Agriculture in the Basin: Now and Into the Future

Reagan Waskom, Colorado Water Institute
2013 Colorado River Water Users Association
A Windshield Tour of ...

- Irrigated Ag in the Colorado River Basin
- Producer and Water Managers’ view of current situation and future of irrigated Agriculture in the Basin
- Ag Water Conservation Opportunities and Barriers
Consumptive Use for Irrigation by State
2000-2005

Source: USBR
Crop Distribution Across Basin
(Irrigated & Non-Irrigated Acreage)

Crop Types, acres
- Forage
- Vegetables
- Wheat
- Cotton
- Seed crops
- Barley
- Corn
- Corn Silage
- Fruits & Nuts
- Sunflower, Safflower, Oats, Sorghum

Source: 2007 Census of Agriculture.
Crop Distribution Across Basin
(Irrigated Acreage Only)

Crop Types, acres

- Alfalfa
- Pastureland
- Hay
- Vegetables
- Wheat
- Cotton
- Orchards, vineyards, nut trees
- Corn for grain or seed
- Small grains
- Corn for silage
- Barley
- Sorghum
- Soybeans
- Other crops

Source: 2007 Census of Agriculture.
Irrigated Basin Acreage - HUC Data

Source: 2007 Census of Agriculture.
Percent Basin Cropland Irrigated - HUC Data

Source: 2007 Census of Agriculture.
Source: 2007 Census of Agriculture.
## Crop & Livestock Value in the Basin

<table>
<thead>
<tr>
<th>State</th>
<th>Livestock $M</th>
<th>Crops $M</th>
<th>Total Products Sold $M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevada</td>
<td>$79</td>
<td>$20</td>
<td>$99</td>
</tr>
<tr>
<td>New Mexico</td>
<td>$81</td>
<td>$75</td>
<td>$151</td>
</tr>
<tr>
<td>Wyoming</td>
<td>$151</td>
<td>$17</td>
<td>$168</td>
</tr>
<tr>
<td>Utah</td>
<td>$296</td>
<td>$57</td>
<td>$353</td>
</tr>
<tr>
<td>Colorado</td>
<td>$262</td>
<td>$211</td>
<td>$473</td>
</tr>
<tr>
<td>Arizona</td>
<td>$1,132</td>
<td>$1,854</td>
<td>$3,032</td>
</tr>
<tr>
<td>California</td>
<td>$1,473</td>
<td>$1,573</td>
<td>$3,046</td>
</tr>
<tr>
<td><strong>Total Products Sold</strong></td>
<td><strong>$3,473</strong></td>
<td><strong>$3,806</strong></td>
<td><strong>$7,322</strong></td>
</tr>
</tbody>
</table>

Source: 2007 Census of Agriculture.
Average Income for Farms in the Basin
(Includes both Irrigated & Non-Irrigated Farms & Ranches)

Source: 2007 Census of Agriculture.
Irrigation Application Methods in the **Upper Basin**

- **Sprinkler**: 27%
- **Gravity**: 73%
- **Drip or Low Flow**: < 1%
- **Subirrigate**: < 1%

Source: 2007 Census of Agriculture.
Irrigation Application Methods in the Lower Basin

- Gravity: 77%
- Sprinkler: 18%
- Drip or Low Flow: 5%
- Subirrigate: < 1%

Source: 2007 Census of Agriculture.
Colorado River Irrigated Acres in Mexico

- Irrigated land in Mexico averages between 483,000 and 513,000 acres (2002-2010)
- Year-round frost-free growing season
- Wheat is planted on more than 50% of acreage

Crops Produced
- Wheat, alfalfa, cotton, barley, sorghum, and corn
- Over 25 different types of vegetables
- Strawberries, watermelon, and raspberries

Source: Pacific Institute (May 2013).
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
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
Benefits from Improvements made in Energy and Water Conservation

