

California International Agriculture Exports in 2008

William A. Matthews, Georgi Gabrielyan and Daniel A. Sumner¹

In 2008, the value of California agriculture exports reached an all time high of \$12.9 billion, a 16 percent increase from 2007.

The data reported in this *AIC Issues Brief* describe AIC estimates of the international agricultural exports for 2008, and provides revisions for 2007. These data are the product of a thirteen-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 previous years, we have relied upon national and international data sources as well as informal estimates from sources within the agriculture industry. 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

The 16 percent increase in export value of California agriculture from 2007 to 2008 represents the largest one-year increase in value of exports in the last thirteen years. Since 2003, the international trade of California produced commodities has continued to increase from year to year (Figure 1). Data in Figure 1 are adjusted for inflation using the Gross Domestic Product (GDP) deflator and the year 2005 as the base year. Figure 1 shows that the top ten commodities have steadily increased over the past three years from around \$5.6 billion in 2006 to \$6.8 billion in 2008. Likewise, the value of exports of the top 55 commodities have also continued to increase in real terms over this same time period with a combined value of \$8.1 billion in 2006

increasing to just under \$10 billion in 2008.

In Table 1 we list the top 55 agricultural products by export value in current year dollars. Table 1 also includes 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 \$10.64 billion or 82 percent of total exports while the remaining 18 percent of exports were associated with other products and mixtures. Thirty-six of the top 55 export commodities experienced growth in exports of five percent or greater from 2007 to 2008. In contrast, nine commodities had decreased export value of five percent or more. The remaining ten commodities experienced little to no change (<5 percent) in export value from 2007 to 2008.

The top ten export commodities combined accounted for 68 percent of the export value of the top 55 agricultural export commodities and 56 percent of total agricultural exports. The top ten commodities in 2008 were almonds, dairy and products, wine, table grapes, pistachios, rice, walnuts, processed tomatoes, oranges and orange products, and strawberries. With a 49 percent decline in export value, cotton dropped out of the top ten in 2008 for the first time since 1995. Replacing cotton in the top ten was oranges and orange products, which dropped to 12th in 2007.

Once again, the value of tree nut exports contributed significantly to the total value of California exports. The combined export value of almonds, pistachios and walnuts was close to \$3 billion in 2008, or 23 percent of the value of all exports. Almonds were the top export commodity for California again in 2008 with an estimated value of \$1.89 billion. There has been essentially no change in

¹ William A. Matthews is a postdoctoral scholar and Georgi Gabrielyan is a student at the University of California, Davis. 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, 2006-2008

2008 Rank	Product	2006	2007	2008	Percent change 2007/2008 ⁴
		Export value (\$ million)			
1	Almonds	1,899	1,879	1,899	1
2	Dairy and products	604	963	1,211	26
3	Wine	735	816	877	7
4	Table grapes	499	553	612	11
5	Pistachios	287	364	581	60
6	Rice	268	313	512	63
7	Walnuts	365	444	491	11
8	Tomatoes, processed	287	300	489	63
9	Oranges and products	359	260	422	62
10	Strawberries ¹	274	298	338	14
11	Lettuce	244	274	315	15
12	Raisins	206	213	300	41
13	Cotton ¹	584	523	266	-49
14	Beef and products	152	199	228	14
15	Peaches & nectarines	125	147	185	26
16	Prunes	133	175	179	2
17	Lemons ¹	104	167	172	3
18	Cherries ²	38	97	140	45
19	Hay ¹	125	129	133	3
20	Broccoli ¹	112	118	120	2
21	Carrots	87	100	109	8
22	Raspberries	40	62	80	30
23	Plums	61	51	71	38
24	Tomatoes, fresh	62	74	70	-5
25	Celery	55	63	63	1
26	Flowers and nursery	51	59	61	4
27	Cauliflower ¹	47	50	59	17
28	Potatoes	42	42	51	24
29	Wheat	14	27	49	78
30	Grape juice	28	32	48	50
31	Melons	42	43	48	9
32	Onions ¹	44	51	47	-9
33	Spinach	26	29	37	25
34	Apples	27	31	33	7
35	Pears	29	22	30	39

