

Background Information and Related Data on California Water

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The development of California water was in response to four conditions:

1. Geographical distribution of water supply and distribution of society's use
2. Short-term temporal aspects of the natural supply
3. Long-term temporal aspects of the natural supply
4. The availability of abundant groundwater reserves

California Water Infrastructure

- Problem: state's water is concentrated in the north but majority of the urban population and irrigated agric. is in south
- While most irrigation water is used to irrigate field and fodder crops, the horticultural crops generate most revenue

Water storage

Storage meets four objectives:

1. To smooth out seasonal variations in natural supply
2. To smooth out annual variations in natural supply
3. To provide flood control
4. To provide recreation

State Water Projects

- State Water Project = State of California
- Stores water in Oroville Dam
- Customers are 30% agriculture and 70% urban

Central Valley Water Project

- Central Valley Water Project = Federal government, CVP is largest single supplier of water in the state
- Composed by two main systems:
 1. Shasta-Trinity Unit and
 2. Friant Kern Unit
- Customers are 90% agricultural and 10% urban

California Water Balance Summary for Average, Wet and Dry Year, million acre-feet

	1998, (wet)	2000, (avg)	2001, (dry)
Total supply precipitation & imports)	336.1	194.6	145.7
Total uses, outflows & evaporation	330.6	200.7	160.2
Net storage changes in State	5.5	-6.1	-14.4

* Environmental water includes instream flows, wild and scenic flows, Delta outflow, and managed wetlands water use. Source: DWR

Trends in Irrigation Method Acreage (in million acres)

Irrigation method	1990 Acreage	%	2000 Acreage	%	% change
Gravity (furrow, flood)	6.5	67.5	4.9	51.3	-16.2
Sprinkler	2.3	23.8	2.8	28.8	5
Drip/micro	0.8	8.7	1.9	19.9	11.2
TOTAL	9.6	100	9.6	100	

California irrigated acreage, average 1998, 2000 and 2001

Crop	Average 1998, 2000, 2001 (in 1000s)	% Share
Barley, wheat, oats	866.3	9.2%
Rice	541.8	5.8%
Cotton	861.8	9.2%
Sugar beets	85.3	0.9%
Corn, field and sweet	639.4	6.8%
Beans	114.1	1.2%
Safflower	122.0	1.3%
Other field crops	192.1	2.0%
Alfalfa	1129.1	12.0%
Pasture	828.3	8.8%

California irrigated acreage, average 1998, 2000 and 2001, continued

Crop	Average 1998, 2000, 2001 (in 1000s)	% Share
Processing tomatoes	291.2	3.1%
Fresh tomatoes	48.1	0.5%
Cucurbits	138.8	1.5%
Onion/garlic	86.5	0.9%
Potatoes	45.5	0.5%
Other truck crops ¹	786.4	8.4%
Almond/pistachios	681.9	7.2%
Other deciduous ²	633.3	6.7%
Subtropical crops ³	434.9	4.6%
Table, wine, raisin grapes	878.8	9.3%
Total Irrigated Crop Acreage	9405.8	100.0%

**Evapotranspiration of Applied Water,
California, Average for 1998, 2000, 2001,
in acre-feet/acre**

Crop	Average 1998, 2000, 2001
Barley, Wheat, Oats	0.8
Rice	3.0
Cotton	2.2
Sugar Beets	2.4
Corn	1.9
Bean	1.6
Safflower	0.7
Other Field Crops	1.7
Alfalfa	3.4
Pasture	2.7

**Evapotranspiration of Applied
Water, California, Average for 1998,
2000, 2001, in acre-feet/acre, cont.**

Processing Tomatoes	2.0
Fresh Tomatoes	1.6
Cucurbits	1.5
Onion/Garlic	2.2
Potatoes	1.6
Other Truck Crop	1.3
Almond/Pistachios	2.5
Other Decidious	2.5
Subtropical crops	2.3
Vineyards	1.3

