

*An aggregate look at California acreage, yield,
and production of field crops; vegetables;
and tree fruits, nuts, and grapes.*

Projections of California crop production to 1985

Gordon A. King ■ Harold O. Carter ■ Daniel J. Dudek

The California agricultural economy has experienced dramatic changes in the last three decades. Increases in farm size—in land, capital, and output per farm—have reached record levels and the trend is likely to continue. These structural changes in California agriculture, made possible by a combination of favorable climate, fertile land and water, and capital and human resources, make it a primary contributor and competitor in national and international markets. Moreover, technological advances, new irrigation development, and shifts in location of agricultural production within the state have thus far allowed California to generally retain, and in some cases enlarge, its traditional share of U.S. and foreign markets despite growing competition within the state for land and water resources.

This report provides a summary of a projections study of California crop acreage, yield, and production to 1985. (See: Gordon A. King, Harold O. Carter and Daniel J. Dudek. *Projections of California crop and livestock production to 1985*, Giannini Foundation of Agricultural Economics. Information Series Report No. 77-3, May 1977.)

The term “projection” rather than “prediction” or “forecast” is used to make clear the conditional nature of the results which depend on the basic assumptions used. The underlying assumptions relate to future population, income, consumption patterns and trade on the demand side;

and on yield trends, interregional competition, normal rainfall, and resource availability on the supply side. The general procedures in arriving at 1985 projections of California crop acreage in summary are:

■ U.S. production in 1985 is derived primarily from estimates made by the USDA.

■ California’s projected share of U.S. production for each product or commodity category is based on the state’s historical market share. If that share has been changing either upward or downward, it is projected to continue changing in the same direction but at a decreasing rate by 1985. In essence, this procedure is based on the premise that economic forces may have favored a regional change in the market shares—but that in an exchange economy, counterforces such as changing resource prices will tend to stabilize the system. If there is no discernible trend in California’s market share for a product, the projection is taken to be equal to the 1968-1972 average share.

■ Probable future yield levels of individual California crops are estimates based on historical trends and the judgment of crop specialists.

■ Projections of the acreages required for crop production in California are based on projections of output requirements and per acre yields.

The focus of this report is an aggregate look at California crop agriculture, and as such does not provide detailed an-

alysis of individual commodities. The 1985 projected harvest of all crops is 9.4 million acres, 11 percent above the 1968-1972 average but slightly below that for 1975. Field crops account for 6.7 million acres; tree fruits, nuts, and grapes for 1.8 million acres; and vegetables for 0.85 million acres (see table).

Field crops

Cotton. Cotton acreage is projected to increase substantially over 1968-1972 levels by 1985. This is based on a slight increase in U.S. production, a markedly higher share of total U.S. output (over 1968-1972 levels) produced in California, and moderate yield increases. After strong export markets and world prices in 1973, the worldwide recession resulted in low prices at planting time and substantial cutbacks in U.S. and California acreage in 1975.

A broad-based recovery of the cotton industry seems evident with substantially more cotton being used in all cotton products and blends with man-made fibers. However, cotton continues to face stiff competition from man-made fibers and remains at somewhat of a price disadvantage.

Considerable regional shifts in production giving California a greater share of total U.S. output are largely the result of 1973 farm legislation. While the 1973 Act was replaced this year, the new legis-

lation retains the essential provisions that will allow continued regional adjustments.

Rice. California rice acreage is projected in 1985 to remain near the 1968-1972 level, but substantially below the 1975 record acreage harvested. Dramatic yield increases (72 hundred weight per acre compared to 55 cwt) will allow projected production increases of over 30 percent to be met with little change in acreage over 1968-1972 average levels. Rice acreage before 1973 was established by a federal allotment control program with marketing quotas. Current rice legislation parallels that for wheat, corn, and cotton with established "target prices" without marketing quotas. Rice acreage and production expanded markedly in 1975, and supplies worldwide are still relatively abundant.

The California rice industry is particularly dependent on the export market, since most of the state's crop is not consumed domestically. In the future, the level of U.S. and California rice produc-

tion will depend on whether deficit countries in Asia become self-sufficient in rice. The California rice industry is expected to concentrate even further in the Sacramento Valley where adaptable soils, relatively low water costs, and processing facilities are available.

Alfalfa and other hay. The projection of alfalfa hay and other hay production in California is derived from feed requirements for projected California livestock with an allowance for horses, rabbits and exports. It is assumed that bulky products such as hay will be produced mainly within California, with only minor inshipments from contiguous states. Given moderate increases in yields, the projected alfalfa hay acreage in 1985 remains at slightly above the 1968-1972 level.

