Agriculture in the Basin: Now and Into the Future

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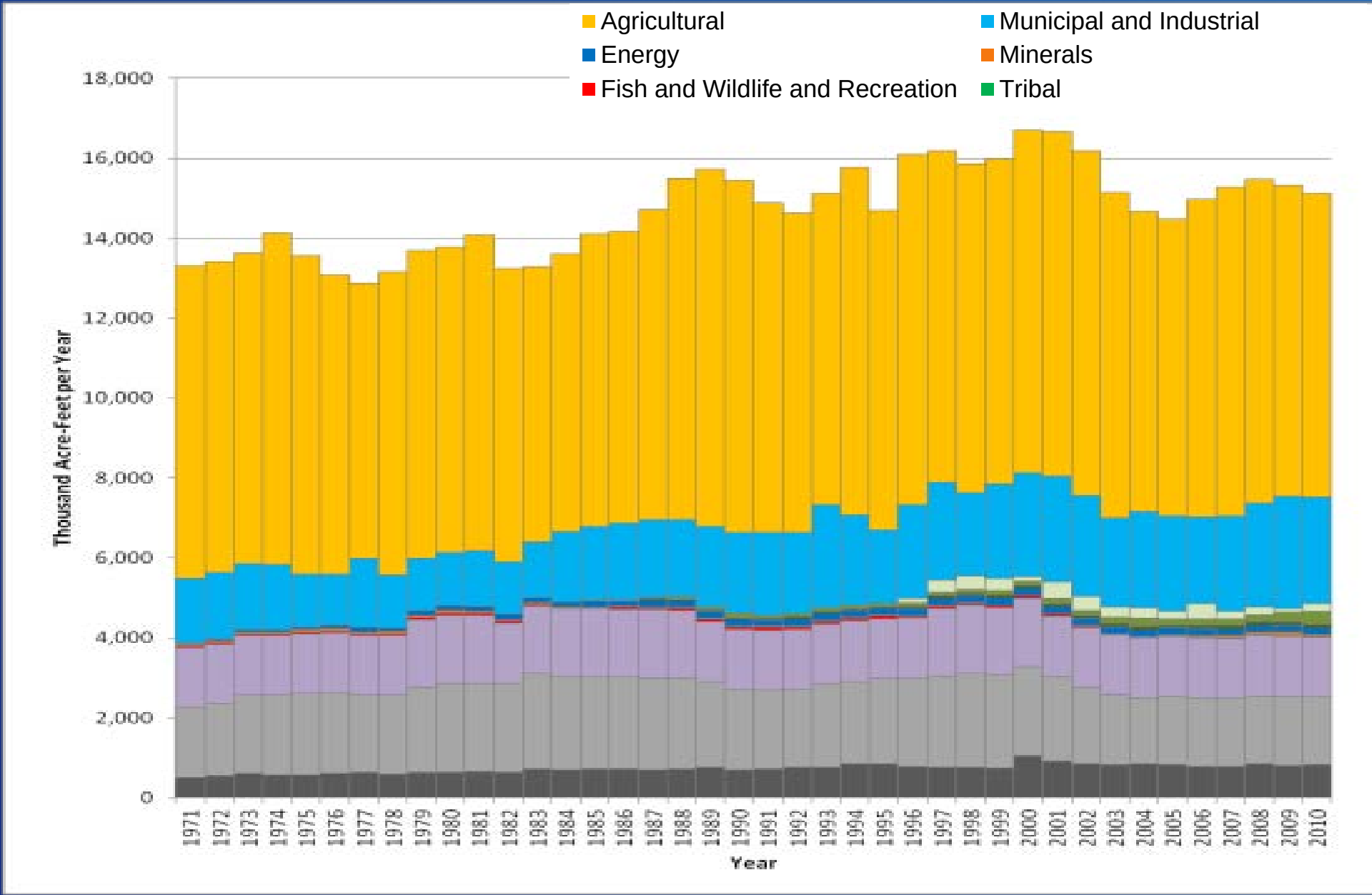
2013 Colorado River Water Users Association