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Percent of Farms Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Upper CRB</td>
</tr>
<tr>
<td>Improved Crop Yield or Quality</td>
<td>59%</td>
</tr>
<tr>
<td>Reduced Energy Cost</td>
<td>16%</td>
</tr>
<tr>
<td>Reduced Water Applied</td>
<td>47%</td>
</tr>
<tr>
<td>Reduced Labor Costs</td>
<td>41%</td>
</tr>
<tr>
<td>Reduced Fertilizer or Pesticide Losses</td>
<td>15%</td>
</tr>
<tr>
<td>Reduced Soil Erosion</td>
<td>37%</td>
</tr>
<tr>
<td>Reduced Tail water</td>
<td>34%</td>
</tr>
<tr>
<td>Other</td>
<td>16%</td>
</tr>
</tbody>
</table>

*USDA FRIS 2008
# Barriers to Adopting Water or Energy Conserving Practices

**2008 FRIS Data**

<table>
<thead>
<tr>
<th></th>
<th>Percentage of Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Upper CRB HUC 14</td>
</tr>
<tr>
<td>Investigating improvements not a priority</td>
<td>42%</td>
</tr>
<tr>
<td>Risk of reduced yield or poor crop quality</td>
<td>4%</td>
</tr>
<tr>
<td>Physical field/crop condition limits system improvements</td>
<td>9%</td>
</tr>
<tr>
<td>Improvements will not reduce costs enough to cover installation costs</td>
<td>13%</td>
</tr>
<tr>
<td>Cannot finance improvements</td>
<td>27%</td>
</tr>
<tr>
<td>Landlord will not share in cost</td>
<td>2%</td>
</tr>
<tr>
<td>Uncertainty about future availability of water</td>
<td>7%</td>
</tr>
<tr>
<td>Will not be farming this operation long enough to justify improvements</td>
<td>4%</td>
</tr>
<tr>
<td>Other</td>
<td>28%</td>
</tr>
</tbody>
</table>
Current 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

Information about projects can be found online: www.crbagwater.colostate.edu
1. What are the most important pressures you experience on your agricultural water?

2. How are you and your organizations responding?

3. How do you see the future of agriculture and agricultural water in your area?
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
Common problems, diverse experiences and responses

Ag water users’ experience of pressures, their responses to them and their views of the future are influenced by:

- geographic, climatic and production conditions
- seniority of rights
- strength of farm operations
- proximity to urban areas
- social and cultural factors
Immediate concern about drought in 2012

Concern about future implications for water rights
Growing regulatory pressures

Environmental protection

“We have a bulls-eye on our backs.”

Wyoming water manager
Urban pressures

“Policies are being changed that facilitate water transfer.”
Utah water manager

Environmental & recreation pressures

“They are not financially dependent on the water the way I am... We cannot farm just anywhere. They don't have any skin in the game.”
Dolores River rancher
Responses to Pressures

Increased efficiency and water conservation

Varying incentives and disincentives:

- Water rights laws & historic consumptive use
- Technical production factors: climate, soils, crops cultivated, irrigation technology type
- Return flow considerations
- Social and cultural factors: generational transitions?
A bright future?

Interviewees’ view of the future was most positive where:

- Highly productive, year round production is possible
- Users have senior rights
- Nearby urban areas lower production and marketing costs
- New generations are entering farming and ranching
An uncertain future?

Less optimism about the future where:

- Higher obstacles to productivity and profitability
- More junior water rights
- Ag users face more competition from urban water demand
- New generations seek futures outside of agriculture
Summary of findings from the Interviews

- Uncertainty about water supply security in CRB
- Growing pressure to link surface and groundwater management
- Greater regulatory burden
- Increased pressure across basin for more efficient use of Ag water
- Both cooperation and conflicts created from growing demands by other interest groups
- Concern about a lack of public understanding and support for irrigated Ag
- Uncertain transition to next generation of farmers
- Mixed views about the future
Final Thoughts

• Current agricultural demands exceed all other demands combined – it takes a lot of water to grow food.
• Agricultural water supplies are under pressure from other sectors; significant future actions needed to protect agricultural water uses.
• No free lunch – Conserving Ag water will cost money and/or productivity.
• Agricultural productivity and economies are at risk; still many farmers and water managers envision a strong future for those in the business of food production in the Colorado River basin.
Contact information: reagan.waskom@colostate.edu

Project Website: www.crbagwater.colostate.edu