

# The Future of Water for Agriculture: Pressures in the Colorado River Basin Perceived by Ag Producers<sup>1</sup>

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## ABSTRACT

Water used for agriculture in the Colorado River Basin and throughout the western United States is being eyed by those seeking water for other uses: urban, environmental, recreation, energy production. As “buy and dry”—buying ag water and permanently removing it from the land—is increasingly losing favor because of its negative repercussions, some are experimenting with alternatives. These alternatives include rotational fallowing and deficit irrigation to free up some of a farmer’s ag water for temporary, often drought-year, leases. Other options including water banking and multiple benefit infrastructure projects. We and others have used the term “water sharing” to describe strategies being considered.

While policy makers, scientists, and academicians are busy researching and exploring these opportunities, few agricultural producers have been actively involved. At a meeting at the Colorado River Water Users’ Association convention in Las Vegas, Nevada, in 2011, one manager of an irrigation district said, “We don’t like this term ‘water sharing.’ We own the rights to our water; if you want a share in it, bring money to the table.” Terminology aside, some ag producers are showing interest in these alternatives that could boost their profit line and allow them to keep farming.

Believing it is important to understand the range of attitudes held by agricultural producers in regard to the future of their water, researchers from the seven land grant universities in the Colorado River Basin are interviewing and surveying farmers and ranchers and those who manage their water. The results of our findings may lead to pilot projects cooperatively led by ag producers and universities to assure that ag interests are at the forefront of any “water sharing” or temporary transfer strategies. Here, we share preliminary findings.

## Introduction

Colorado State University's Colorado Water Institute is spearheading a USDA-funded research project on water for agriculture in the Colorado River Basin (CRB). Carried out in partnership with the seven CRB land grant universities (Colorado State University, University of Arizona, University of California, University of Nevada, New Mexico State University, Utah State University, and University of Wyoming), we want to find out what

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farmers, ranchers, and water managers are thinking about the current and future status of their agricultural water. Through this project, we hope to identify ways in which land grant universities can better assist agricultural water users and managers with the challenges they are facing.

Here, we briefly report on our progress with the research, which includes in-depth exploratory interviews and survey and mapping activities.

### **The Interviews**

We have completed in-depth telephone interviews with more than sixty farmers, ranchers and water managers in all seven CRB states. Our other university partners helped us identify areas of high significance for agricultural water within each state and assisted us in contacting potential interviewees. We asked interviewees open ended questions about what they felt were the main pressures, if any, on agricultural water, how farmers were responding, how they saw the future of agricultural water and how land grant universities might help. Although we are in the process of analyzing the rich information from these discussions, below we provide some preliminary thoughts on what we have learned.

### **The Survey**

The project team will be administering an online survey of farmers and ranchers in selected counties of Colorado and Arizona who use Colorado River water. The survey will address similar topics as those covered in the interviews, but will gather information from a broader audience in order to help formulate collective solutions to keep irrigated agriculture viable in the Colorado River Basin. The survey seeks to:

- Identify what CRB agricultural water users think about the current and future state of their water supplies and production activities.
- Identify and compare the attitudes, beliefs, and perceptions held by agricultural water users towards the changes and pressures they are/are not facing with their water supplies, changes in water law and policy, and how to meet future water demands.
- Gather data on agricultural producers' interest and involvement in temporary and permanent agriculture water transfers and water banks.
- Identify how agricultural producers work cooperatively with other agricultural and non-agricultural stakeholders.
- Identify how land grant universities can better assist farmers and ranchers with the challenges they are facing, or will be facing with regard to their agricultural water.
- Gather ideas for projects, partnerships, and other initiatives to work with agricultural producers to help address the challenges they are facing with regard to their water and operations.

## **The GIS Mapping Activities**

The project team conducted a mapping exercise in December 2011 with approximately 40 agricultural representatives from the CRB. A geospatial database is being created to help us better understand how agricultural water is administrated and managed in the seven CRB states. Data collected includes:

- political jurisdictions including counties, states, tribal lands, counties, and municipalities
- hydrologic boundaries defined both by state and by hydrologic unit
- agricultural water jurisdictions within the basin including Bureau of Reclamation projects, irrigation districts, water conservancy districts and conservation districts, water users associations, and private irrigation and ditch companies
- environmentally sensitive areas such as salinity control areas, designated wild and scenic stretches of the Colorado River and tributaries, and areas where endangered species are identified as of concern or are actively being protected.

Maps have also been an integral part of the interview process. With help from water leaders in each state, we created maps to help us locate areas where agricultural water is especially important and where we needed to interview individuals and key water organizations' representatives. Though the interviewees' identities are confidential, during the interviews we referenced digital maps showing local political jurisdictions, waterways and other features to help us locate our discussion in the complex geographic space occupied by the interviewees.

All of the base maps were created from a comprehensive geospatial database of the CRB that is being developed under the direction of CSU professor, Dr. Melinda Laituri.

## **Preliminary Results from the Interviews**

Agricultural water users across the CRB are of course, very diverse. They operate across geographical contexts that vary from Upper to Lower Basin, high-altitude to sea level areas, and from forested to semiarid regions. They engage in a wide range of agricultural activities, from cattle ranching and cropping of pasture, alfalfa and small grains, to high value vegetables, fruits, nuts and more. Agricultural water users and managers operate under the 1922 Colorado River Compact and the Law of the River, yet each state provides distinctive frameworks for agricultural water use, management and transfer.

Agricultural water users and managers operate in a complex set of organizational contexts, from individual surface water diverters and groundwater users to ditch companies, irrigation districts, and water conservancy districts. Nevertheless, agricultural water users and managers report a number of common challenges (though their experience of them is shaped by geographic location, the history and seniority of their water rights, the type of agriculture and ranching, the proximity of urban areas and other competing water users, etc.).

