

Research Department
Federal Reserve
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Bread and Water

Will 1977 become the new drought benchmark for California, replacing 1924 as the driest year on record? With the southward migration of a high-pressure ridge and the advent of rain in late February, the current year may not break the record. But even if normal weather returns, the drought of the past two years guarantees a period of water rationing and economic hardship for many Californians, particularly for those who till the soil and tend the livestock.

In a normal year, California uses about 37 million acre feet of water (imagine roughly one-third of the State a foot deep in water). A good 85 percent of this is claimed by the agricultural sector, with about half coming from ground water and half from surface water. The ground-water situation is not critical, even though the water table dropped 4.5 feet last year in contrast to an average 1.5-foot decline.

What is critical, however, is the thin Sierra snow pack and the half-empty reservoirs which usually supply the life blood of the state's agricultural sector—the sparkling irrigation water which allows California to produce a major share of the nation's fruits and vegetables. In most northern areas of the state, rainfall has been a mere shadow of its former self—only one-fifth of normal at Shasta, for example, even with the recent rains. And water levels in the major reservoirs are only 53 percent of normal for this

time of year. All of this translates into the recent announcements by State and Federal irrigation districts that water deliveries to agriculture would be cut back 60 and 75 percent, respectively, during 1977.

Water in the Southland

What does this mean to the farmer and the consumer? Let's first put the problem in geographical perspective. Despite the drought, everything below the Tehachapis (the mountains just north of Los Angeles) and everything west of the coastal ranges from the Salinas Valley south are in relatively good shape. This is because the southern part of the state derives a major portion of its water from the Colorado River, while the coastal valleys rely almost exclusively on ground water for irrigation. Thus, the crops grown in these areas (such as cauliflower, broccoli, Brussels sprouts, celery, lettuce, cucumbers, spinach, artichokes and tomatoes) seem to be surviving well. Where water levels have fallen, farmers will face increased pumping costs and ranchers using non-irrigated pastures will have to buy hay for their animals. But on the whole, there should be no serious effects from the lack of rainfall in southern and coastal California.

The real problem lies in the agricultural spinal cord of the State—the great Central Valley, consisting of the Sacramento Valley in the north and the San Joaquin Valley in the south. It is here that the severe

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water cutbacks by State and Federal water projects will be most intensely felt. But here again, those areas with ground water available are in better shape than others. For example, the eastern side of the San Joaquin Valley can make up for a good part of the surface-water cutback by simply pumping more ground water.

Unfortunately, that ground water is becoming increasingly expensive to acquire because more energy is required to pump water from lower depths (especially with the continued decline in the water table) and because each unit of energy is becoming increasingly expensive. The Public Utilities Commission allows a fuel-rate adjustment every six months; thus, Central Valley electricity prices increased 22 percent on January 5 and are likely to rise by another 10 percent at midyear. Moreover, each 10-percent decline in the water table requires roughly 10 percent more energy to pump a given amount of water. Meanwhile, with many farmers deepening old wells and digging new ones, there is a six-month wait for well-digger services. All of this means increased costs and reduced net income even for those lucky farmers who have enough water to maintain production.

Crisis in the San Joaquin

The worst situation is found on the west side of the San Joaquin Valley. Those farms that had wells when the State Water Project came to the west side in the 1960's soon abandoned them for the cheaper surface water. Today, most of those

wells are useless—too shallow, rusted out, or simply lost somewhere beneath the furrowed earth. So for many, there is simply no short-run way of offsetting the State's 60-percent cutback.

Nonetheless, a 60-percent decline in water supplies will not mean a full 60-percent decline in farm output on the west side. Very careful water management and a switch to less water-intensive crops should soften the cutback. Probably the highest priority will be given to the survival of vines and tree crops, which represent large investments that would take a number of years to replace. Second, the usual double-cropping of grains probably will be supplanted by a large increase in summer fallow. Aside from grains, likely candidates for reduction include sugar beets, leafy vegetables, alfalfa, melons and tomatoes. However, in view of this year's 16-percent rise in processing-tomato prices, many observers feel that other areas, including the Imperial and coastal valleys, will more than make up for any San Joaquin Valley cutbacks.

The drought also means increased uncertainty for cotton. Farmers had planned to expand cotton acreage prior to the water-cutback announcements, but now they will probably switch to a water-saving planting method which skips every third row and reduces yields by 25 percent. Total cotton output could go either way. Meanwhile, in the Sacramento Valley, the biggest cropping change will be a severe reduction in the planting of rice—a

quarter-billion dollar earner but also a very heavy water user.

