Moving Forward on Agricultural Water Conservation in the Colorado River Basin

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WHERE and HOW is Agricultural Water Being Conserved?

We evaluated 75 case studies of how technology can be employed to conserve agricultural water. Four examples are illustrated below.

EXAMPLE CASE STUDIES		State	AGRICULTURAL BENEFIT			ENVIRONMENTAL BENEFIT		URBAN BENEFIT
			Improves reliability of supplies for improved agricultural production	Improves or retains economic return for agricultural producers	Keeps water under ownership for agricultural producers/ irrigation companies	Keeps more water in river or stream for environmental benefits	Increases water quality	Provides supplies for urban use
1	Arizona Best Management Practices Program	AZ		✓	✓			
2	PVID/MWD Forbearance and Fallowing Program	CA		✓	✓		✓	✓
3	Grand Valley Water Management Plan	CA		✓	✓	✓		
4	High Savery Dam and Reservoir: Improving Agriculture and the Environment	CO	✓	✓	✓	✓		

1

Arizona Best Management Practices Program

Developed as an alternative to the 1980 Base Program in 2002 by:
- Arizona Dep. of Water Resources
- The Agricultural Water Conservation BMP Advisory Committee

Goal: Ensuring 80% irrigation efficiency

Voluntary program

Approved BMPs are separated into four categories:
- Water Conveyance System Improvements
- Farm Irrigation Systems
- Irrigation Water Management
- Agronomic Management

Volunteers receive incentives to implement specific agricultural conservation practices that involve on-farm irrigation system improvements and increased farm management.

2

PVID/MWD Forbearance and Fallowing Program

Palo Verde Irrigation District (PVID) and Metropolitan Water District of Southern California (MWD)

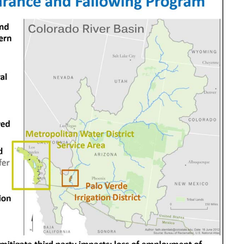
Non-permanent transfer of agricultural irrigation water for urban use
- 2005 through 2040

~6000 to 26,000 acres/yr to be fallowed

25,000 to 118,000 AF/yr is transferred
- 1.8 to 3.9 MAF estimated transfer over 35 years

At PVID, agricultural water conservation was seen as a way to stabilize farm economy.

A mitigation plan was established to mitigate third party impacts: loss of employment of farm workers and reduced sales for agricultural input products such as fertilizer.



3

Grand Valley Water Management Plan

Developed as part of the Recovery Program by Grand Valley Water Users Association and the Bureau of Reclamation

To maintain higher water levels at lower flows for environmental purposes, while improving agricultural irrigation

The initial goal was to save ~28,500 AF/yr and leave it in the 15-mile reach of the river
- It has on average conserved 36,463 AF/yr from 2002-2010.

Improvements include:
- Construction of check structures within the Grand Valley Project
- New operational procedures.
- Modernized canal infrastructure and systems, including SCADA and in system storage

4

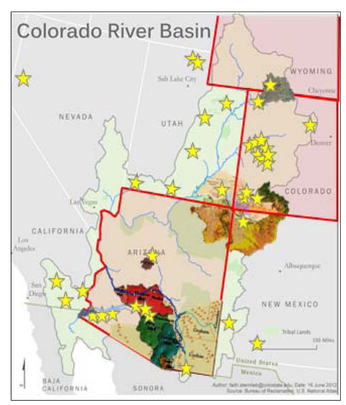
High Savery Dam and Reservoir: Improving Agriculture and the Environment

To mitigate shortages caused by Wyoming's only large transbasin diversion, which removed 21,000 acre-feet of water from the basin.
- A reservoir was built with a capacity of 23,000 acre-feet
- Wetland and stream channel impacts were mitigated
- Environmental attributes along the river corridor were enhanced

A broad coalition among the agricultural community, wildlife and conservation organizations, local, state, and federal government entities.

Supporting local fisheries, improving agricultural irrigation, and providing a buffer against energy and municipal water demands.

75 Case Studies Geographic Location



Arizona (17)
California (3)
Colorado (15)
Nevada (3)
New Mexico (3)
Utah (8)
Wyoming (3)
Multi State (5)
Out of Basin (18)

WHAT are the BARRIERS and OPPORTUNITIES?

Sociological analysis of existing legal, economic and socio-cultural barriers as well as emerging opportunities of agricultural water conservation.