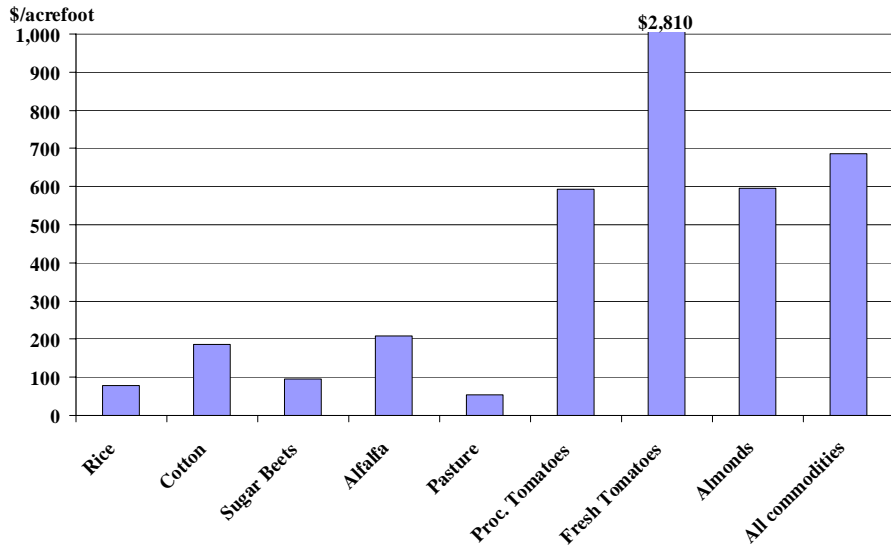
Applied Water in Acre-foot/Acre for Selected Crops in Tulare County, 2000

Field Crops	2.8
Alfalfa	4.5
Pasture	1.5
Proc Tomatoes	3.2
Fresh Tomatoes	1.7
Almond/Pistachios	2.8
Grapes	2.8
Citrus	2.5

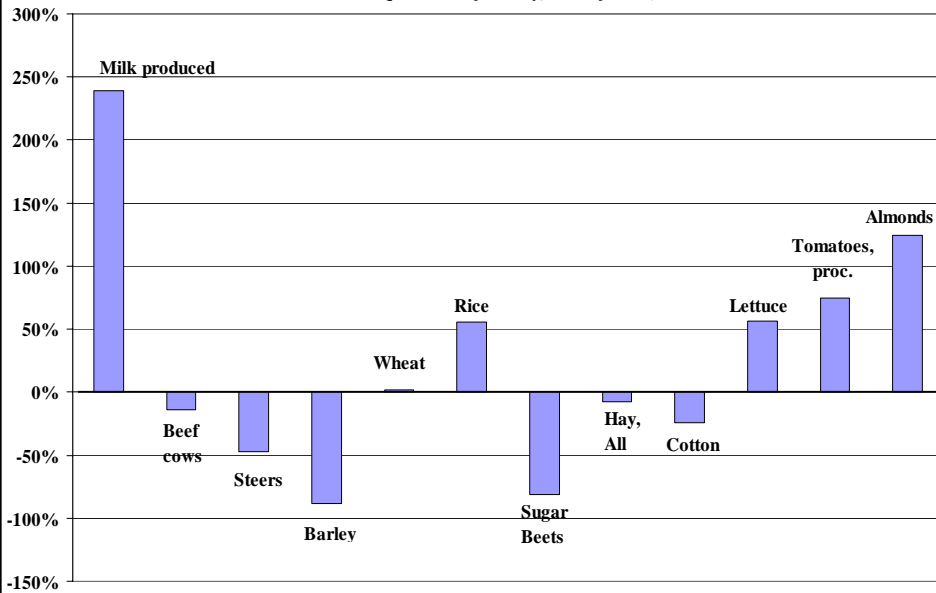
Shares of Applied Water for Selected California Crops and Origin of Applied Water, 1995-1998

Commodity	Applied water share	Origin of water					
		Local Surface	Groundwater	CVP	Colorado	SWP	Other
Alfalfa	14.6%	26.4%	43.2%	13.1%	11.5%	3.4%	2.3%
Pasture	13.1%	45.3%	34.9%	7.3%	7.8%	0.4%	4.2%
Cotton	12.5%	14.8%	50.3%	22.0%	3.3%	0.9%	0.0%
Rice	9.2%	39.8%	32.5%	27.1%	0.0%	0.0%	0.6%
Grapes	6.8%	36.2%	47.2%	9.8%	3.3%	2.4%	1.1%
Almonds/Pistac.	5.8%	39.4%	37.1%	17.3%	0.0%	5.5%	0.7%
Citrus	4.1%	20.2%	50.1%	10.0%	15.3%	3.4%	0.9%
Proc. Tomatoes	3.0%	23.5%	41.8%	28.5%	1.8%	1.9%	2.6%
Fresh Tomatoes	0.3%	23.5%	41.8%	17.2%	12.3%	2.4%	0.8%
Other Field Crops	14.9%	29.2%	35.3%	13.5%	17.8%	2.0%	2.3%
Other Fruit/Veg.	15.6%	25.4%	47.1%	12.2%	12.0%	1.8%	1.5%