A Windshield Tour of …

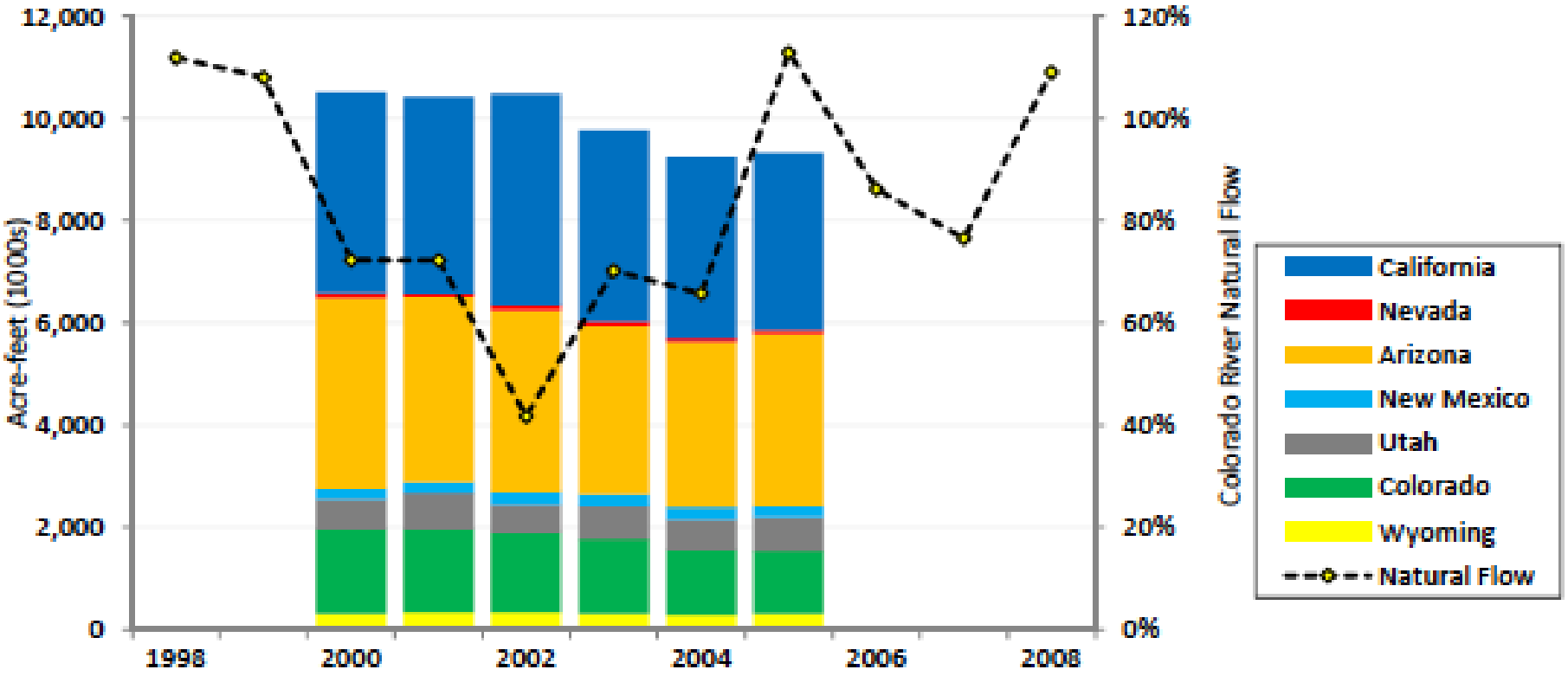
- Irrigated Ag in the Colorado River Basin
- Producer and Water Managers' view of current situation and future of irrigated Agriculture in the Basin
- Ag Water Conservation Opportunities and Barriers