- Secondary literature review
- Interviews
- In-depth case studies

Barriers to Agricultural Water Conservation

LEGAL
- Use it or lose it
- Real and perceived risk of forfeiture
- No third-party injury return flow issues
- Change in use legal requirements
- Upper-Lower Basin Compact issues
- Others

ECONOMIC
- High cost of conservation capital investments
- Crop characteristic-related obstacles
- Real and perceived negative impacts on yields and returns
- Lack of viable cropping alternatives
- Volatile commodity markets
- Little or no economic benefit back to conserving farmers
- Others

SOCIO-CULTURAL
- Diverse concepts/objectives of conservation and efficiency
- Inadequate public understanding of irrigated farming
- Aversion to risk; insecurity
- Distrust of non-farm water interests
- Cultural resistance to deficit irrigation and fallowing
- Uncertain shift to new farming generation
- Negative impacts on local farming communities and economies
- Others

Emerging Opportunities for Agricultural Water Conservation

LEGAL
- Efforts to mitigate forfeiture risks
- Innovative mitigation of third-party return flow injuries
- Efforts toward more flexible alternative transfers
- New Upper-Lower Basin discussion and cooperation
- Others

ECONOMIC
- Capital investment cost sharing arrangements
- Efforts to develop financial arrangements to benefit farmers conserving water
- Alternative transfer agreements
- Mitigation of negative farming economy impacts
- Others

SOCIO-CULTURAL
- Innovative public/private; farmer/municipality; farmer/NGO partnerships
- Stewardship values in support of conservation
- Improved communication among agriculture and non-agriculture water interests
- Efforts to mitigate negative farming community impacts
- Others

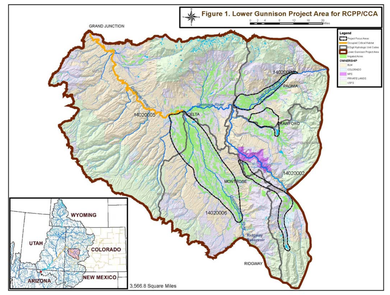
ENGAGEMENT RESEARCH with Agricultural Stakeholders

Dialogue with Colorado River Lower Basin and Upper Basin groups of agricultural stakeholders to strategize practical actions to take advantage of opportunities

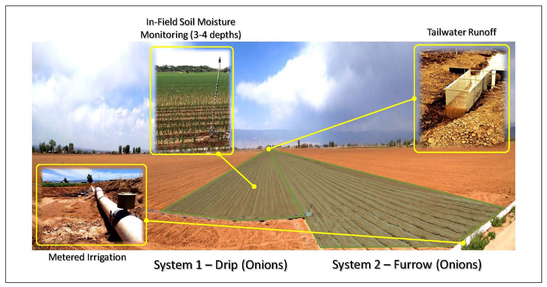
In the Upper Basin:
No Chico Brush - a grassroots group of ag producers in the Lower Gunnison Valley of Colorado, organized to demonstrate how irrigation efficiency measures secure water for agriculture

- Facilitated dialogue internally and with external groups
- Field site demonstrations

John Harold,
Olathe sweet corn producer,
member of No Chico Brush

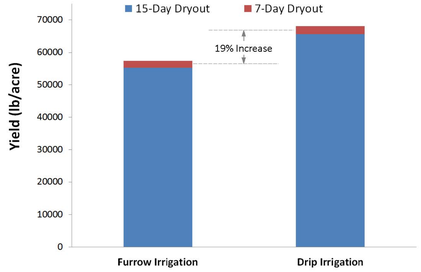


NoChicoBrush Sites



NoChicoBrush Irrigation Research Sites

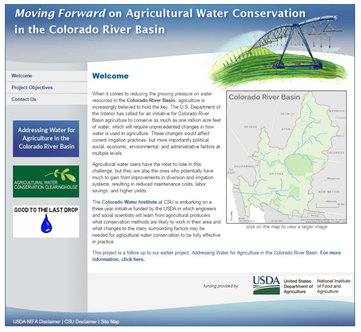
(onions planted 4/5/2014)

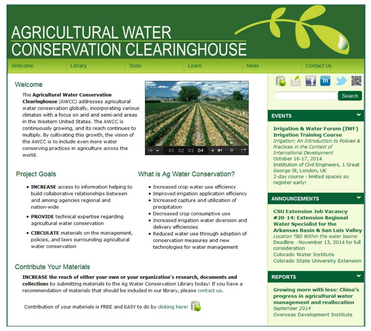


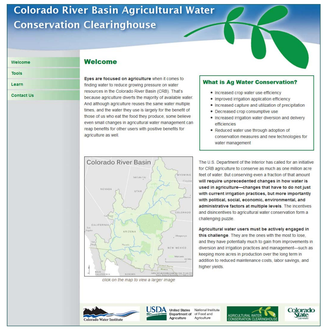
Outreach & Education

Promote actions needed for change in perceptions, adoption of conservation by agricultural producers

- Workshops
- Published Articles
- University Curricula
- Training of Facilitators
- Extension Outreach
- Websites and web tools
- Facilitated dialogue with stakeholders
- Facilitated development of Action Support Matrix







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