**Table I- California agricultural product export values and rankings, 2006-2008
(continued)**

2008 Rank	Product	2006	2007	2008	Percent change 2007/2008 ⁴
		Export value (\$ million)			
36	Tangerines and mandarins	15	11	29	159
37	Bell & chili peppers	22	22	27	19
38	Garlic	26	25	25	0
39	Turkey	18	21	25	18
40	Cottonseed byproducts	12	19	22	13
41	Apricots	13	16	21	30
42	Grapefruit	88	79	21	-74
43	Dates	16	18	20	11
44	Olives	16	17	19	11
45	Sweet potatoes	13	12	16	34
46	Figs	14	11	15	35
47	Cabbage	19	14	15	5
48	Kiwi	17	14	13	-7
49	Asparagus	12	16	11	-31
50	Chickens	7	9	10	13
51	Avocados	11	4	10	170
52	Dry beans	14	12	8	-31
53	Mushrooms	2	4	4	3
54	Eggs	9	9	4	-53
55	Artichokes	5	4	3	-5
	Total principal commodities	8,404	9,305	10,647	14
	Total otherproducts ^{1,3}	1,420	1,909	2,332	22
	Total all agricultural exports	9,824	11,214	12,979	16

Source: University of California Agricultural Issues Center.

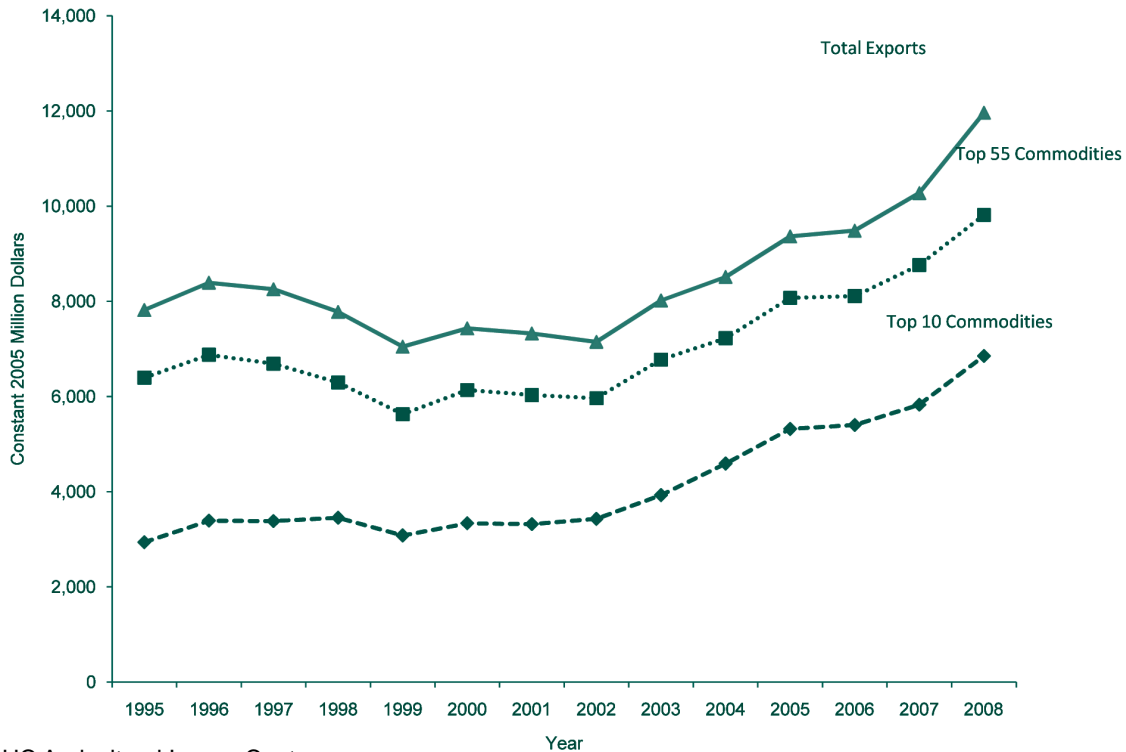
¹ 2007 figures were revised based on updated production data from the U.S. Department of Agriculture/ National Agricultural Statistics Service.

² In 2007, the California Cherry Advisory Board started reporting historical data (starting in 2005) on the shipment of all 8 major varieties. Prior figures were based on reported shipments of only four varieties (Bing, Van, Lambert and Rainier).

³ "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.

⁴ Export values for each year are rounded. More precise numbers are used in the percent change calculations.