Colorado River Historical Consumptive Use
1971 - 2010



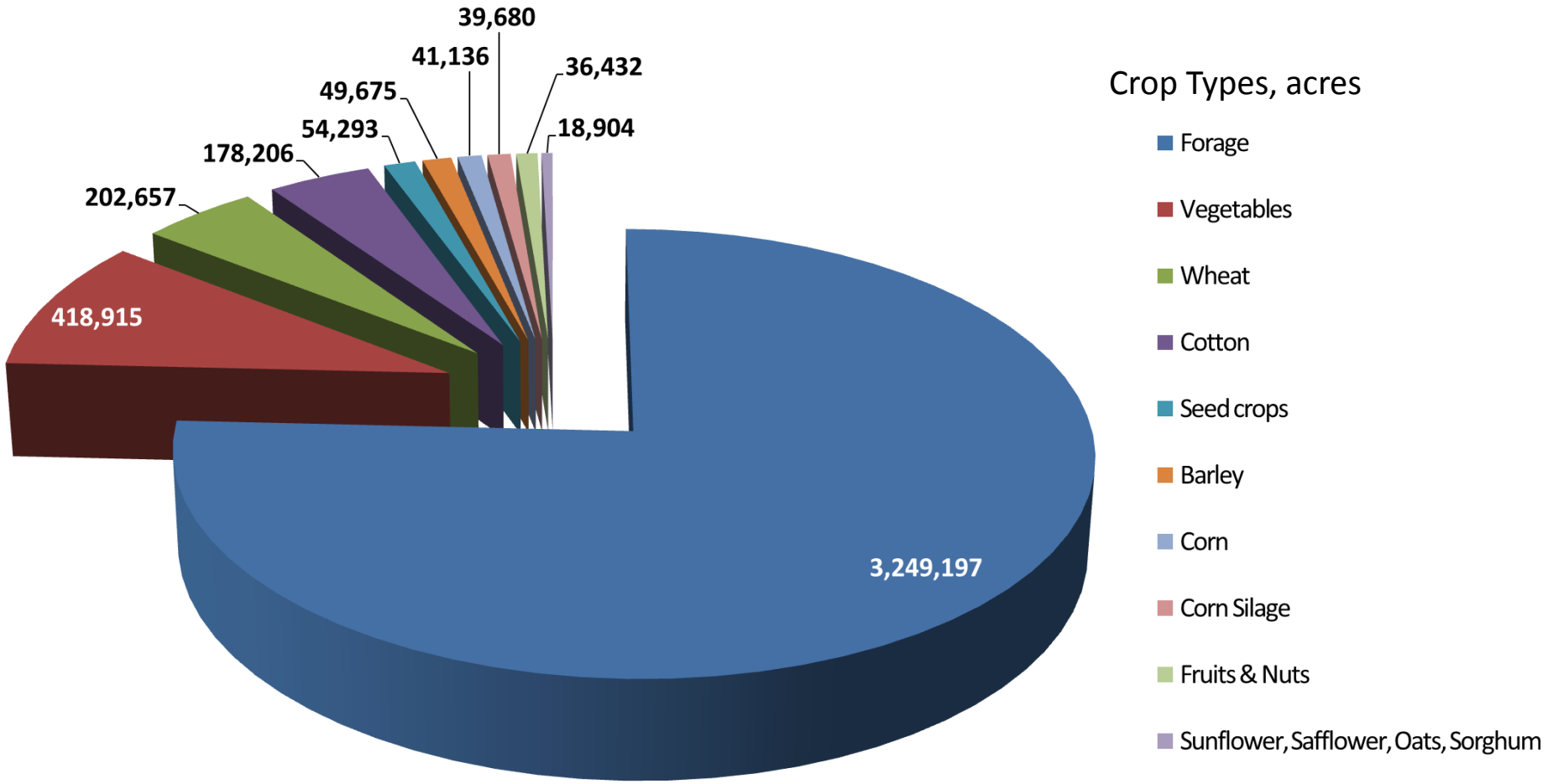
Consumptive Use for Irrigation by State

2000-2005



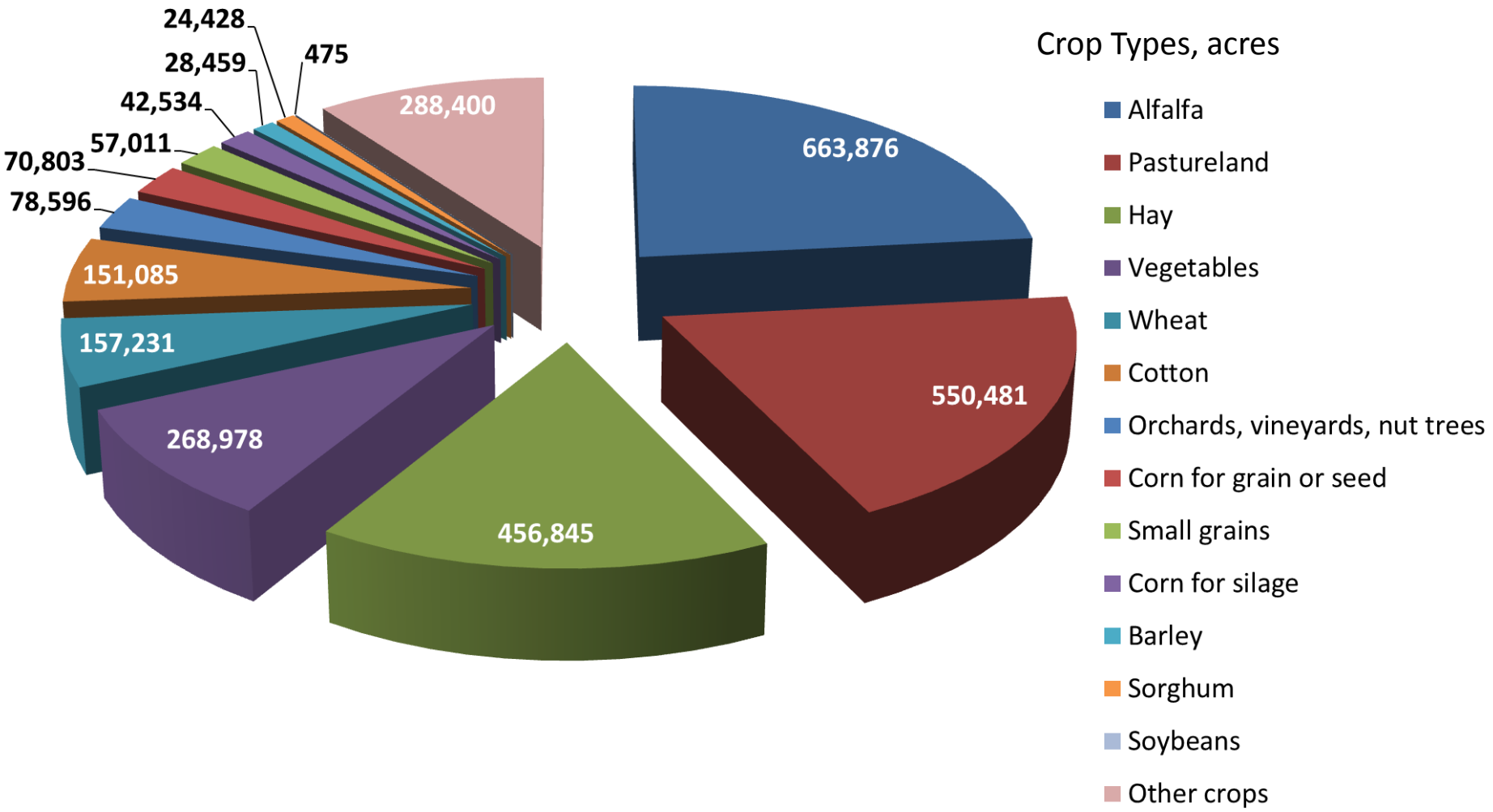
Source: USBR

Crop Distribution Across Basin
(Irrigated & Non-Irrigated Acreage)



