

New Mexico Water Resources Research Institute Student Research Grant
Final Report

The Everyday Politics of Irrigated Agriculture and an Uncertain Future

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Flood irrigated cotton with the Organ Mountains in back.

Research Problem and Objectives

The expanses of beige desert scrub of southern New Mexico are interrupted during the agricultural growing season with patches of green oases. Irrigated agriculture transforms the landscape, diverting surface and ground water to carefully delineated segments of earth to be absorbed by the thirsty soil and growing plants. The magic of growing crops in the desert obscures the politics that shape the physical flows of water, how water resources are used, and by whom. Irrigation is a political process, and, like all political processes, is contested by different stakeholders. Surface water flows across state and national borders, its use governed by treaties and compacts, while groundwater aquifers extend beyond the political borders we draw on the surface. The contested nature of these unruly resources is exemplified by the current litigation between Texas and New Mexico in which Texas argues that it is not receiving its full water allotment guaranteed by the Rio Grande Compact because of New Mexico's groundwater pumping for agriculture. The threat of groundwater use restrictions for agriculturalists from this ongoing litigation coexists with other concerns: dwindling groundwater resources, severe drought conditions, restrictions proposed to protect endangered wildlife, and low commodity prices for crops that are comparatively drought tolerant. Each of these concerns call into question the future of irrigated agriculture in southern New Mexico. This project examines the everyday politics of agricultural water use in the context of an uncertain future in order to:

- 1) Examine on-the-ground practices of agricultural water use and conservation.
- 2) Identify the attitudes, fears, hopes, and meaning behind such water practices, especially in relationship to planning for the future.
- 3) Explore how agricultural water users interface (or do not interface) with institutions that work to legislate, conserve, or shift practices around water use.

Description of Methodology

This project used qualitative, ethnographic methods including participant observation, and document analysis, along with semi-structured interviews. Through daily interactions with those involved in agriculture, I witnessed and documented through extensive field notes how agriculturalists are currently using water, including the kinds of irrigation technology that they employ, water-saving practices that they use, and sources of institutional assistance that they engage. I used participant observation and interviews to document opinions and fears about water resources, and how agriculturalists are organizing to meet the challenges of potential water scarcity. I examined how agriculturalists and the institutions that they interface with imagine the future of irrigated farming in New Mexico, who/what shapes those ideas about the future, and how such ideas affect the daily practices and long-term projects of agriculturalists. Besides working with those involved in agriculture, the produce industry, and University Extension services, I also attended water conservation meetings, water conferences, and joined a water modeling research group at WRI. This helped me to understand the experiences of water managers, planners, and scientists and their interactions with, and ideas about, agricultural

stakeholders. I used qualitative analytic coding reveal patterns and themes in the data in interview transcripts, field notes, and documents.

Results and Discussion

1. Agriculturalists in the Rincon and Mesilla Valleys are acutely aware of the need to address long-term water availability and water quality concerns. Many of the agriculturalists expressed a strong desire to be good stewards of land and water resources, and many were actively taking steps towards conserving water through the use of drip irrigation, laser leveling, closely monitoring soil moisture levels before irrigating, and at times choosing less water intensive crops during years in which surface water is scarce. Agriculturalists are also increasingly taking steps to increasing soil health for better moisture retention, and working to decrease their use of agro-chemicals wherever possible.

Despite these individual efforts at conservation of water quantity and quality, many farmers expressed that they feel overwhelmed in the face of long-term water scarcity issues. There is little clear planning as to how to maintain agricultural livelihoods while protecting long-term water resources. Some farmers noted that these are problems that need to be addressed collectively and lamented the lack of collective action.

2. Agricultural decision-making is deeply embedded in social and political contexts. While water availability and water quality might be considered by agriculturalists as they decide what to plant, other political factors also play a key role. For example, I found that the decision to switch from row crops to more “thirsty” pecans was not just related to commodity price, and was instead more closely linked to labor shortages in my data. Frustration with the inability to find labor at critical moments in the agricultural cycle led many agriculturalists in the area to abandon row crops in favor of growing pecans because they are so much less labor intensive. As such, policies of border militarization, lack of comprehensive immigration reform, and difficulty navigating the limited work visa programs had a direct affect on irrigated agricultural water use in the Rincon and Mesilla Valleys.

Similarly, our trade policies also have an effect on water use. The introduction of the North American Free Trade Agreement left many farmers unable to compete with imported agricultural products from just across the border. Again, this is particularly true for row crops that require large mounts of seasonal labor, like chile. Much of the chile previously produced in New Mexico is now produced just across the border in Chihuahua where labor costs are significantly lower. Here there is another link between politics and the move towards cultivating water intensive but labor saving crops. Thus, those who researching or managing water futures must take into account how contemporary politics shape agricultural decision-making.

3. Through participant observation at events related to water planning and management, water modeling, and water conservation, I noticed how agricultural water users are often lumped together in a single category and considered abstractly. However, the agricultural community in the borderlands is very diverse in terms of what they are producing, land tenure, wealth, political connections, cultural relationship to water resources, age, gender, race, ethnicity, language dominance, and experience level. These lines of difference can affect the agriculturalists’ relationship to land and water resources. For example, between ranchers, dairy farmers, row croppers, and pecan growers, there are very different water needs and water quality concerns, and

they rely differently on surface versus groundwater resources. In regards to land tenure, while the default farmer considered by water planners is also a landowner, there are many different kinds of communally held lands, as well as renting or leasing practices in agriculture. These alternative kinds of land tenure affect a farmer's ability to make decisions about land and water use, but also might prevent a farmer from being able to take advantage of governmental programs that encourage investment in more efficient irrigation infrastructure. Therefore, researchers and water managers must avoid assuming that the opinions, experiences and desires of one or few agriculturalists provides an adequate understanding of the agricultural perspective that they wish to engage.

4. Water planners and scientist are increasingly aware that hydrological systems research and planning must account for the complexly intertwined nature of hydrological and social systems. Allowing economic or demographic statistical data to stand in for social life does not do justice to complex social dynamics at work. While it can be difficult to translate the fine-grained specifics of ethnographic data into data that is useful in water modeling and planning efforts, there is real potential for very productive interdisciplinary work that can lead to better results for all parties. Social science approaches can also be helpful in developing effective stakeholder engagement practices.



New Mexico type green chile.

Who Could Benefit from Results

This research could be of use to water researchers, planners, and managers. Specifically, those involved in water modeling efforts that need to take agricultural water use variables into account, as well as the local, state, regional, and binational water planning organizations. These findings could also be of use to conservation agencies looking to understand agricultural livelihoods and/or partner with agriculturalists in their efforts.

Potential Avenues for Future Research

One avenue for further research is examining the effect of water related collective organizing or collaborative participation by agriculturalists on their perceived ability engage in proactive management of long-term water futures. Additionally, and examination of what the barriers to agricultural collective action are, and what incentives might encourage participation, are important questions for water resource management.

Presentations Made Related to Research

“The Uncertain Future of Irrigated Agriculture in New Mexico” New Mexico Water Resources Research Institute Annual Water Conference Poster Session, October 18, 2018.

“Negotiating Difference and Considering Power: An Anthropological Perspective on Engaging Agricultural Stakeholders” IBWC Binational Summit on Groundwater at the US-Mexico Border, April 11, 2019.

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Future Plans

I am currently in the dissertation research phase of my Anthropology Ph.D. program at the University of New Mexico. After receiving my degree I plan to work in academia. Because of my WRRI grant, I also plan to continue my work with water modeling efforts and work at the nexus of physical and social science approaches in an effort to address pressing socio-environmental concerns.