Along the eastern edge of the entire Central Valley, ragged herds of cattle and sad-eyed ranchers roam through the parched Sierra foothills. The drought, coming on top of a two-year decline in cattle prices, means that ranchers' unit costs have risen some sixty dollars above revenues per head. In these circumstances, buying hay (especially at \$75 to \$100 a ton) and hauling water simply do not pay. According to some industry observers, perhaps a third or more of the State's ranchers have thrown in the towel in the past several years.

Agricultural extension agents report that banks have been quite reasonable in carrying farmers who face trouble paying off loans. The only major credit difficulties have been in the livestock sector, where the value of livestock collateral in some cases has fallen to 60 percent of total debt. Total loan demand probably will increase this year. Loans for machinery and equipment (except pumps) may drop sharply, but this should be more than offset by an increase in loans for operating expenses. Because of drought, storm and strike trouble last year, a number of farmers entered 1977 in much less liquid positions than usual.

Farm, food impact

What does all this mean for the farmer and the consumer? The California Department of Food and Agriculture has calculated potential declines in farm income for several

possible moisture scenarios, the most likely being a \$1.2-billion decline—amounting to about 14 percent of 1976's gross farm income of \$8.9 billion. The bulk of the losses probably would be suffered by growers in the irrigated lands of the San Joaquin Valley.

Compared to the farmer, the consumer has little to complain about. With both a sugar and a rice glut in world markets, neither sugar nor rice prices should be much affected by California's production cutbacks in those crops. Many of the vegetable crops which feed the nation so bounteously are grown either in the Imperial Valley or in coastal valleys, all of which face no irrigated-water shortage. California's grain output is but a drop in the national bucket, and her grain reductions should have little price effect in a generally surplus situation. Beef prices are almost sure to go up this year, but because of other factors, not the drought.

The U.S. Department of Agriculture has increased the upper end of its forecast of retail food-price increases by one percentage point—making a range of 3 to 5 percent—in response to all the nation's weather problems, including the Florida freeze and both the Midwestern and Western droughts. However, the California drought by itself may push up the consumer price index by no more than a tenth of a percentage-point. Urban consumers may rejoice, but not too loudly, for their rural brethren remain hard-pressed.

Michael Gorham

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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT
 (Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 2/16/77	Change from 2/09/77	Change from year ago	
			Dollar	Percent
Loans (gross, adjusted) and investments*	92,299	+ 28	+ 4,707	+ 5.37
Loans (gross, adjusted)—total	70,368	+ 132	+ 5,453	+ 8.40
Security loans	1,449	+ 105	+ 782	+ 93.98
Commercial and industrial	22,860	- 31	- 464	- 1.99
Real estate	21,901	+ 93	+ 2,306	+ 11.77
Consumer instalment	12,400	+ 32	+ 1,675	+ 15.62
U.S. Treasury securities	8,858	+ 25	- 1,098	- 11.03
Other securities	13,073	- 129	+ 352	+ 2.77
Deposits (less cash items)—total*	91,738	- 247	+ 4,715	+ 5.42
Demand deposits (adjusted)	25,954	- 421	+ 2,580	+ 11.04
U.S. Government deposits	394	+ 143	- 239	- 37.76
Time deposits—total*	64,022	- 115	+ 2,669	+ 4.35
States and political subdivisions	5,828	- 18	- 975	- 14.33
Savings deposits	30,939	0	+ 6,386	+ 26.01
Other time deposits‡	25,287	- 83	- 2,193	- 7.98
Large negotiable CD's	8,855	- 185	- 3,426	- 27.90
Weekly Averages of Daily Figures	Week ended 2/16/77	Week ended 2/09/77	Comparable year-ago period	
Member Bank Reserve Position				
Excess Reserves (+)/Deficiency (-)	- 23	+ 62	+ 48	
Borrowings	2	2	8	
Net free(+)/Net borrowed (-)	- 25	+ 60	+ 40	
Federal Funds—Seven Large Banks				
Interbank Federal fund transactions				
Net purchases (+)/Net sales (-)	+ 539	+ 921	+ 1,989	
Transactions with U.S. security dealers				
Net loans (+)/Net borrowings (-)	+ 196	+ 146	+ 175	

*Includes items not shown separately. ‡Individuals, partnerships and corporations.

Editorial comments may be addressed to the editor (William Burke) or to the author. . . .
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