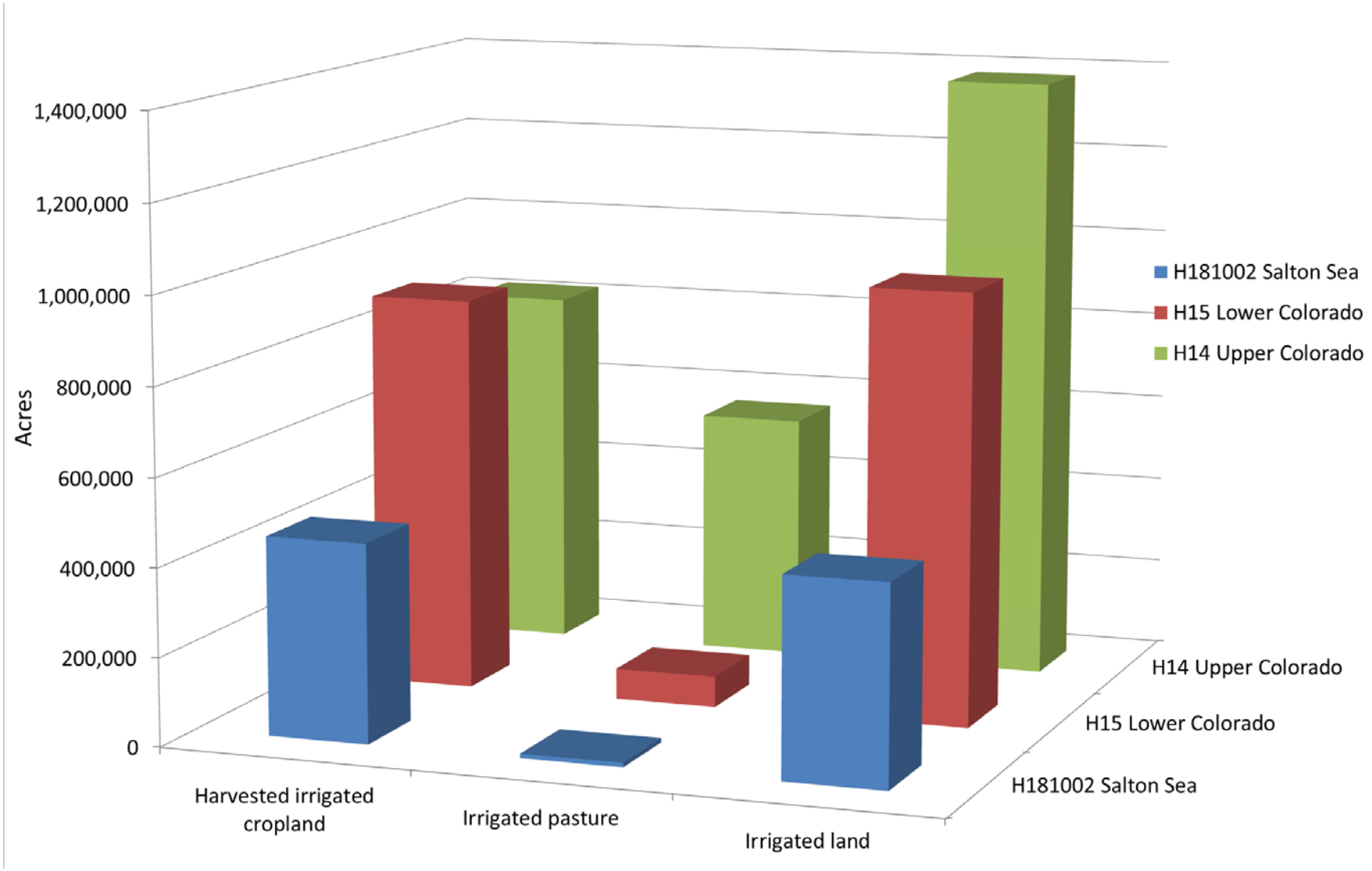
Source: 2007 Census of Agriculture.

Crop Distribution Across Basin
(Irrigated Acreage Only)