Cereal grain (excluding rice). In California, barley has traditionally been the major feed grain (accounting for about 18 percent of total field crop acreage in 1968-1972), followed by grain sorghum, corn, and oats. However, the general shift

towards corn and wheat in the U.S is also taking place in California. Corn acreage in California has doubled from 1961-1965 to 1968-1972. New single-cross hybrids, increasing world demand for corn, as well as use of corn for processing appear to be important factors in the growth of state corn production.

The growth in production of wheat (accelerated by the introduction of Mexican varieties) in California has been remarkable. Wheat production in 1975 shows a threefold increase compared to the base period 1968-1972. A smaller increase is projected for 1985 over the 1975 level, however.

California 1985 harvested acreage of these grains is projected to increase only slightly over base period levels. Much of the projected production increase is expected from substantially higher anticipated yields—for example, corn yield is projected to increase 35 percent, wheat 63 percent.

Since California is (and will likely

Summary of California Harvested Acreages of Field Crops, Vegetables, Tree Fruits, Nuts, and Grapes: Projections to 1985 Compared with 1968-1972 Average and 1973 to 1975 Annual Acreage

Crop	1968-1972 average	Harvested acreage ^a				Projected 1985	Percentage changes 1968-1972 average to 1985
		1973	1974	1975	1985		
		thousand acres				percent	
Field crops:							
Grains, excl. silage	2,222	2,144	2,178	2,635	2,558	15.1	
Rice	363	401	467	525	361	-0.6	
Dry beans	179	161	227	154	169	-5.6	
Cotton	731	942	1,238	875	1,044	42.8	
Potatoes	84	70	70	59	56	-33.3	
Sugar beets	310	263	230	326	338	9.0	
Safflower	212	145	159	146	144	-32.1	
Alfalfa seed	92	56	66	51	69	-25.0	
Alfalfa hay	1,168	1,190	1,150	1,120	1,226	5.0	
Other field crops ^b	660	739	717	725	725	9.8	
Subtotal	6,021	6,111	6,502	6,616	6,690	11.0	
Vegetables:							
Processing	232	188	310	359	297	28.3	
Fresh market	398	437	445	438	420	5.6	
Melons	80	77	54	58	77	-3.7	
Other miscellaneous ^c	40	44	42	43	48	18.4	
Strawberries	8	8	9	10	10	25.0	
Subtotal	758	754	860	908	852	12.4	
Tree fruits, nuts and grapes:							
Citrus fruits ^d	292	306	305	303	288	-1.4	
Semitropical fruits	82	94	101	105	94	14.3	
Deciduous fruits	376	344	342	338	346	-7.8	
Tree nuts	414	491	522	536	489	18.1	
Grapes	496	623	654	647	612	23.4	
Subtotal	1,660	1,858	1,924	1,929	1,829	10.2	
Total	8,439	8,723	9,286	9,453	9,371	11.0	

^a Includes bearing plus nonbearing acreage for tree fruits, nuts, and grapes.

^b Includes corn and sorghum silage, sweet potatoes, hops, ladino clover seed, grain and other hay.

^c Includes green onions, Oriental vegetables, parsley, pumpkins, radishes, squash, casaba, cranshaw and persian melons, mushrooms, chili peppers, and green peas for fresh market.

^d Oranges, lemons, and grapefruit only.

Source: Gordon A. King, *et al.*, *Projection of California Crop and Livestock Production to 1985*. Giannini Foundation of Agricultural Economics, Information Series No. 77-3, May 1977 (Tables 2, 3 and 4).

continue to be) a substantial importer of feed grains, and since it produces less than 2 percent of U.S. feed grain output, state acreage could change substantially with little change in price. As in the past, therefore, the acreage of grains in California is likely to be determined largely by competitive relationships with other crops such as cotton, rice, sugar beets, and, in some areas, specialty crops.

Vegetables

Processing tomatoes are by far the most important single vegetable crop, accounting for 23 percent of the state's harvested vegetable acreage in 1968-1972 and 33 percent in the high-acreage year of 1975. Future acreage, which is mainly contracted by processors, will be related to yields (which are projected to increase sharply) and consumption levels for various end products. Canned whole tomatoes and juice probably will maintain present per capita consumption levels. Catsup, chile sauce, and tomato concentrates (puree, paste, and sauce) have shown sharp upward consumption trends associated with away-from-home eating, and the use of concentrates in various prepared dinners.

