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Fruit and Tree Nuts Outlook

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Smaller Crops To Boost Fresh-Market Apple, Pear, and Grape Grower Prices

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USDA's National Agricultural Statistics Service forecast the 2017 U.S. apple crop at 10.4 billion pounds, down 7 percent from the previous year but higher than most years since 2000, if realized. While the anticipated smaller crop should provide a boost to U.S. apple prices during the 2017/18 marketing year, above-average production, competing large storage supplies from the previous harvest, and weak 2016/17 end-of-season prices will be mitigating forces on early-season fresh apple prices.

The 2017 U.S. pear crop is forecast to decline for a fourth consecutive year to 1.41 billion pounds, down 4 percent from the previous year, pointing to stronger pear prices for the season. Forecast lower production in Washington State is driving the overall decline.

The U.S. grape crop in 2017 is forecast at 15.0 billion pounds, down 2 percent from a year ago. California's production is forecast to decline at the same pace, mostly reflecting a smaller raisin grape crop. Declines are also anticipated in other key States. As California's table grape crop is forecast down less than 1 percent, fresh-market production will likely be near the previous 5-year average highs, indicating ample supplies to meet current demand.

The final estimate for the U.S. citrus crop in 2016/17 is 7.77 million tons, an 11-percent decline, year over year, with declines for most citrus fruit. As the 2017/18 season begins, the initial forecast for California's navel orange crop is down 10 percent from last season. Also, while the full damage and loss assessment from Hurricane Irma is ongoing, early indications suggest Florida's citrus production will slip again in 2017/18.

U.S. cranberry production in 2017 is forecast down 6 percent from the 2016 record crop but the second largest historically, if realized. Continued ample production and large beginning inventories will likely ease any upward pressure on cranberry prices.

After 3 consecutive years of setting record highs, California's walnut production is forecast to decline during the 2017/18 season. Meanwhile, the State's almond crop is forecast to surpass the 2016/17 record crop. This, combined with sizeable stocks from last season, will likely suppress almond grower prices again in 2017/18.

Price Outlook

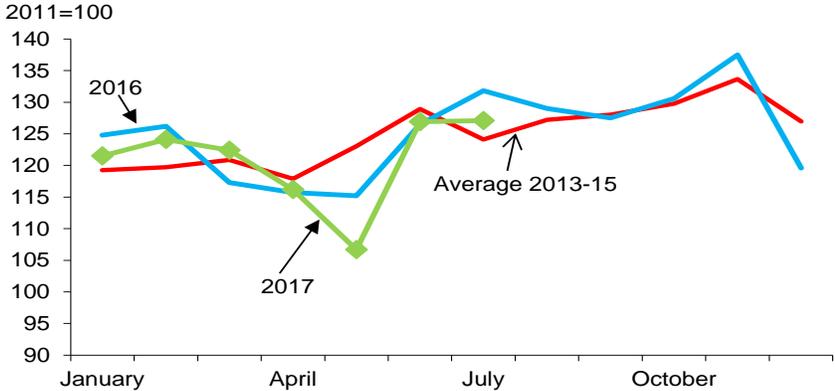
Fruit and Nut Grower Price Index Weakens

After being steady from year-ago prices briefly in June, the July 2017 grower price index for fruit and nuts fell below last year. At 127 (2011=100), the July index is down slightly from the July 2016 index of 132. While mostly below the exceptionally strong levels of 2014 to 2015, the 2017 index is slightly higher than average levels (fig. 1). Lower grower prices for fresh apples, pears, and grapefruit more than offset the higher grower prices for grapes, peaches, strawberries, and most citrus fruit (except grapefruit), driving down the July index (table 1).

The near-record crop of apples harvested in the fall of 2016 led to above-average inventories at the end of the 2016/17 marketing season (August-July), contributing to lower grower prices in July 2017 compared to the same time a year ago. Production for 2017/18 is forecast to be down but still slightly higher than average, so there should be adequate supplies moving into the season. While the smaller crop is expected to support prices during the season, large inventories from last season should ease some of this upward pressure, especially early in the season. Grape production is also anticipated to fall this year, and lower shipment volumes to date, based on USDA Agricultural Marketing Service (AMS) data, have elevated prices thus far. As with the previous season, peach and pear prices will likely continue to be strengthened by the forecast lower production.