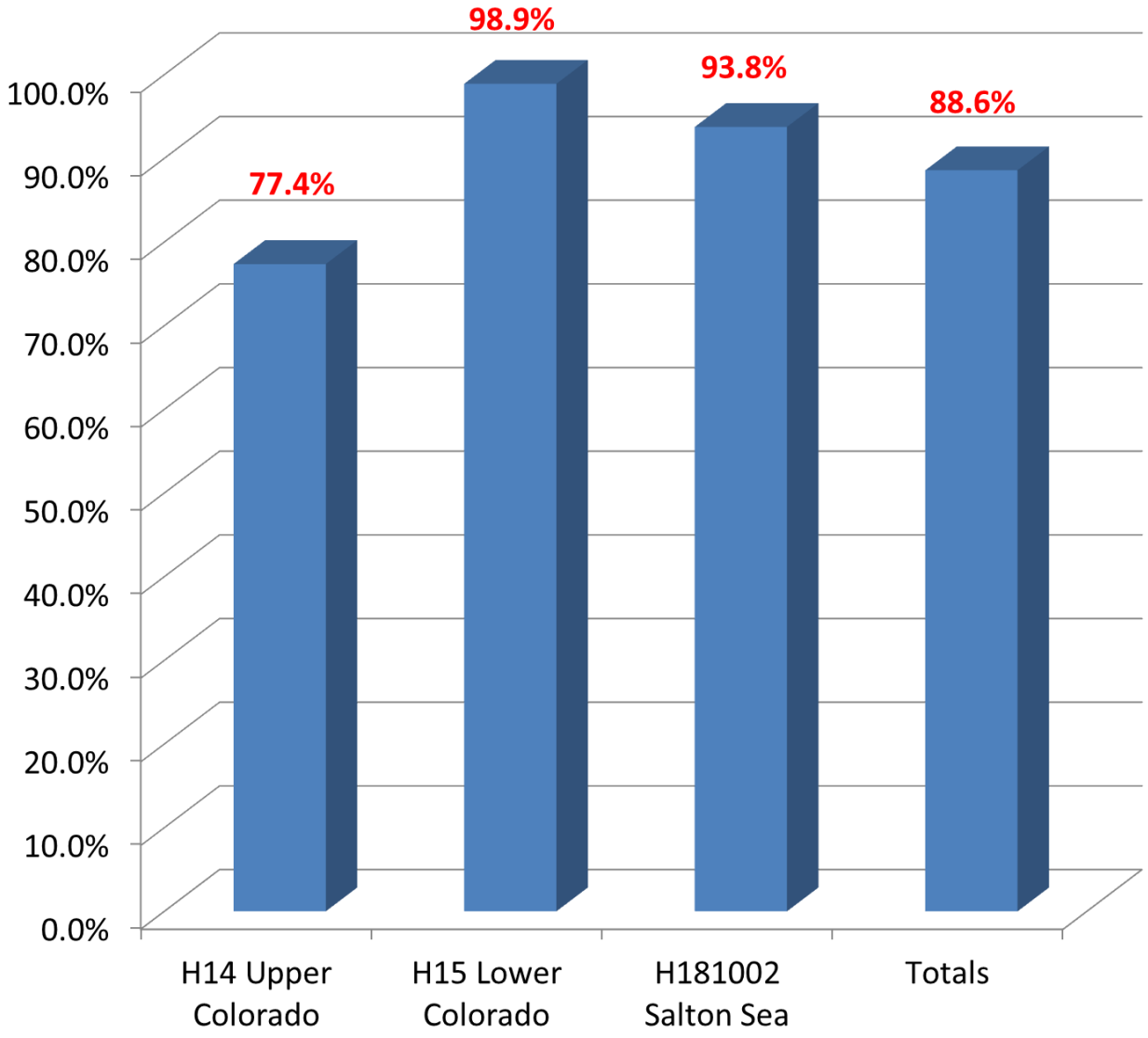
Source: 2007 Census of Agriculture.

Irrigated Basin Acreage - HUC Data



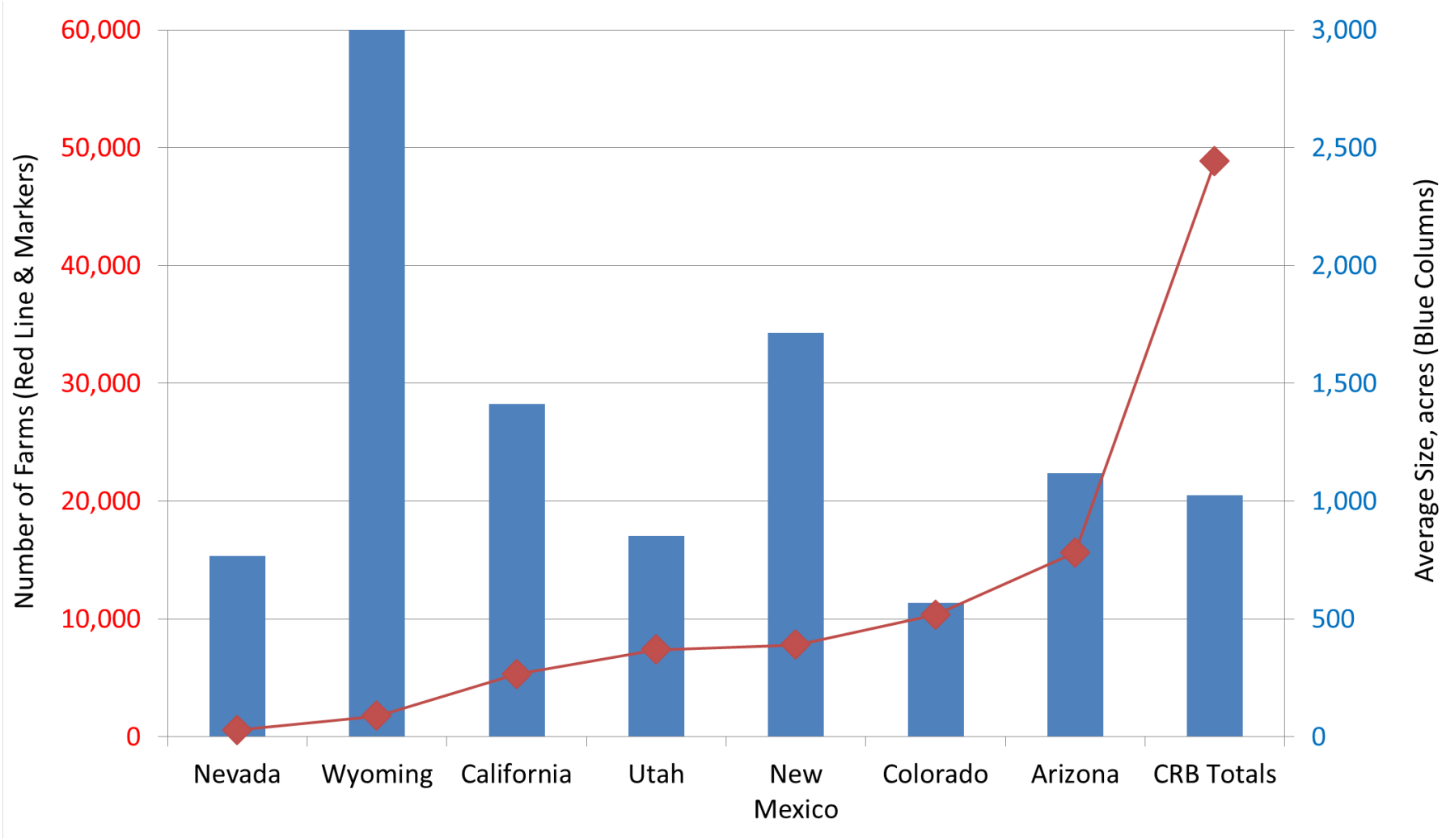
Source: 2007 Census of Agriculture.