These common challenges include uncertain water supplies, extended drought and the threat of climate change, and competition and conflicts with other water users within

agriculture and from energy, environmental, recreational, and municipal/industrial sectors.

Many respondents have talked about the need for storage to manage effectively for multiple use and conservation but often express concern about the barriers posed by negative public views of storage and time-consuming and expensive permitting processes. Conjunctive management of surface and groundwater poses increasingly complex problems of water access and management.

Many have commented on how government regulatory frameworks, especially the Endangered Species Act, the National Environmental Protection Act, the Clean Water Act and health and safety regulations, have fundamentally changed not only how water is used, but agricultural production itself.

Many farmers have expressed concern about the need to strengthen public understanding of the importance of agriculture for a secure and healthy food supply. Many also have observed that the key role irrigated agriculture plays in creating ecological and amenity values is not well understood by many in the environmental and recreation communities. Others have remarked on the increasingly litigious environments in which discussions of water are occurring and suggested that more real progress can be made when people can stay out of court.

Our interviewees have also spoken, often with great poignancy, about uncertain futures for family farms and agribusinesses as younger generations choose not to continue in agriculture. Numerous interviewees have spoken of farming's future as one integrated with growing cities, with fewer traditional operations and many smaller "amenity" farms.

Some farmers spoke of selling parts of their land and water rights to developers or even acting themselves as development investors, with returns reinvested in agriculture elsewhere or in helping secure their retirement.

It seems clear that agricultural water users are not affected the same way by the challenges facing them today. Many interviewees describe themselves as positioned to move ahead and either surmount these challenges or adapt to them in new and productive ways. These well-positioned users of agricultural water are found in all parts of the CRB represented by our interviews. Yet agriculture and agricultural water is described as strongest where geographic and climatic conditions allow highly productive agriculture with year-round, high-value commercial cropping.

Water users with the most senior water rights are more cushioned from the uncertainties of an intensively used river and of supplies threatened by extended drought and predicted climate change. Though having urban areas nearby generally results in significant pressures from non-agricultural water demands, transportation and communication infrastructure also mean lower costs of production and marketing. Significantly, it is in these areas that interviewees spoke more consistently of new generations entering farming, ranching and related agribusiness.

Agricultural water users working in geographical areas where climatic and soil conditions pose higher obstacles to productivity, shorter growing seasons, and greater isolation from

markets, face special challenges in adapting to new water pressures. More of these respondents spoke poignantly about their sense of the threats to a traditional farming way of life, as their children seek futures outside of agriculture.

Yet these interviewees are clearly not giving up; on the contrary, they express deep commitments to what is in many cases, multi-generational investments in their land, water and agricultural way of life. They also express a strong commitment to providing food for our society, and their concern for national food security. Moreover, they are working hard to develop innovative ways to protect their water and their communities.

Indeed, interviewees throughout the CRB have talked about innovative strategies they are developing to overcome or adapt to pressures on agricultural water. In many areas, as in California, Arizona and Colorado, agricultural water users and managers have embarked on new agreements with large urban water users to develop water supplies for multiple objectives, including urban, environmental, recreation and agriculture. Several water managers have described their organizations' services to multiple user groups and their need to plan for more urban and municipal demands while maintaining support for agriculture.

In several areas, such as Wyoming, Colorado and New Mexico, multi-stakeholder forums and organizations have formed to try to manage conflicting claims and perspectives on water by bringing agriculture, environmental, recreation, and other groups to the negotiating table. These initiatives are not easy and have had mixed results, but participants in successful experiences have spoken of what can be achieved with key visionary leaders, a focus on common interests of all parties in healthy local economies and riparian ecologies, willingness of all user groups to compromise, and a commitment to generating concrete results quickly, even if on a small scale.

Other innovative responses reported by interviewees include diverse groundwater recharge programs, formal and informal water banking and a range of leasing mechanisms. Numerous interviewees have reported on innovative approaches to planning storage as a key to developing secure future supplies of water for multiple uses, including agriculture, environmental, and recreational uses.

### **What Needs to be Done?**

Our interviewees have spoken of possible paths to a positive future for agricultural water. They suggest that the broader public might be helped to better understand the importance of irrigated agriculture, not just for securing high quality and safe food for our nation, but also for creating significant environmental and amenity values. As one Wyoming rancher put it, "This is an oasis in the high desert. But God didn't make the oasis. It's man-made. It takes lots of water, diverted regularly in almost impossible quantities to keep it that way."

Interviewees remarked that regulatory frameworks could better recognize both the continuing need for a viable agriculture throughout the Basin as well as its obstacles. Competing water users/stakeholders could develop more effective ways to negotiate, based on understanding if not agreement with other perspectives, and the need for a strong agriculture in the future.

### **What is the Role of Land Grant Universities?**

Most interviewees have expressed positive views of land grant universities. They speak of the Extension agents who help them improve efficiency of irrigation technology and water management, introducing new seeds, and implement better soil practices. Interestingly, although most of our open-ended questions about the agricultural water community's challenges stimulated discussion of issues that are largely political, economic, social and cultural in nature, relatively few respondents had experience with universities helping with these issues.

This suggests to us that land grant universities have an opportunity to bring to bear new kinds of social science research and outreach on the problems facing agricultural water users and managers, in addition their traditional strengths in natural science and more technical disciplines.

### **Posting of Results**

Results from the Addressing Water for Agriculture in the Colorado River Basin project will be summarized and posted on the project website in the spring of 2013. ([www.CRBagwater.colostate.edu](http://www.CRBagwater.colostate.edu))