Agricultural Water Conservation: Angles Colorado Water Institute is Investigating for Colorado and the Colorado River Basin

Reagan Waskom, Colorado Water Institute

2014 Colorado Water Congress Annual Convention

What does Ag Water Conservation mean?

- Decreased crop consumptive use
- Increased crop water use efficiency
- Improved irrigation application efficiency
- Increased irrigation water diversion and delivery efficiencies
- Reduced water use or evaporation through adoption of conservation measures and new technologies
- Increased capture and utilization of precipitation

Ag Water Conservation Related Projects

- Agricultural Water Conservation Clearinghouse
- Addressing Water for Agriculture in the Colorado River Basin
- Moving Forward on Ag Water Conservation in the Colorado River Basin

- Agronomic Feasibility of Deficit Irrigation of Hay as Part of a West Slope Water Bank
- BOR Colorado River Basin “Next Steps” Ag Water Conservation and Transfers Committee

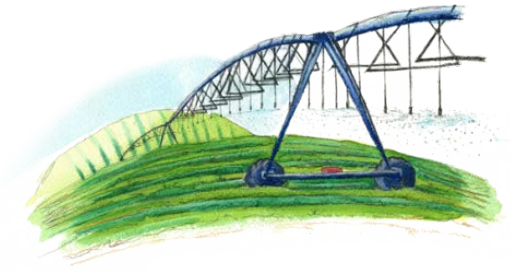
Ag Water Conservation Clearinghouse

www.agwaterconservation.colostate.edu

2011-2013 USDA Project

Addressing Water for Agriculture in the Colorado River Basin

- Project Team – Faculty from the 7 CRB Land Grant Universities
- Working with Ag water users and managers to explore how we can increase Ag water security to maintain productivity
- 60 Interviews: what are the pressures on your water and how are you responding to them?
- Survey of 3 Colorado (Delta, Garfield and Mesa) and 3 Arizona counties



Information about the project can be f

www.crbagwater.colostate.edu

United States Department of Agriculture
National Institute of Food and Agriculture

Interviewee Locations

Animas River
Central Arizona Project
Coachella Canal
Colorado River mainstem
Crystal River
Dolores River
Gila River
Green River
Gunnison River
Little Snake River
North Fork River
Pine River
San Francisco
San Juan River
San Miguel River
Spanish Fork River
Virgin River
Yampa River

NOTE: Points indicate where interviews were conducted with agricultural water managers, users and their respective agricultural water supply organizations.

From the Interviews, one response to pressures

Increased efficiency and water conservation

BUT

Concern about varying incentives and disincentives:

- Water rights laws & historic consumptive use
- Technical production factors: climate, soils, crops cultivated, irrigation technology type
- Return flow considerations

Ag Water User Survey

Preference for Meeting Future Ag Water Supplies

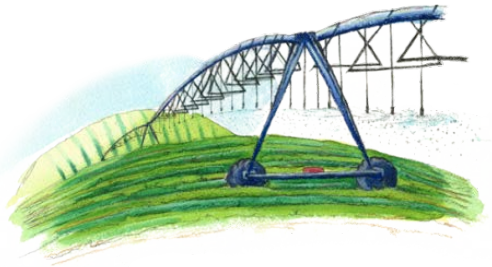
Preference	**Percent (%)**
Water conservation and efficiency	**79**
Public policy that supports keeping land/water in ag	76
New storage infrastructure	46
Expansion of existing storage infrastructure	45
Improved ag management practices	39
Technological innovations	35
Alternative water transfer methods	11
Deficit irrigation	5

2013-2016 USDA Project

Moving Forward on Agriculture Water Conservation in the Colorado River Basin

- CSU Faculty and Staff Project Team
- Learn from Ag producers what conservation methods are likely to work in their area and what changes to surrounding factors may be needed for ag water conservation to be fully effective
- Work with Ag water stakeholders in the basin to identify and address the challenges and barriers for ag water conservation

Information about this project can be found online at
www.crbagwater.colostate.edu



United States Department of Agriculture
National Institute of Food and Agriculture

Moving Forward on Agriculture Water Conservation in the Colorado River Basin

Project Activities

- Pilot Projects – upper (No Chico Brush) and lower basin
- Case studies for university curriculum
- Document and analyze the legal, economic, and social barriers and potential impacts related to ag water conservations
- Expand Ag Water Conservation Clearinghouse **www.agwaterconservation.colostate.edu**
- Undergraduate and Graduate student training
- Project website – **www.crbagwater.colostate.edu**
- Workshops with Extension specialist and agents, irrigation districts, ag producers, tribal partners, and other Land Grant Universities in the CRB
- Basin-wide symposium

Ag Water Conservation: Opportunities and Challenges

Challenges

- Legal
- Financial
- Environmental
- Political
- Social

Opportunities

- Improved crop production
- Conserved water for additional beneficial uses
- Partnerships
- Financial incentives

Benefits from Improvements made in Energy and Water Conservation

Benefits	Percent of Farms Reporting	
	Upper CRB	Lower CRB
Improved Crop Yield or Quality	59%	64%
Reduced Energy Cost	16%	48%
Reduced Water Applied	47%	75%
Reduced Labor Costs	41%	54%
Reduced Fertilizer or Pesticide Losses	15%	30%
Reduced Soil Erosion	37%	59%
Reduced Tail water	34%	39%
Other	16%	1%

*USDA FRIS 2008

Barriers to Adopting Water or Energy Conserving Practices

2008 FRIS Data	Percentage of Farms	
	Upper CRB HUC 14	Lower CRB HUC 15
Investigating improvements not a priority	42%	48%
Risk of reduced yield or poor crop quality	4%	15%
Physical field/crop condition limits system improvements	9%	12%
Improvements will not reduce costs enough to cover installation costs	13%	6%
Cannot finance improvements	27%	41%
Landlord will not share in cost	2%	6%
Uncertainty about future availability of water	7%	19%
Will not be farming this operation long enough to justify improvements	4%	16%
Other	28%	25%

BOR "Next Steps" Ag Conservation, Productivity & Water Transfers Workgroup

Co-Chairs

Ken Nowak, Bureau of Reclamation

Tina Shields, Imperial Irrigation District

Reagan Waskom, Colorado Water Institute

Phase I

Prepare a report that quantifies current ag conservation efforts and transfers (both in and out of the basin)

Document programs that have been successful to date

Document future plans of conservation and transfer activity

Estimate potential savings from existing plans

Phase II

Will be established from Phase I baseline information

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Project Website: www.crbagwater.colostate.edu