

California International Agricultural Exports in 2006

Omid Rowhani and Daniel A. Sumner¹

In 2006, California agricultural exports set a new record totaling \$9.8 billion, a 5 percent increase from the 2005 total.

The data reported in this *AIC Issues Brief* describe international agricultural exports for 2006, and revisions for 2004 and 2005. These data are the product of an eleven-year collaborative effort between the AIC and the California Department of Food and Agriculture to develop estimates of the value of California agricultural products shipped to international markets. As in the past, we have relied upon national and international data as well as informal estimates from industry sources. More detail about the history, methods, and early results from the project, along with export data since 1995, is available at <http://aic.ucdavis.edu/pub/exports.html>. The website also contains additional details for individual commodities and markets.

Agricultural exports by commodity or product

Total California agricultural exports declined in the late 1990s and stabilized at the lower plateau before beginning a steady rise from 2003 to 2006 (figure 1). Data in Figure 1 are adjusted for inflation using the Gross Domestic Product (GDP) deflator. In Figure 1 we see that exports of both the top 10 and top 55 commodities or products have followed a similar pattern, but the top 10 decreased slightly in 2006. (Note: except as noted in Figure 1, all price and value data in this Issues Brief are presented in nominal terms.)

In Table 1 we list the top 55 agricultural products by export value and an “other products and mixtures” category comprised of other commodities, mixtures of commodities, and other agricultural products for which the commodity composition is difficult to determine. The top 55 export commodities account for \$8.4 billion or 86 percent of total exports while the remaining 14 percent of exports were associated with other products and mixtures. Twenty-nine of the top 55 export commodities exhibited increases of more than five percent in export value from 2005, while 14 showed decreases, and 12 showed little change (\pm 5 percent).

The top 10 export commodities combined accounted for 70 percent of the export value of the top 55 agricultural export commodities and 60 percent of total agricultural exports. The top 10 export commodities in 2006 are almonds, wine, dairy and products, cotton, table grapes, walnuts, oranges, pistachios, processed tomatoes and strawberries. Strawberries joined the top 10 after a 17 percent increase in value from 2005, dropping rice out of the top 10. Generally there is little change in the rank of the top 10 commodities from year to year.

Almonds have been the top export commodity for several years. The export value of almonds increased 3 percent from 2005 to nearly \$1.9 billion. The increase is accounted for by a 13 percent increase in export volume for almonds and a decline in the export price.

¹ Omid Rowhani was a staff research associate for the University of California Agricultural Issues Center; Daniel A. Sumner is the Frank H. Buck Jr. Chair Professor in the Department of Agricultural and Resource Economics, UC Davis, and director of the UC Agricultural Issues Center.

Table I - California agricultural product export values and rankings, 2005-2006

2006 Rank	Product	2004	2005	2006	Percent change 2006/2005
		Export value (\$ million)			
1	Almonds	1,370	1,841	1,899	3
2	Wine ¹	684	575	736	28
3	Dairy and products	440	563	604	7
4	Cotton	632	700	554	-21
5	Table grapes ¹	454	540	499	-8
6	Walnuts	241	318	365	15
7	Oranges and products ^{1,2}	345	365	359	-2
8	Pistachios	179	299	287	-4
9	Tomatoes, processed ¹	250	263	286	9
10	Strawberries ³	202	234	273	17
11	Rice	280	320	269	-16
12	Lettuce	188	237	244	3
13	Raisins	195	209	206	-1
14	Beef and products ⁴	80	100	152	53
15	Dried plums	130	108	133	23
16	Peaches and nectarines	123	127	125	-1
17	Hay ¹	109	112	117	4
18	Broccoli ¹	99	104	112	7
19	Lemons ¹	77	87	102	17
20	Grapefruit	43	50	89	76
21	Carrots	78	82	87	5
22	Tomatoes, fresh ¹	68	55	62	12
23	Plums	38	55	60	8
24	Celery ¹	51	53	55	4
25	Onions ³	39	45	53	19
26	Flowers and nursery ²	41	42	51	20
27	Cherries	77	46	49	8
28	Cauliflower	48	48	47	-2
29	Melons	39	43	42	-2
30	Potatoes	24	35	42	18
31	Raspberries	23	29	40	41
32	Pears	24	24	29	17
33	Grape juice and concentrate	30	30	28	-9
34	Apples	16	24	27	12
35	Garlic	21	24	26	8