The 1985 per capita consumption is estimated at about 27 percent above the 1968-1972 base period, and equal to the unusually high 1975 production. Further, exports are assumed equal to imports. The production level may be conservative if current consumption trends continue or if export markets are developed.

Tree fruits, nuts, and grapes

Projections of perennial tree and vine crops are particularly difficult due to the long-term cyclical nature of acreage supply response. Yields and production are also highly variable and long-term yield trends are influenced by the age distribution of tree populations as well as by varietal and cultural improvements. Demand aspects include fresh and processed uses and the importance of developments in export markets.

Citrus fruits. Consumption of citrus fruits, particularly in processed form, has shown strong growth over the past 20 years. Per capita consumption of all fruit (fresh equivalent) has been about 200 pounds in recent years, with increases in consumption of citrus fruit offsetting declines in other fruits. Within the citrus group, oranges are the major component, and frozen orange juice is the major use for U.S. orange production. California or-

anges, particularly navels, are utilized mainly as fresh fruit although in recent years processing has been of increased importance.

California is projected to have 190,000 bearing acres of oranges in 1985. Yield is estimated at 10.5 tons per bearing acre and production is projected to be 2 million tons. U.S. production is projected at 10 million tons, which is feasible if per capita consumption continues to rise and exports rise somewhat above current levels.

Semitropical fruits. California produces most of the U.S. semitropical fruit. Total acreages of avocados, dates, figs, and olives is projected to increase from about 82,000 in 1968-1972 to 93,970 in 1985.

Deciduous fruits. U.S. per capita consumption of deciduous fruit (fresh-weight equivalent) averaged about 100 pounds in 1968-1972 and has shown a slight downward trend over the last 20 years. Future trends in consumption are influenced by competition among fruits, population and income levels, and changing tastes. We estimate that future deciduous fruit consumption per capita may be slightly below current levels. Increases in population should about offset these per capita declines. Net trade is estimated at 1968-1972 levels. The projected level of production by crop is more speculative without detailed analysis of trends in fresh, canned fruit and juice, and dried usage, and may be subject to large error.

Projected 1985 California production for all deciduous fruits is 15 percent above the 1968-1972 average. If projected yields are achieved, bearing acreage would decrease by 10,000 acres from 1975 levels and be 28,000 acres below the 1968-1972 average. However, total (bearing and nonbearing) acreage is projected to increase slightly (8,000 acres) over 1975 acreage but would still remain below 1968-1972 average total acreage.

Tree nuts. Per capita consumption of all tree nuts has remained relatively constant over the last 20 years at 1.6 pounds (shelled basis). Almonds, pecans, and walnuts account for about 65 percent of this consumption. Per capita consumption of almonds and walnuts, however, has increased over the past two decades. The export market is the key to the present and future economic position of these crops.

Grapes. California produces about 90 percent of all grapes grown in the U.S. California grape production sold in all markets is projected to increase from an average 3,083,000 tons in 1968-1972 to

4,324,000 tons in 1985. Consumption of raisins and fresh grapes is projected on the assumption that current per capita consumption levels will be maintained, and that total utilization will increase due to population growth. This level may be conservative if market promotion in both domestic and export markets is successful.

There is a great deal of uncertainty as to the future of the wine industry, and thus several alternative outcomes are offered in the main report as to consumption, yields, and acreage. Raisin grapes are projected to yield 9.4 tons per acre in 1985. Table grape yields are projected to remain at the 1946-1973 average of 6.66 tons per acre. Yield of wine grapes is projected to increase to 6.50 tons per acre based on a continuation of the upward trend from 1946-1974. The bearing acreage for all grapes associated with these assumptions is 562,740 acres with a total acreage of 611,675 acres, assuming bearing acreage is 92 percent of total acreage.

Conclusion

These projections are conditional: they are based on a particular set of assumptions about demand from domestic and export markets; California's market share; yield trends; and the relationship between bearing and nonbearing acreages for the tree fruits, nuts, and grapes. Our purpose in this report is to bring together an aggregate view of California crop agriculture in a consistent way. The data are computerized in a program that allows alternative assumptions about important variables to be introduced and traced through the system.

Gordon A. King and Harold O. Carter are Professors of Agricultural Economics and Agricultural Economists in the Experiment Station and on the Giannini Foundation, University of California, Davis. Daniel J. Dudek is Agricultural Economist, Natural Resource Economics Division, Economic Research Service, U.S. Department of Agriculture, stationed at the University of California Davis—formerly Research Assistant, Department of Agricultural Economics, UC Davis.