Percent Basin Cropland Irrigated - HUC Data



Source: 2007 Census of Agriculture.

Number of Farms & Average Size
(Irrigated & Non-Irrigated Acreage by County)



Source: 2007 Census of Agriculture.

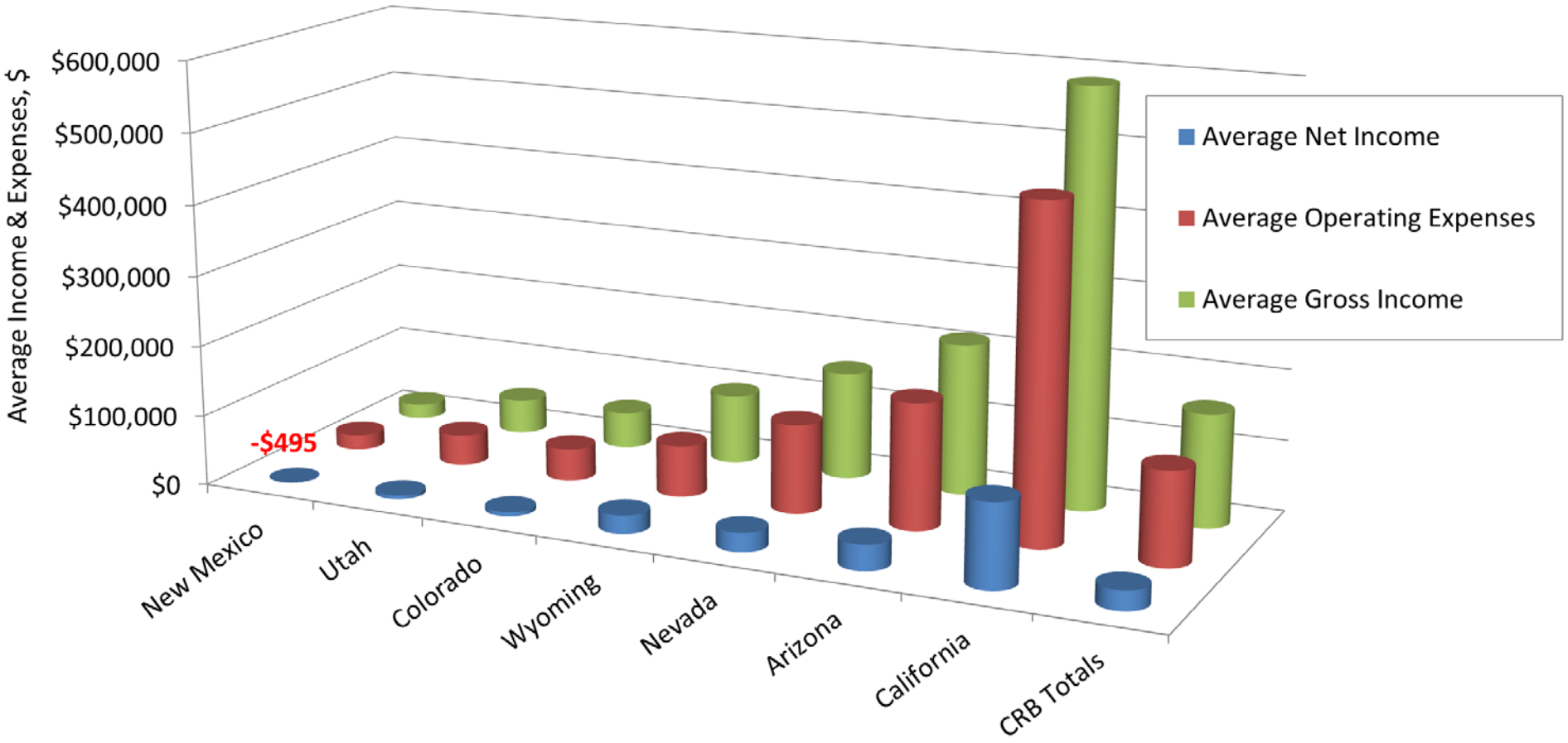
Crop & Livestock Value in the Basin

	Livestock $M	Crops $M	Total Products Sold $M
Nevada	$79	$20	$99
New Mexico	$81	$75	$151
Wyoming	$151	$17	$168
Utah	$296	$57	$353
Colorado	$262	$211	$473
Arizona	$1,132	$1,854	$3,032
California	$1,473	$1,573	$3,046
Total Products Sold	**$3,473**	**$3,806**	**$7,322**

Source: 2007 Census of Agriculture.