Table I - California agricultural product export values and rankings, 2005-2006 (continued)

2006 Rank	Product	2004	2005	2006	Percent change 2006/2005
		Export value (\$ million)			
36	Spinach	27	31	26	-15
37	Peppers, bell and chili ^{1, 2}	26	26	22	-14
38	Cabbage	15	19	19	-3
39	Turkey	15	19	18	-6
40	Kiwi	11	9	17	87
41	Dates	12	13	16	23
42	Olives	16	18	16	-9
43	Tangerines and mandarins	9	12	15	30
44	Wheat	27	18	15	-18
45	Figs	9	12	14	15
46	Sweet potatoes	10	10	13	41
47	Apricots	13	14	13	-10
48	Asparagus ¹	18	31	12	-61
49	Cottonseed and byproducts	17	6	12	100
50	Avocados	2	3	11	285
51	Eggs	5	10	9	-7
52	Dry beans	7	10	8	-20
53	Chicken	7	9	7	-13
54	Artichokes	4	4	5	6
55	Mushrooms	2	2	2	0
Total 55 principal commodities		6,991	8,064	8,378	4
Total other products ^{1, 5, 6}		1,246	1,292	1,420	10
Total all agricultural exports		8,237	9,356	9,798	5

Source: University of California, Agricultural Issues Center.

¹ 2005 figures were revised based on updated production data from the U.S. Department of Agriculture/National Agricultural Statistics Service (USDA/NASS).

² 2005 figures were revised based on updated Canadian import data.

³ 2005 and 2006 figures were revised based on updated production data from the USDA/NASS.

⁴ Hides and skins account for 46% of beef and products' total value in 2006.

⁵ 2005 figures were revised based on updated port data from the U.S. Department of Commerce/International Trade Commission.

⁶ "Other Products" is composed of (a) highly processed products that are difficult to attribute to a specific commodity such as mixtures of fruits, nuts and vegetables and other processed foods; and (b) animal and plant products marketed in such small quantities that they are not included in the top 55 leading commodities.

⁷ Export values for each year are rounded. More precise numbers are used in the percent change calculations.

Wine export values increased 28 percent from 2005 to an all-time high of nearly \$736 million. The export price of wine increased 21 percent from 2005, while export quantity increased 7 percent from 2005.

The export value of dairy and products totaled nearly \$604 million in 2006, a 7 percent increase from 2005. Much of the increase in dairy export value is a result of an increase in the export of nonfat dry milk.

The fourth largest export commodity by value is cotton. The export value of cotton decreased substantially from \$700 million in 2005 to nearly \$554 million in 2006. Exports of both California upland and American pima cotton types went down. Upland cotton export value decreased substantially from \$360 million in 2005 to \$257 million in 2006, a decrease of nearly 29 percent. The value of American pima exports decreased 13 percent from 2005 to \$297 million dollars.

The export value of table grapes dropped from \$540 million in 2005 to \$499 million in 2006, an 8 percent drop. Export quantity decreased by 21 percent and prices increased by 13 percent.

Exports of walnuts have nearly doubled in recent years from \$184 million in 2002 to \$365 million in 2006. The export value increased 15 percent from 2005 due to a 16 percent increase in export prices. Quantities exported decreased slightly.

The export value of processed tomatoes was \$286 million, 9 percent higher than in 2005. Export quantity and price each increased slightly to account for the gain in value.

In 2006, strawberries returned to the top 10 with export value of \$273 million. Export value increased 17 percent from 2005, due to a 9 percent increase in export price and an 8 percent increase in export quantity.

Other top 10 commodities include oranges and pistachios, both of which showed small decreases in export (less than 5 percent) from 2005.