Figure 1. California's agricultural exports, inflation adjusted, 1995-2008



Source: UC Agricultural Issues Center

the export value of almonds from 2006 through 2008. As a result, the share of total export value attributed to almonds has declined from 20 percent in 2006 to approximately 15 percent in 2008. The non-growth in export value of almonds from 2006 to 2008 coincides with increases in volume of almonds exported and subsequent decreases in export price. This result represents the third year in a row of increased export volume and subsequent lower prices. California walnuts and pistachios both experienced growth in export sales in 2008.

Pistachios experienced the largest growth in export value among tree nuts from 2007 to 2008, increasing by 60 percent from \$364 million to \$581 million. The growth in pistachio export value is the result of a 64 percent increase in the quantity of pistachios shipped to foreign markets. Walnut exports for 2008 increased as well, from \$444 million in 2007 to \$491 million in 2008. This is a continuation of the steady growth in California walnut exports since the year 2000. The past year's growth in walnut export value was the result of an 8.5 percent growth in export price.

The California dairy industry experienced an increase in the value of dairy exports for the second year in a row and topped the \$1 billion

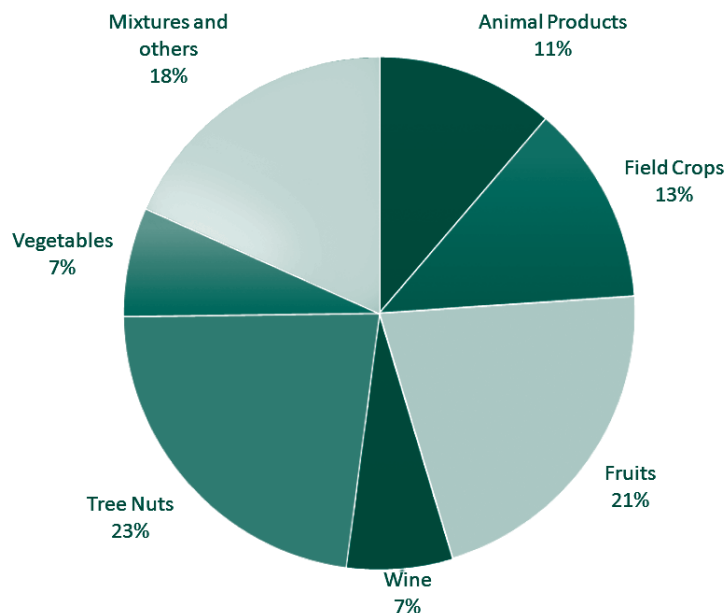
mark with an estimated 2008 export value of \$1.2 billion. This represents a 26 percent increase in export value from 2007. The increase in the value of California dairy exports is linked to a 15 percent increase in the export price of dry milk powder and a four percent increase in the export price of butter.

California wine had a third consecutive year of record high exports with a total value of \$877 million. This value is seven percent higher than the record exports of 2007. The California wine industry continues to increase its proportion of overall production that is sold in international markets. In 2007, the California wine industry exported 18 percent of its production to foreign markets. This share increased to 19.5 percent in 2008.

California table grapes remained the fourth highest export commodity in 2008 with an export value of \$612 million. This represents the second year in a row that table grape exports increased by 11 percent from the previous year. This increase is mostly attributed to a nine percent increase in export quantities, with a slight one percent increase in unit price.

Among the top ten export commodities, rice and processed tomatoes each had the greatest percentage increase in export value from 2007 to 2008. Each

Figure 2. agricultural exports by category, 2008



Source: UC Agricultural Issues Center.

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

experienced growth in export value of 63 percent from the previous year. Rice exports increased from \$313 million in 2007 to \$512 million in 2008. This growth was due to large increases in both the quantity and price received for medium grain rice exports. In 2008, exports of California medium grain rice increased by 43 percent over the previous year from 664 million metric tons to 947 million metric tons. In addition, export prices for medium grain rice increased 20 percent from 2007 to 2008.

Processed tomatoes increased from \$300 million in exports in 2007 to \$489 million in 2008. This increase is due to a larger proportion of California process tomato production being allocated to the export market. In 2007, 11.3 percent of California’s processed tomato crop was exported, and this share increased to 22.2 percent in 2008.

California cotton experienced a third consecutive year of declining exports. With decreases in export value of 21 percent from 2005 to 2006 and nine percent from 2006 to 2007, California cotton exports declined another 49 percent in 2008 with a total export value of \$266 million. The sharp decline is the result of significant drops in the production and export of Pima cotton. In 2008, California produced 415,000 bales of Pima cotton, 47 percent below the

2007 production level of 793,000 bales. Exports quantities of California Pima cotton dropped from an estimated 775,000 bales in 2007 to 216,000 bales in 2008.