Despite the forecast smaller strawberry crop in 2017 (down 3 percent from 2016), U.S. strawberry shipments have been higher than year-ago levels, having little effect on July grower prices. Although supplies have remained robust through August, AMS shipments indicate a large drop in September movement, which may result in healthy strawberry prices for the remainder of summer. At the same time, fresh orange and lemon prices were driven up by smaller crops harvested in California last year. Harvest for the 2017/18 California navel crop is expected to begin in October. The crop is forecast to be down 10 percent, pointing to potential upward gains in prices relative to last season. Additionally, damage to the Florida citrus crop caused by Hurricane Irma may lead to tighter supplies and upward pressure on prices for the 2017/18 season.

Figure 1
Index of prices received by growers for fruit and tree nuts



Source: USDA, National Agricultural Statistics Service, *Agricultural Prices*.

Table 1--Monthly fruit prices received by growers, United States

Commodity	June		July		Year-to-year change	
	2016	2017	2016	2017	June	July
	-----Dollars per box-----				Percent	
Citrus fruit: ¹						
Grapefruit, all	13.82	15.31	15.26	14.10	10.8	-7.6
Grapefruit, fresh	--	--	--	--	--	--
Lemons, all	29.95	40.90	26.47	41.85	36.6	58.1
Lemons, fresh	40.00	46.18	37.90	45.78	15.5	20.8
Oranges, all	8.56	18.53	8.11	20.33	116.5	150.7
Oranges, fresh	14.07	21.54	13.56	24.21	53.1	78.5
	-----Dollars per pound-----					
Noncitrus fruit:						
Apples, fresh ²	0.380	0.363	0.406	0.370	-4.5	-8.9
Grapes, fresh ²	--	0.845	0.740	0.765	--	3.4
Peaches, fresh ²	0.497	0.765	0.615	0.855	53.9	39.0
Pears, fresh ²	0.525	0.367	0.405	0.316	-30.1	-22.0
Strawberries, fresh	0.605	0.592	0.594	0.741	-2.1	24.7

-- Insufficient number of reports to establish an estimate.

¹ Equivalent on-tree price.

² Equivalent packinghouse-door returns for CA, MI, NY, and PA (apples only), OR (pears only), and WA (apples, peaches, and pears). Prices as sold for other States.

Source: USDA, National Agricultural Statistics Service, *Agricultural Prices*.

Consumer Price Index for Fresh Fruit Continues to Climb in August

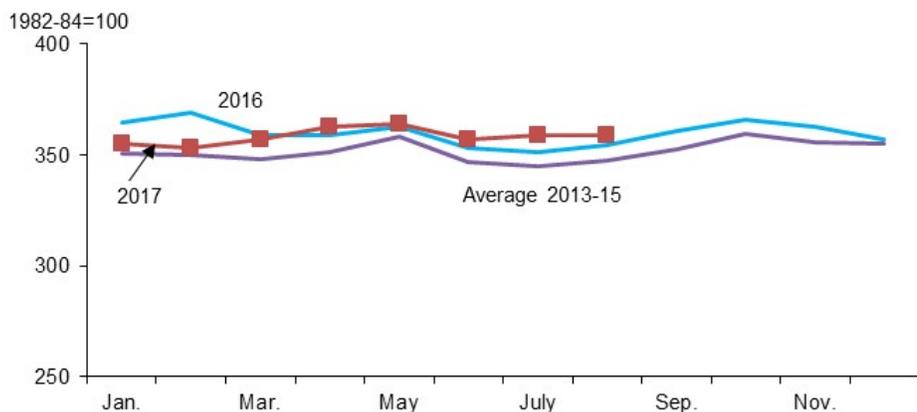
The Consumer Price Index (CPI) for fresh fruit was reported at 359.1 (1982-84=100) in August 2017, up from 354.6 in August 2016 and strong relative to recent years (fig. 2). Based on data from the U.S. Department of Labor, Bureau of Labor Statistics (BLS), year-to-year retail price gains for navel oranges, grapefruit, peaches, and Thompson seedless grapes in August more than offset price declines for lemons, Red Delicious apples, bananas, and strawberries (table 2), boosting the August fresh fruit CPI.

As with grower prices, apple retail prices have generally fallen below year-ago levels through most of the 2016/17 season due to higher domestic supplies. This was indicated by the CPI for apples, which was consistently down from previous-year levels during the period from January-July 2017. In August, Red Delicious apple prices were down 11 percent from last year at the same time, and the CPI for apples was 371.3 (1982-84=100), down from 373.9 in August 2016. Increased harvest activity this fall should lead to seasonal declines in apple prices for the rest of this year, and the expected crop, smaller than last year's but still quite large, suggests favorable prices for consumers in 2017/18.