Exports of beef and products, including hides and skins, increased for the second consecutive year following a case of “mad cow” disease detected in the state of Washington on December 23, 2003, that resulted in the closure of markets for U.S. beef and a collapse in beef exports. Beef export totaled \$215 million (ninth overall) in 2003 prior to the closure of markets. As markets gradually opened in 2004, exports totaled \$80 million, increasing to \$100 million in 2005. Japan, a major market for U.S. beef prior to the BSE outbreak, reopened its market to beef in January 2006, but closed it again the same month following the export of beef to Japan with the vertebral column attached, which was counter to a United States-Japan agreement. On July 27, 2006, Japan again reopened its market, this time without further problems. South Korea, another large market prior to the BSE outbreak, agreed to resume imports of U.S. beef on a limited basis in September, 2006 on the condition that the source of the beef is cattle no older than 30 months and the beef does not include brain, spinal cord, or bone chips. No shipments successfully entered South Korea under these rules. Only three shipments were attempted, all were rejected by South Korea. In 2007, some shipments of boneless beef have successfully entered South Korea. Beef and products ranked 14th in overall export value with exports totaling \$152 million in 2006, an increase of 53 percent from 2005.

Large increases in export value during 2006 were also seen in markets for grapefruit, \$38 million (76%), prunes, \$25 million (23%), and raspberries, \$11 million (41%).

Other commodities with significant increases in export value in percentage terms, rather than absolute gain in value, were avocados (285%), cottonseed (100%), kiwifruit (87%), sweet potato (41%) and dates (23%).

Major commodities that witnessed significant percentage losses in export value in 2006 include Cotton, \$145 million (-21%), rice, \$50 million decrease (-16%), table grapes and asparagus, \$19 million decrease (-61%)

As Table 1 documents, California exports a wide variety of agricultural products. Figure 2 shows the share of total export value by commodity group. Fruits, wine, tree nuts and vegetables account for over 63 percent of total agricultural export value. Most of the “mixtures and others” category is comprised of highly processed products and is hard to separate into individual commodities. Animal products showed the largest increase (13 percent) from 2005, and field crops was the only commodity group to show a decrease in export value (11 percent) from 2005.

International Destinations

California exports agricultural products to more than 150 countries. Relatively accurate export destination data are available for 48 commodities. These 48 commodities account for 99 percent of the export value of the top 55 export commodities. The commodities whose export destinations are not included are apples, turkey, wheat, eggs, chicken, avocados and mushrooms. The top 10 export destinations account for 85 percent of the 2006 export value of the 48 commodities, while the top 3 destinations, the European Union (EU-25), Canada and Japan account for nearly three-fifths of the 48 commodity total (Figure 3).

The European Union was the largest importer of California agricultural commodities in 2006, with imports of nearly \$2.1 billion or 25 percent of the export total for the 48 export commodities. In 2006, the European Union consisted of 25 individual member nations, with the major destinations being the United Kingdom, Germany, Spain, the Netherlands and Italy, each accounting for over \$200 million of California agricultural exports. However, products move freely within the European Union and we have no data on the

country of final consumption. Tree nuts (almonds, walnuts and pistachios) comprise three of the top four export commodities to the European Union and account for over two-thirds of the value of California exports to the European Union. Almonds are the primary export commodity, and account for nearly half of the \$2.07 billion in E.U. exports, followed by wine, which accounts for more than 20 percent of E.U. import value.

Canada imported nearly \$1.9 billion or 23 percent of the 48 commodity total in 2006. The value of exports to Canada was spread over many commodities. The top 5 exports to Canada were lettuce, strawberries, processing tomatoes, table grapes and wine, which combined, account for \$868 million or 46 percent of the value of exports to Canada. Canada imported \$15 million or more of 27 commodities and \$2 million or more of 44 commodities. Fresh fruits and vegetables accounted for a large share of the exports to Canada.