Oranges and orange products rebounded in 2008 with a 62 percent increase in export value over the previous year. Foreign sales of oranges and orange products totaled \$422 million in 2008 and reflect the largest value of orange exports in the last fifteen years. For strawberries, the final commodity in the top ten, exports increased 14 percent from \$298 million in 2007 to a value of \$338 million in 2008.

California cotton experienced a third consecutive year of declining exports. With decreases in export value of 21 percent from 2005 to 2006 and nine percent from 2006 to 2007, California cotton exports declined another 49 percent in 2008 with a total export value of \$266 million. The sharp decline is the result of significant drops in the production and export of Pima cotton. In 2008, California produced 415,000 bales of Pima cotton, 47 percent below the 2007 production level of 793,000 bales. Exports quantities of California Pima cotton dropped from an estimated 775,000 bales in 2007 to 216,000 bales in 2008.

Within the remaining 55 principal commodities, the biggest significant gains in export value from the previous year were experienced by tangerines and mandarins, which increased 159 percent in value from \$11 million in 2007 to \$29 million in 2008. This increase is linked to a 126 percent increase in the quantity of tangerines and mandarins exported to Canada. From 2007 to 2008, Canada increased imports of California tangerines and mandarins from 5,500 metric tons to 12,400 metric tons.

Other commodities with large percentage increases in export value were avocados (170%), wheat (78%), grape juice (50%), cherries (45%), pears (39%), plums (38%), and figs (35%). Also of note was the continued increase in the value of beef and cattle related products exported. The 14 percent increase in 2008 California beef exports indicates a continued recovery from the 2003 BSE incident and the subsequent collapse of U.S. beef exports.

As Table 1 shows, the export of California agriculture products covers a broad scope of different commodities. Figure 2 shows the 2008 share of fruits and tree nuts was 44 percent of total exports. The export of vegetable crops accounted for seven percent of export value, a decrease of one percent in the share of total exports from 2007. California wine exports share of export value remained steady

at 7 percent as did the share of animal products (11 percent) and field crops (13 percent). Mixtures and other products increased in share of total export value from 15 percent in 2007 to 18 percent in 2008.

International Destinations

In 2008, California agricultural products were shipped to 194 individual countries worldwide. Relatively accurate export destination data are available for 48 commodities. These 48 commodities account for over 99 percent of the export value of the top 55 export commodities. The rest of the top 55 commodities for which no reliable export destination data are available are apples, turkey, wheat, eggs, chickens, avocados and mushrooms.

The top 10 export destinations (shown in Figure 3) account for 81 percent of the 2008 export value of the 48 commodities when unrounded data are summed, which is down from 83 percent in 2007. The top three export destinations, Canada, the European Union and Japan, account for 56 percent of 2008 export value down one percent from 2007. Overall, California agricultural products continued to span a greater proportion of the global market in 2008 as those countries that are outside the top ten primary recipients received a combined 19 percent of exported commodities, up from 17 percent in 2006 (Figure 3).

Table 2. Percent of California export value shipped to major markets by commodity group, 2008¹

	Canada	EU-27	Japan	China /HK	Mexico	South Korea	ROW	Total
Animal Products ²	10	3	9	8	23	6	41	100
Field Crops ³	17	9	22	7	7	8	30	100
Fruits ⁴	36	11	12	7	6	6	22	100
Tree-nuts	7	48	6	10	2	3	25	100
Vegetables	73	2	6	0	8	0	11	100
Flowers and Nursery	39	13	5	1	39	1	1	100
Wine	24	50	6	4	1	1	14	100
All Commodity Groups	24	22	10	7	7	4	25	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.

In 2008, Canada was the largest recipient of California agricultural exports. With a value of close to \$2.5 billion in imports, Canada imported 24 percent of agricultural product value exported from California in 2008. The \$2.5 billion value of California exports to Canada was spread across a broad selection of products. The top commodities for Canada in 2008 were fruits and vegetables. Lettuce and strawberries were once again the top two commodity exports to Canada in 2008. The third highest export for 2008 was wine, which surpassed table grapes.