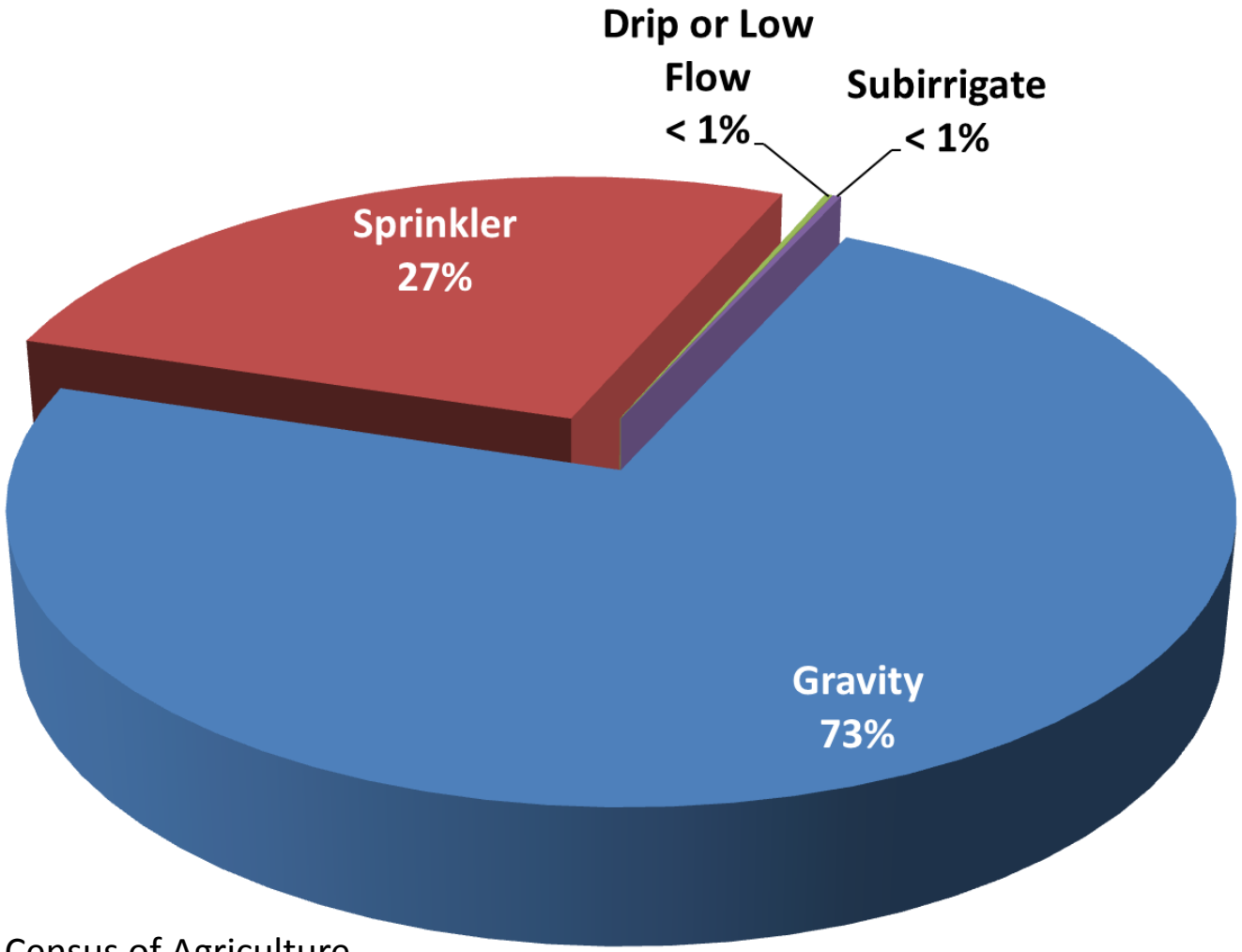
Average Income for Farms in the Basin

(Includes both Irrigated & Non-Irrigated Farms & Ranches)