Domestic grape shipments consistently lagged the previous year, contributing to higher prices. The harvest in California's San Joaquin Valley is well underway, and the anticipated ample table grape harvest in the State will likely soften grape prices for the remainder of the summer and into the early fall.

Higher domestic strawberry shipments and the winding down of imports from Mexico in the early summer have put conflicting pressures on retail prices.

Figure 2
Consumer Price Index for fresh fruit



Source: U.S. Department of Labor, Bureau of Labor Statistics.

Table 2--U.S. monthly retail prices for selected fruit, 2016-17

Commodity	Unit	2016		2017		2016-17 change	
		July	August	July	August	July	August
--- Dollars ---							
Fresh:							
Navel oranges	Pound	1.268	1.365	1.462	1.453	15.3	6.4
Grapefruit	Pound	1.280	1.319	1.333	1.333	4.1	1.1
Lemons	Pound	2.170	2.161	2.093	2.138	-3.5	-1.1
Red Delicious apples	Pound	1.463	1.508	1.354	1.347	-7.5	-10.7
Bananas	Pound	0.567	0.562	0.565	0.561	-0.4	-0.2
Peaches	Pound	1.711	1.712	2.084	1.952	21.8	14.0
Anjou pears	Pound	1.684	--	1.629	1.653	-3.3	--
Strawberries ¹	12-oz. pint	1.942	2.169	2.036	1.979	4.8	-8.8
Thompson seedless grapes	Pound	2.359	2.155	2.420	2.213	2.6	2.7
Processed:							
Orange juice, concentrate ²	16-fl. oz	2.768	2.774	2.827	2.868	2.1	3.4
Wine	liter	12.393	12.400	12.511	12.712	1.0	2.5

-- Insufficient marketing to establish a price.

¹ Dry pint.

² Data converted from 12-fluid-ounce containers.

Source: U.S. Department of Labor, Bureau of Labor Statistics.

Estimated at 9 percent below a year ago in August, the strawberry price was up 5 percent in July relative to last year. Prices likely strengthened for the rest of the summer, given large year-over-year supply drop observed through mid-September, based on USDA/AMS shipment data. Meanwhile, banana import shipments have been mostly down this season, and banana retail prices have remained at or below last year's levels thus far, suggesting lack of demand for bananas in the United States.

Navel orange retail prices witnessed an increase in August due to lower domestic shipments. Fresh orange import volumes have been up, February through July, putting downward pressure on retail orange prices. Continued reduced processing orange volume and juice yield in Florida has lowered U.S. orange juice production in 2016/17; however, prices for the season have been consistently below 2015/16

levels until July and August (when prices averaged slightly higher), likely due to reduced consumer demand and increased imports. As the 2016/17 grapefruit season transitions to the new crop, overall tight supplies have driven up August prices. Despite lower domestic volume, lemon prices are down on rising import levels.

Smaller Apple Crop Likely To Raise Prices

In August, USDA's National Agricultural Statistics Service (NASS) released the initial forecast for the 2017 U.S. apple crop at 10.4 billion pounds, down 7 percent from the upwardly revised 2016 estimate of 11.3 billion pounds. If realized, the current forecast still places this year's production higher than most years since 2000. While the anticipated smaller crop should provide a boost to U.S. apple prices during the 2017/18 marketing year (August-July), some mitigating forces on early-season prices include new crop supplies continuing at above-average levels, competing large storage supplies from the previous harvest, and weak 2016/17 end-of-season prices relative to the previous year.

Production to decline in the Western and Central United States: While production is expected to increase in several apple-producing States, lower outputs in the Western and Central States are driving the forecast for a reduced National apple crop this year (table 3). In the West, production is forecast to decline 9 percent from last year, with smaller crops across producing States, dominated by Washington State's crop. Following a bumper crop last year, Washington's 2017 apple crop is forecast at 6.7 billion pounds, 8 percent below the previous year but still on par with the 2012-15 average crop size. Harvest in Washington was reported 2 to 3 weeks behind last season and with smaller fruit size. However, with no major frost problems encountered this growing season, industry sources have reported fruit quality to be high in terms of texture, sugar levels, and storability. Though smaller in relative volume than the West, the overall production decline in the Central region is much larger, declining by 27 percent from a year ago. A late spring frost and last year's large harvest lowered yield potential in Michigan, where the crop is forecast down 32 percent from a year ago. Other states in the region, however, are seeing the reverse. Meanwhile, as growing conditions fared mostly better than last year in the eastern United States, overall production in the region is expected to increase 8 percent. Larger crops are forecast across producing States, including New York (up 2 percent), Pennsylvania (up 11 percent), and Virginia (up 22 percent)—major producers in the region. Last season, production in many of these Eastern States were reduced due to spring frost damage and summer drought conditions.