Japan was the third largest market for California agricultural exports in 2006. Exports to Japan totaled \$964 million and accounted for nearly 12 percent of the 48 commodity export value. Exports of rice to Japan totaled \$169 million and almonds \$129 million, combined, the two commodities accounted for nearly one-third of total California exports to Japan. Beef and products were once a major export to Japan, but following BSE concerns, exports from California collapsed. In 2006, exports of beef and products to Japan totaled \$21 million, four times greater than the value exported in 2005. Exports of beef and offal accounted for \$16 million, while the remaining \$5 million were hides and skins. Other major export commodities to Japan included hay, oranges and products, wine, walnuts and dairy and products.

China/Hong Kong moved up one position to the fourth largest export destination in 2006. China/Hong Kong accounted for 7 percent of shipments of the 48 commodity total. The main exports to China were cotton, almonds, table grapes and oranges and products. Mexico also accounted for

7 percent of exports of the 48 commodity total. Exports to Mexico decreased from \$592 million in 2005 to \$562 million in 2006. The decrease was due primarily to a decrease in the value of cotton, and dairy and products exports. The top 5 exports to Mexico were dairy and products (mainly nonfat dry milk), table grapes, processed tomatoes, almonds and beef and products.

Exports to Korea totaled \$312 million in 2006. The top 5 exports to Korea were oranges and products, grapefruit, walnuts, rice and almonds, which combined accounted for nearly two-thirds of all exports to Korea. The United Arab Emirates was notable for its 47 percent increase in export value, from \$67 million to \$94 million.

By commodity group, Table 2 shows California export distribution among the six principal destinations and the “rest of the world.” Table 2 summarizes some of the patterns described above. Canada is an important market for flowers, nursery products, fruits and vegetables. The European Union is especially important for tree-nuts and wine, and Mexico is an important market for animal products.

Farm Quantity Exported

Table 3 show the ratio of the farm quantity exported in 2005 to the farm quantity produced in 2005 for major commodities. We used standard U.S. Department of Agriculture conversion ratios to translate export quantities of processed products back to farmgate production. For example, to estimate the farm export quantity of all grape products in terms of fresh grapes, we converted export quantities of raisins, wine and grape juice to fresh grapes and then added this figure to fresh table grape exports.

For many crops harvested in the fall, such as cotton or almonds, or commodities where a portion is placed in storage, the ratio of farm quantity exported to farm quantity produced does not represent the share of production in 2006 because most of the exported commodity

was likely to have been produced in the previous year. For crops harvested earlier in the year or not easily stored, such as lettuce and table grapes, the ratio approximates the annual share of farm production exported. Despite their limitations, the data in Table 3 displays the importance of exports across commodities.

Individual commodity ratio of exports to production ranged from two percent for eggs to 164 percent for olives. Six commodities, almonds, cotton, grapefruit, kiwi, olives and pistachios, had ratios over 50 percent, while 19 commodities had ratios over 20 percent. Table 3 shows the importance of export markets for tree-nuts, where exports accounted for at least 45 percent of the production of almonds, pistachios and walnuts. The overall average ratio of exports to production of commodities weighted by production share of each product was 24 percent for these California commodities..

Final Remarks

This year was the fifth consecutive year that California witnessed increases in agricultural export value to foreign destinations. California exports increased by 5 percent in 2006 and reached a record high with total exports nearing \$9.8 billion. With markets for beef and products (historically a major export for California) beginning to open globally and the low value of the U.S. dollar relative to other currencies, 2007 looks to be a promising year for California agricultural exports.

Table 2. Percent of California export value shipped to major markets, by commodity group, 2006¹

	EU-25	Canada	Japan	China/ HK	Mexico	South Korea	ROW	Total
Animal Products ²	2.3	1.0	8.1	7.1	31.1	2.8	47.6	100
Field Crops ³	3.2	14.9	23.5	17.4	6.9	5.7	28.5	100
Flowers and Nursery	10.8	37.9	4.1	3.5	32.0	0.9	10.8	100
Fruits ⁴	8.5	35.9	13.3	9.4	5.7	6.4	20.7	100
Tree-nuts	54.4	6.7	7.4	4.4	1.6	2.7	22.8	100
Vegetables ⁵	1.5	74.8	7.9	0.6	6.9	0.3	8.0	100
Wine	57.8	20.0	8.6	1.7	0.8	1.4	9.7	100
All Commodity groups	25.0	22.7	11.6	7.4	6.8	3.8	22.8	100

Source: University of California Agricultural Issues Center.

