on the current status of acequia communities (rather than the history) and future threats to their existence.

After being displayed at two locations in Northern NM, we will bring the exhibit south to the Farm and Ranch Museum in Las Cruces (in 2014).

International Acequia Workshop

A breakout group on the Thursday evening first discussed the basic objective and scope of an international symposium/workshop (named "the global workshop"). This workshop is being led by S. Rodriguez and will consist of a symposium, a keynote lecture and a workshop to write the conference proceedings. The global workshop will include acequia researchers from Spain, Peru, Bali, New Mexico and Chile and will be held on March 5th and 6th, 2013 (location to be determined). Planned attendance is 150-200 people during the symposium with 200-300 attending the keynote lecture.

The global workshop will tentatively consist of: 2 panels of four people each to discuss our current research in New Mexico and 2 panels to discuss work in other locations. This equates to a total 16 invitees. A final panel will summarize the differences and similarities in acequia research around the globe. Each presenter will have approximately 20 minutes to present their research which should include (i) methodology, (ii) questions for the future, (iii) policy implications of their work.

Invited so far: Elinor Ostrom (Indiana University, Nobel Laureate in Economic Sciences [key note]), Paul Trawick (University of Kentucky), and Michael Cox (Indiana University), have already been invited.

IWG Participants

Acequia and Extension Representatives

David Archuleta	New Mexico State University, Extension, Alcalde
Gloriana Atencio	Lower Rio Hondo
Jeff Bader	New Mexico State University, Extension
Juan Garcia	El Rito
Ursula Rosaeur	New Mexico State University, Extension, Taos
David Salazar	New Mexico State University, Extension, Alcalde
Palemon Martinez	Upper Rio Hondo
Lucas Trujillo	El Rito
Pat Torres	New Mexico State University, Extension, Alcalde

Academics

Israel Calsoyas	New Mexico State University, Graduate Student
Andres Cibils	New Mexico State University
David Esquibel	New Mexico State University, Graduate Student
Bobbie Jo Fossberg	New Mexico State University
Moises Gonzalez	University of New Mexico
Brian Hurd	New Mexico State University
Karina Jurado	New Mexico State University, Graduate Student
Stephanie Lopez	New Mexico State University, Graduate Student
Greg Pederson	USGS Northern Rocky Mountain Research Center, Bozeman, Montana
Elizabeth Samson	New Mexico State University, Graduate Student
Stephanie Walker	New Mexico State University
Quita Ortiz	NM Acequia Association

Conveners

Sam Fernald	New Mexico State University
Steve Guldán	New Mexico State University, Alcalde
Carlos Ochoa	New Mexico State University
Jose Rivera	University of New Mexico
Sylvia Rodriguez	University of New Mexico
Caiti Steele	New Mexico State University
Vince Tidwell	Sandia National Laboratories

Meeting Agenda

Thursday February 2, 2012

2 – 3.30 pm	Participants arrive
3.30 – 4.00 pm	Tea
4.00 – 6.00 pm	Preparation for Friday's meeting with stakeholders
6.30 – 7.30 pm	Supper
7.00 pm	Global Workshop/Conference planning

Friday, February 3, 2012

7 – 8 am	Breakfast
8 – 9.30 am	Concurrent break-out sessions: Group 1: Socio-cultural, economic and field outreach group Group 2: Hydrology, climate...
10 – 10.15 am	Acequia research: Big picture (Sam, Steve)
10.15 – 11 am	Prepared questions, feedback from stakeholders, stakeholders' questions
11 – 11.15 am	Acequia systems: Land, water, and people connections (Vince, Carlos)
11.15 - 12	Prepared questions, feedback from stakeholders, stakeholders' questions
12 – 1 pm	Lunch
1 – 1.15 pm	Socio-cultural, economic and field outreach group report
1.15 – 2.00 pm	Prepared questions, feedback from stakeholders, stakeholders' questions
2.00 – 2.15	Time built in for over-run
2.15 – 2.30	Stephanie Walker presents on Western SARE opportunities
2.30 – 3 pm	Wrap up and next steps: focus on stakeholder needs?
3 – 3.15 pm	Break
3.15 – 4.15 pm	Invited presentation on Climate change, snowpack, and streamflow in the Rockies Greg Pederson USGS
4.15 – 5.15 pm	Jeff Bader presents on extension activities in Northern New Mexico (with questions)
6.00 – 7.00 pm	Supper
7.00 – 8.00 pm	Informal proposal discussions

Saturday, February 4, 2012

7 – 8 am	Breakfast
8 – 9 am	Museum group meeting
9 – 10 am	Greg Pederson: How to publish in high impact journals
10 – 10.15 am	Break
10.15 am – 12 pm	Review on Friday's meeting with stakeholders, identify future research directions.
12 – 1 pm	Lunch
1 – 1.45 pm	CNH Meeting
1.45 – 3.00 pm	Preparation of paper on stakeholders and research involvement Plan paper sub-headings and assign tasks
3.00 – 3.15 pm	Break
3.15 – 5 pm	Concept mapping for paper sub-sections Agree time for conference call