Still plenty of fresh-use supplies to move to market: With dominance in U.S. apple production, the smaller Washington crop indicates reduced fresh-market supplies in 2017/18 compared to last season. USDA's Economic Research Service (ERS) projects approximately 7.2 billion pounds of production will go toward fresh use, nearly 70 percent of total utilized production (about 1-2 percent of the crop is unutilized due to economic or natural reasons). If realized, fresh-market production will be down 5 percent from the corresponding 2016/17 level. However, this projected fresh volume will be the third-largest historically (and 4 percent larger than the 2011-15 average), suggesting there should be ample supplies of U.S. fresh apples moving to the domestic and international markets this season (fig. 3).

Table 3--Apples: Total production and season-average price received by growers, 2014-16, and indicated 2017 production¹

States	Production				Price		
	2014	2015	2016	2017	2014	2015	2016
	-- Million pounds --				-- Cents per pound --		
Eastern States:							
Connecticut	20	25	13	25	63.2	58.5	97.3
Maine	38	36	37	43	42.1	50.4	48.3
Maryland	45	41	38	46	24.5	20.2	26.4
Massachusetts	43	43	29	46	49.2	53.0	44.5
New Hampshire ³	17	20	na	na	61.6	63.8	na
New Jersey	37	42	35	44	84.7	88.6	107.0
New York	1,260	1,360	1,180	1,200	20.0	20.7	27.1
North Carolina	125	105	104	105	24.6	20.7	23.7
Pennsylvania	534	519	442	490	16.7	19.1	19.8
Rhode Island	2	2	na	na	74.0	83.1	na
Vermont	29	36	27	30	40.7	43.2	68.5
Virginia	205	195	180	220	17.3	17.7	20.1
West Virginia	94	92	80	94	15.0	15.2	19.0
Total	2,450	2,517	2,164	2,343			
Central States:							
Illinois	21	21	19	22	76.4	55.8	87.2
Indiana ³	17	23	na	na	43.0	38.2	na
Iowa ³	5	5	na	na	77.9	86.3	na
Michigan	1,025	995	1,175	800	21.6	23.6	25.0
Minnesota	25	26	19	26	84.2	81.0	81.5
Missouri ³	21	28	na	na	28.3	44.0	na
Ohio	44	51	34	47	45.3	42.1	52.0
Tennessee ³	6	5	na	na	43.8	29.5	na
Wisconsin	54	52	41	50	61.2	57.8	55.2
Total	1,217	1,204	1,288	945			
Western States:							
Arizona ³	7	²	na	na	42.1	²	na
California	240	201	251	230	23.8	25.4	21.6
Colorado ³	9	²	na	na	89.2	²	na
Idaho	63	46	55	51	14.6	32.6	17.5
Oregon	155	125	195	175	27.9	35.5	30.7
Utah ³	23	15	na	na	21.9	32.9	na
Washington	7,650	5,930	7,320	6,700	26.8	39.4	34.6
Total	8,147	6,318	7,822	7,156			
United States	11,814	10,046	11,274	10,444	25.7	33.6	32.0

na = not available.

¹Commercial production from orchards of at least 100 bearing-age trees.