¹ Based on 48 individual products for which reliable data is available.

² Does not include chicken, eggs, or turkey because reliable data on destination of export is not available.

³ Does not include wheat because reliable data on the destination of export is not available.

⁴ Does not include apples and avocados because reliable data on the destination of export is not available.

⁵ Does not include mushrooms because reliable data on the destination of export is not available.

Figure 1. California's agricultural exports, 1995-2006



Note: The aggregation "Top-55 products" includes only 50 products from the years 1995-2000. In 2001 the added 5 commodities contribute \$57 million.

Table 3. Percent of farm quantity exported, 2005 and 2006 ^{1, 2}

	2005	2006
	Percent	
Almonds	77	72
Grapes, all ³	23	27
Dairy and products ^{4, 5}	12	13
Cotton ⁶	118	96
Walnuts ⁶	44	45
Oranges ⁶	28	38
Pistachios	59	57
Tomatoes, processed	15	14
Strawberries	12	12
Rice	69	40
Lettuce	13	10
Beef and products ⁷	3	4
Dried plums ⁶	53	32
Peaches and nectarines	12	12
Hay	7	7
Weighted average ^{6, 8}	25	24

Source: University of California, Agricultural Issues Center.

¹ The quantities are converted to farm level equivalent using conversion factors from the USDA/NASS.² Ratios do not necessarily reflect share of the crop exported in a given year, because exports may include quantities produced in prior years and some of the current year's production may be exported in subsequent years.

³ "Grapes, all" includes grape juice, raisins, table grapes and wine.

⁴ Farm quantity exported for dairy and products is calculated by converting cheese, condensed milk, fluid milk, ice cream, nonfat dry milk and whole dry milk to their fluid milk equivalents on a total solids basis.

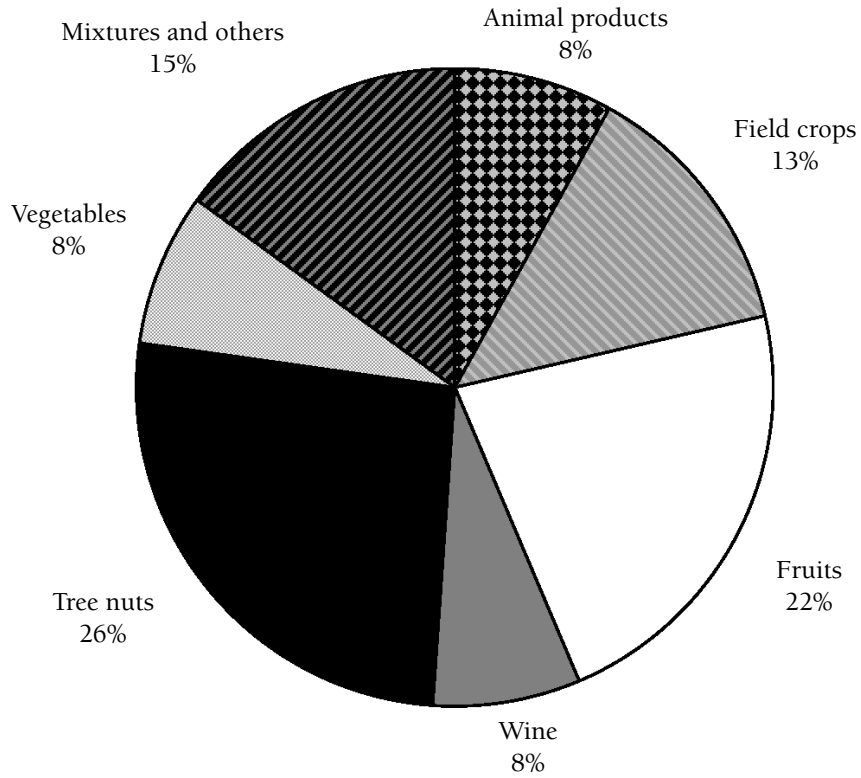
⁵ There is no addition for the farm quantity of milk allotted to whey exports because whey is a by-product from cheese production. Other products including casein, lactose, milk albumin, products for infant use, pudding and rennet are converted to farm equivalent by multiplying California's share of U.S. milk production to the U.S. export quantity for these products, then applying a conversion factor of 1 pound of product to 8 pounds of milk equivalent. The same conversion factor is used for nonfat dry milk.