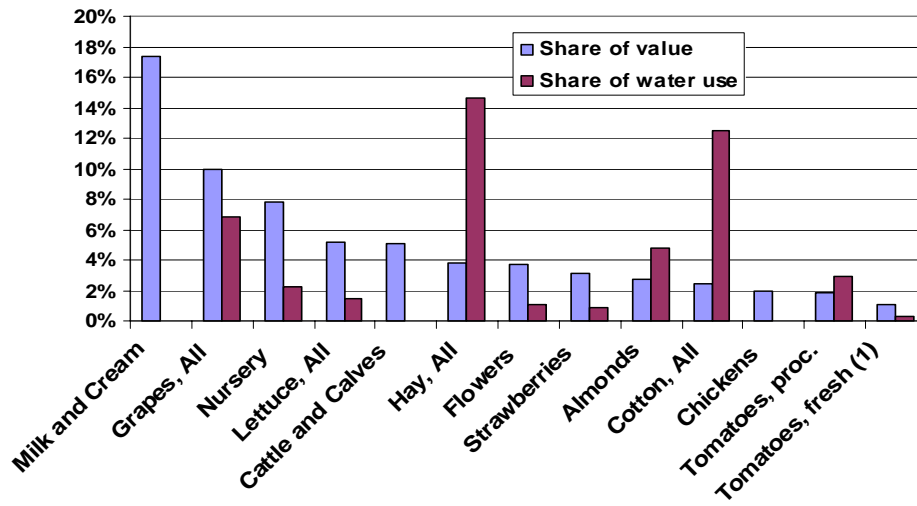
Value per Acre-Foot for Selected California Commodities, 2001



Change in Acreage for Major Irrigated California Crops 1970-2002 (production for dairy, head of cattle)

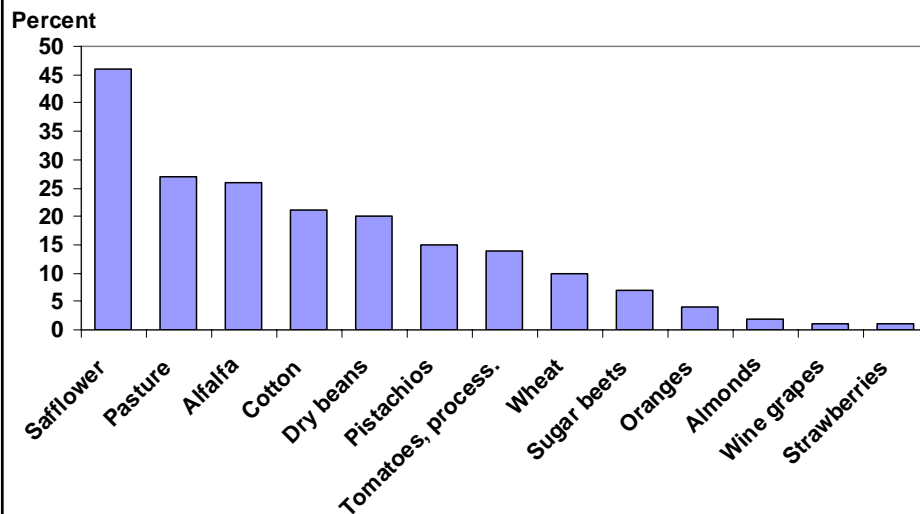


Distribution of Water Use Among the Top 12 Commodities, California, 2002



Source: California Department of Water Resources and NASS (1) Fresh Tomatoes for comparison purposes only

Water Costs as a Percent of Operating Costs for Selected Crops



Source: UC Davis, Ag&Res.Econ., Cooperative Extension