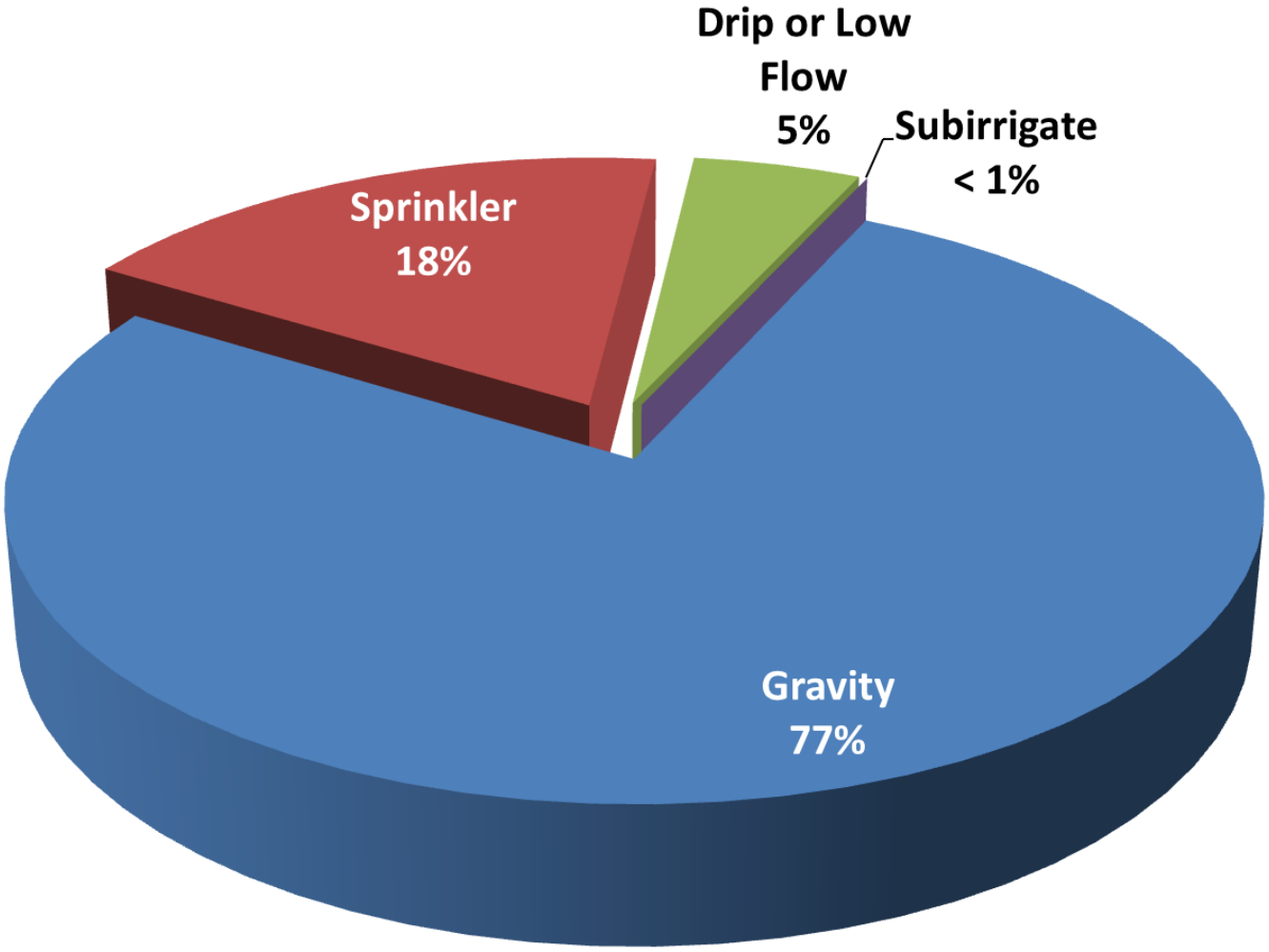
Source: 2007 Census of Agriculture.

Irrigation Application Methods in the Upper Basin



Source: 2007 Census of Agriculture.

Irrigation Application Methods in the Lower Basin



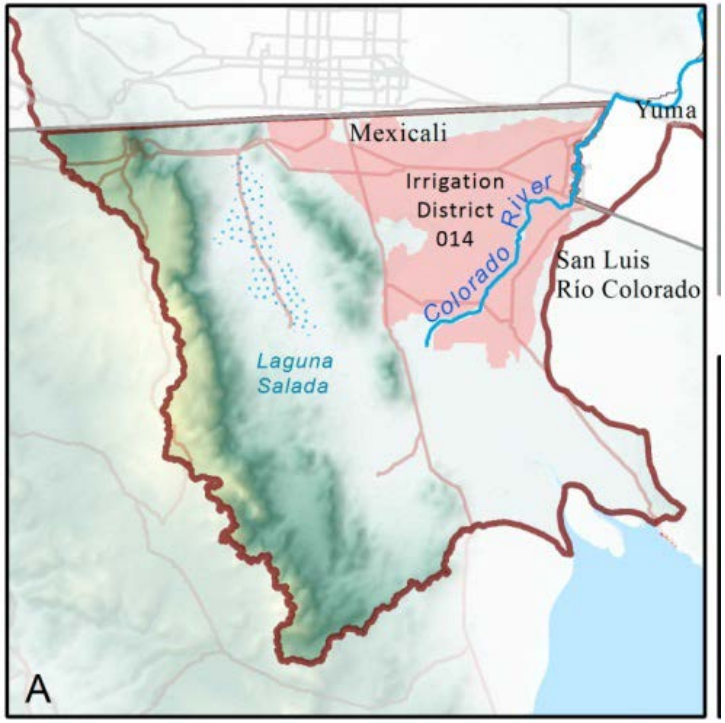
Source: 2007 Census of Agriculture.

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

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%

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

USDA

United States Department of Agriculture
National Institute of Food and Agriculture

Stakeholder Interviews

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

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

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

Extended drought & predicted climate change

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

Competing demands from non-agricultural users

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?

Visions of the Future

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

Visions of the Future

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.

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Project Website: www.crbagwater.colostate.edu