⁶ The 2005 figures were revised based on updated production data from the USDA/NASS.

⁷ The liveweight equivalent for beef and products is obtained by taking the volume of exports of beef and offal and dividing this by a conversion factor using 1 pound of beef and offal carcass weight as equivalent to 1.49 pounds liveweight.

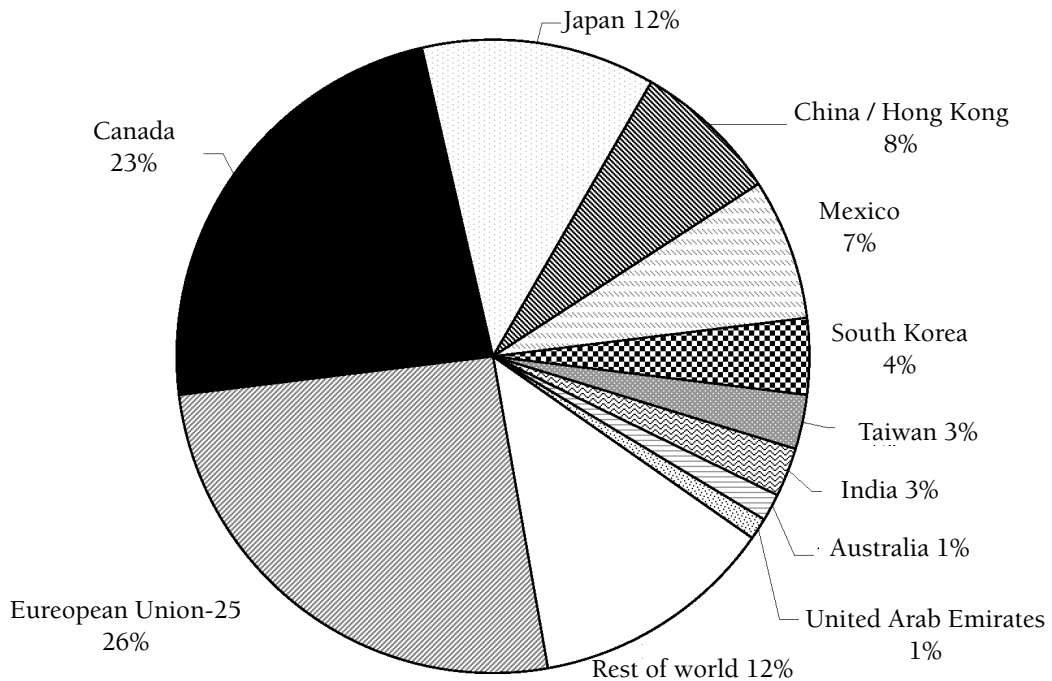
⁸ The weighted average is based on each of the 52 commodity's share of production value. Values for chicken, mushrooms, and flowers and nursery products are not included because reliable data on export quantity is not available.

Figure 2 - California agricultural exports by category, 2006



Note: Flowers and nursery products are included in "mixtures and others."

Figure 3 - California agricultural exports to the top-10 destinations , by value, 2006



Note: Chart is based on 48 individual products for which reliable destination data were available. The 48 commodities account for nearly 99 percent of the export value of the top 55 commodities. The commodities for which export destinations are not included are apples, turkey, wheat, eggs, chickens, avocados and mushrooms.