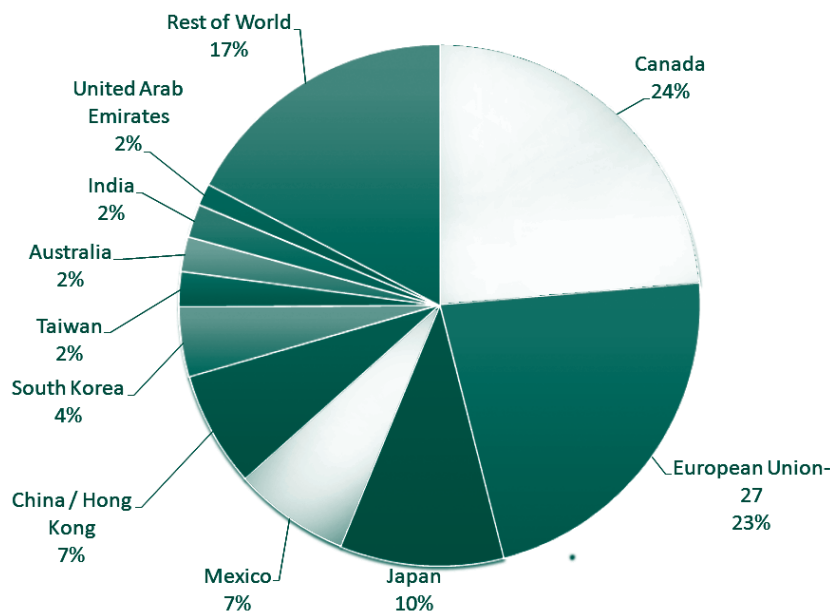
Canada maintained its position as the top ranked trading partner in 2008 by increasing the value of its agricultural imports from California by 12 percent from 2007 to 2008. Combined, the top three commodities imported by Canada in 2008 had a value of \$703 million. Dropping from third in 2007 to fourth in 2008, table grape exports to Canada valued \$182 million and processed tomatoes rounded out the top five with \$171 million in export value from California. In 2008, Canada imported seven commodities from California with values in excess of \$100 million: lettuce, strawberries, wine, table grapes, processed tomatoes, dairy and dairy products and almonds. Another 27 commodities were exported to Canada with values in excess of \$10 million.

The European Union was the second largest destination for California produced commodities, consuming approximately \$2.4 billion or 22 percent of total exports in 2008. The European Union also increased the value of its consumption of California commodities by ten percent in 2008.

The five major destinations within the European Union were once again the United Kingdom, Germany, Spain, Italy, and the Netherlands. Each of the five countries accounted for greater than \$200 million of California agricultural exports. Due to the freedom of trade among European Union member nations, it is not possible to determine the country of final consumption. As was the case in 2007, almonds were the top California export commodity exported to the European Union in 2008 with a value of \$894 million, representing approximately 38 percent of total value of all commodity exports to the European Union. The other two tree nuts, walnuts and pistachios, which were the third and fourth ranked exports to the European Union, combined for another \$521 million in export value.

Combining the import of all three tree nuts, the European Union consumed close to 48 percent of all tree nuts exported from California in 2008. The second highest commodity export from California to the European Union was wine with a total value of

Figure 3. California agricultural exports to the top-10 destinations, by value, 2008



Source: University of California Agricultural Issues Center.

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

Table 3. Percent of farm quantity exported, 2007 and 2008 ^{1,2}

	2007	2008
	Percent	
Almonds	61	55
Grapes, all ³	26	30
Dairy and products ^{4,5}	17	14
Cotton	98	90
Walnuts	53	33
Pistachios	45	109
Rice	37	52
Tomatoes, processed	11	22
Strawberries	13	13
Lettuce	8	8
Oranges and products	18	36
Beef and products ⁶	5	6
Dried Plums	88	54
Lemons	30	20
Peaches & nectarines	11	13
Weighted average for top 52 commodities ⁷	23	24

\$438 million. As with tree nuts, the European Union, which received 50 percent of total California wine exports, was the largest foreign consumer of California wine in 2008. Combined, tree nuts and wine account for 79 percent of total export value of California commodities to the European Union.

In contrast, only the top 5 commodities exported to the European Union had total values in excess of \$100 million, and only 12 commodities with values equal to or greater than \$10 million???