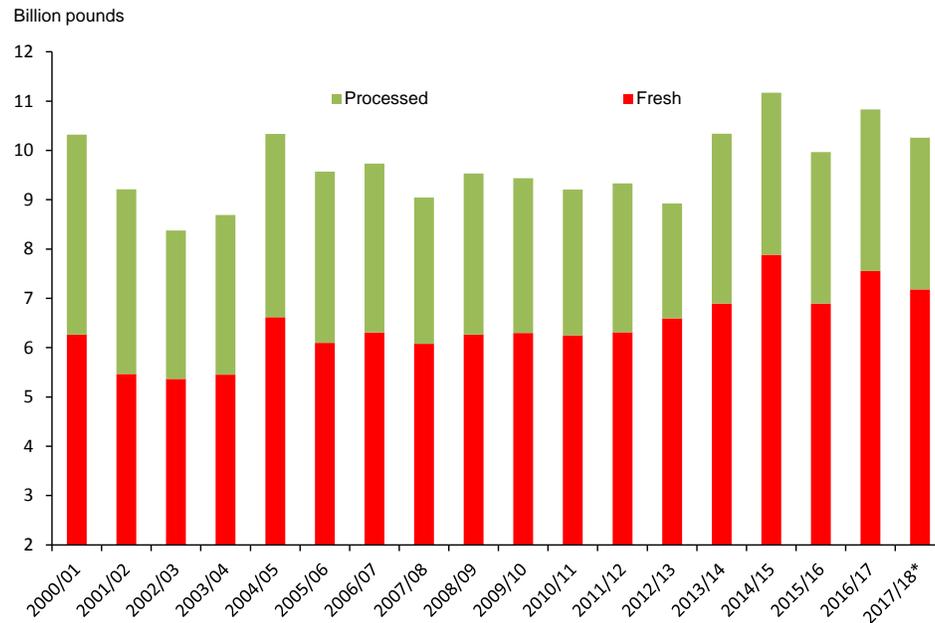
² Production withheld to avoid disclosing data for individual operations.

³ Estimates discontinued in 2016.

Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts 2016 Summary and Crop Production* (August 2017 issue).

Domestic production maintains a major role in U.S. fresh apple consumption, supplying over 90 percent of domestic availability. Imports account for the remainder and are sourced mostly from the Southern Hemisphere. More than half of import volume comes from Chile, but other major suppliers from the region include New Zealand and Argentina, and North American neighbor, Canada.

Figure 3
U.S. apple production to decline in 2017/18



* USDA, Economic Research Service projection.

Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts Summary*, various issues.

U.S. fresh apple exports rose in 2016/17: Export markets take nearly one-third of the fresh-market crop. During the 2016/17 season, increased domestic production and lower prices aided the 12-percent rise in export volume from the previous season. U.S. fresh apple exports increased to several global destinations, including Mexico, India, Taiwan, Hong Kong, Vietnam, and Saudi Arabia, among the top 10 markets. Increased shipments to Mexico (up 23 percent in volume), the United States' leading export market for U.S. apples, was aided by the weather-reduced crop in the country and the June 2016 revocation of provisional antidumping duties against U.S. apple imports that had been effect since January 2016. Although apple production continued to increase in China, U.S. exports to the country jumped significantly (up 35 percent) in 2016/17. This increase was likely influenced by more favorable pricing for importers in China relative to the 2015/16 season, when lower production in the United States resulted in higher U.S. apple grower prices. The 2016/17 season was the second full marketing year that U.S. apples have had expanded access to the Chinese market.

Large 2016 storage apple supplies likely to temper the boost in early 2017/18 prices: Harvest is underway for the 2017/18 apple season. Season-to-date U.S. shipment volumes through early September 2016 are running well ahead of the same time last season, driven by significantly higher volumes from Washington, based on data from USDA's Agricultural Marketing Service (AMS). Shipments from most other States are down to date, including California, Oregon, Idaho, Michigan, and North Carolina. As the 2016/17 season wound down, increased storage apple supplies helped keep end-of-season fresh-market apple grower prices below year-ago levels, indicating less favorable early-pricing prospects in 2017/18. As of June 1, 2017, fresh-market apple supplies in cold storage were up 12 percent from the same time a year ago and 5 percent more than the previous 5-year average, according to the U.S. Apple Association. Storage supplies were up in part due to

increased domestic production in 2016/17. Despite starting the season strong, U.S. grower prices for fresh-market apples in 2016/17 remained consistently below previous-year levels since November 2016. NASS reported end-of-season prices averaging \$0.37 per pound in July 2017, down from \$0.41 in July 2016. Overall, the 10-percent year-on-year increase in fresh-use production in 2016/17 resulted in a 7-percent drop in the season-average grower price for fresh-use apples, reported at \$0.41 per pound. At the retail end, monthly apple prices in 2016/17 also mostly fell from the strong levels of the previous season.