The value of agricultural exports to Japan increased from \$953 million in 2007 to \$1.1 billion in 2008. With this increase, Japan maintained its rank as the third largest foreign consumer of California agricultural products in 2008. Rice and almonds remained the top two California commodities imported to Japan in 2008. The value of rice exports to Japan increased 22 percent in 2008, while almond export values to Japan decreased by 11 percent. The largest contributors in the overall increase of export value to Japan were oranges and orange products, and cotton. Orange exports to Japan grew 69 percent from \$43.5 million in 2007 to \$73.7 million in 2008, while cotton exports expanded from \$11.6 million to \$49.1 million, an increase of 322

Source: University of California, Agricultural Issues Center.

¹ The quantities are converted to farm level equivalent using conversion factors from the United States Department of Agriculture, National Agricultural Statistics Service.

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.

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 non fat dry milk.

⁶ 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.

⁷The weighted average is based on each of the 52 commodity's share of production value. Values for chickens, mushrooms, and flowers and nursery products are not included because reliable data on export quantity is not available.

percent. Also of note, California beef and products continued a strong rebound into the Japanese markets in 2008 with \$59.9 million in sales—an 83 percent growth in export value from 2007. This demonstrates a continued recovery from the collapse of beef sales to Japan in 2005 due to the BSE crisis.

Mexico surpassed China/Hong Kong in 2008 as the fourth largest export destination. Total exports to Mexico in 2008 were valued at \$762 million, an increase of 19 percent from 2007 exports. The biggest export gain to Mexico came from walnuts, which increased from \$3.5 million in 2007 to \$27.3 million in 2008. Pears also had large gains in export to Mexico going from \$500,000 in 2007 to \$7.7 million in 2008. Although 2008 exports to China/Hong Kong were valued less than those to Mexico, they still rose 18 percent compared to 2007, from \$638 million to \$752 million. Almonds surpassed cotton as the top export product to China/Hong Kong in 2008 with \$166.6 million value. This represents 22 percent of the value of all California commodities shipped to China/Hong Kong. The biggest gain in exports to China/Hong Kong was experienced by the pistachio industry. The value of pistachio exports in 2008 was \$126.2 million compared to \$56.1 million in 2007, a gain of 125 percent.

Also changing rank in the top ten export destinations were Australia, which moved with India from ninth place to eighth place. South Korea, Taiwan and the United Arab Emirates all maintained the same ranking from 2007 to 2008 as top ten destination countries who received California agricultural products in 2008. Of these remaining countries, Taiwan was the only country that had a decrease in the total value of agricultural product imports from California in 2008.

By commodity group, Table 2 shows California export distribution among the six principal destinations and the “rest of the world”. Table 2 summarizes previously discussed observations. The European Union is the largest importer of tree nuts and wine, while Canada imports a variety of fruits, vegetables, flowers and nursery products, but is also for field crops. Imports to the Asian trading partners Japan, China/Hong Kong and South Korea lean toward California field crops.

Farm Quantity Exported

Table 3 shows the ratio of farm quantity exported in 2008 and 2007. 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 grape equivalent and then added this figure to fresh grape exports. For many crops harvested in the fall, such as cotton or almonds, or commodities where a portion is processed or stored before export, the ratio of farm quantity exported to farm quantity produced does not represent the share of production in 2008 that is exported. Much of a commodity exported in 2008 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 ratios approximate the annual share of farm production exported. Despite their limitations, the data in Table 3 displays the importance of exports across commodities.

When considering all 55 principal commodities, individual commodity ratio of exports to production ranged from one percent for eggs to 109 percent for pistachios. There were seven commodities which had export quantities that were more than 50 percent of 2008 production levels. These commodities were pistachios, raspberries, apples, cotton, almonds, dried plums and rice.

As in previous years, export markets proved vitally important to the California tree nut growers as over 30 percent of 2008 walnut production and over half of the almonds and pistachios produced were exported internationally. The weighted average ratio of exports to production of the top 52 commodities in California for 2008 was 24 percent compared to 23 percent in 2007.

Final Remarks

Overall, California agricultural exports in 2008 increased by 16 percent from the previous year and achieved a record high of more than \$12.9 billion in value. The 2008 export of California agricultural products marks the sixth year of continued growth in the sale value of agricultural products to foreign destinations. In addition to an increase in overall export value of California commodities, the data indicate that a broader scope of foreign destinations may be importing more California agricultural production. Data for 2009 is not available, but based on production and price information, it seems unlikely that 2009 export totals will reach records set in 2008.