Processing-use production likely down: U.S. apple production for processing is also expected to decline in 2017/18 due to the forecast smaller crops in Washington and Michigan. Decline in raw material supplies this season should help support processing-apple grower prices. Increased processing-apple storage supplies from last season, however, will likely mitigate the upward pressure on prices. The U.S. Apple Association reported that as of June 1, 2017, processing-apple supplies in cold storage were up 8 percent from the same time last year and were 6 percent more than the 5-year average for that date. During the 2016/17 season, strong processor demand bolstered the season-average grower price for processing apples to \$213 per ton, up 6 percent from the previous season, despite increased processing-use production. Season-average grower prices rose across most processed product categories in 2016/17, particularly for canned, juice and cider, and dried, where more 2016 apples were utilized compared with the previous year. The average price in the frozen category was nearly flat, while in the fresh slice category, the average price fell 24 percent to \$390 per ton, despite a decline in utilized production.

U.S. Pear Crop Continues To Decline

In August, NASS forecast the 2017 U.S. pear crop to decline for a fourth consecutive year to 1.41 billion pounds (equivalent to 707,000 tons), down 4 percent from the previous year (table 4). If realized, this year's production will be the smallest production reported since 1980, pointing to stronger pear prices during the 2017/18 marketing season (July-June). Forecast lower production in Washington State (down 20 percent from the previous year), the largest pear-producing State, is driving the overall smaller U.S. crop. Production increases of 9-10 percent are anticipated in California and Oregon. California's crop benefited from favorable weather and a good bloom set, while harvest timing delays (compared with last season's abnormally early start) and fruit sizes smaller in the Pacific Northwest are being reported by the industry.

Most of production goes to the fresh market: The primary outlet for U.S. pears has increasingly shifted to the fresh market. Around two-thirds of the U.S. crop are now destined for fresh use annually, up from a 53-percent average share during the 1990s and around 46 percent in the 1980s. Like the previous three marketing seasons, the smaller U.S. crop will likely reduce the fresh-market pear output in 2017/18—projected by ERS to total 934 million pounds, down 7 percent from last season and below the previous 5-year average. Lower fresh output, combined with good fruit quality in general, bodes well for fresh pear grower prices in 2017/18. The domestic season kicks off with California pears in July. Early California supplies were tight, but fresh pear grower prices in July averaged \$0.32 per pound (or \$631 per ton), 22 percent below the historically strong July 2016 average price.

After setting mostly record-high monthly prices during the first half of the 2016/17 season, average prices have fallen below year-ago levels during the second half of last season, in part likely influenced by greater than expected late-season supplies and competing large storage apple supplies. As California's current season progressed through the summer, supplies have rebounded, reflecting the State's expected larger crop this year. Overall, however, AMS data show U.S. fresh pear shipment volumes for this season through early September down significantly from the same period last year. While volumes in California were up moderately from the previous season to date, those in Oregon and Washington were running far behind. Lower volumes reported thus far in the Pacific Northwest could be partly explained by the prolonged period for fruit to size up in the region due to a long winter and cold spring, causing harvest delays. Moreover, a smaller crop in Washington may also help explain the lower volumes to date. Reduced domestic shipments likely strengthened grower prices this summer. Harvest in the Pacific Northwest will be well underway in the fall. Prices in the coming months will likely continue to receive a boost from the forecasted smaller domestic crop and the anticipated smaller apple crop, the bulk of which will be harvested this fall.

Lower production and higher prices will likely diminish demand for U.S. fresh pears in 2017/18, with domestic per capita use likely to decline again (fig. 4). Overall U.S. fresh-pear export supplies will also likely be reduced by this year's short crop. Early-season exports are, however, showing strength, with July 2017 export volume up 12 percent from the same time last year. Imports in July, on the other hand, show a significant decline.

Table 4--Pears: Total production and season-average price received by growers, 2014-16 and indicated 2017 production

State	Production ¹				Price		
	2014	2015	2016	2017	2014	2015	2016
	--- Million pounds ---				--- Cents per pound ---		
Pacific Coast:							
California:							
Bartlett	308	336	282	320	20.8	24.7	25.0
Other	70	60	68	60	35.1	24.0	34.1
Total	378	396	350	380	23.5	24.6	26.8
Oregon:							
Bartlett	106	115	107	114	28.6	32.0	31.8
Other	326	341	323	360	29.8	34.4	35.7
Total	432	456	430	474	29.5	33.8	34.7
Washington:							
Bartlett	362	356	295	240	25.7	26.5	29.1
Other	470	404	402	320	32.1	36.7	37.0
Total	832	760	698	560	29.3	31.9	33.7
Michigan ²	5	4	na	na	22.1	30.3	na
New York ²	11	13	na	na	33.3	37.8	na
Pennsylvania ²	5	4	na	na	55.0	60.5	na
United States	1,663	1,633	1,478	1,414	28.1	30.8	32.3

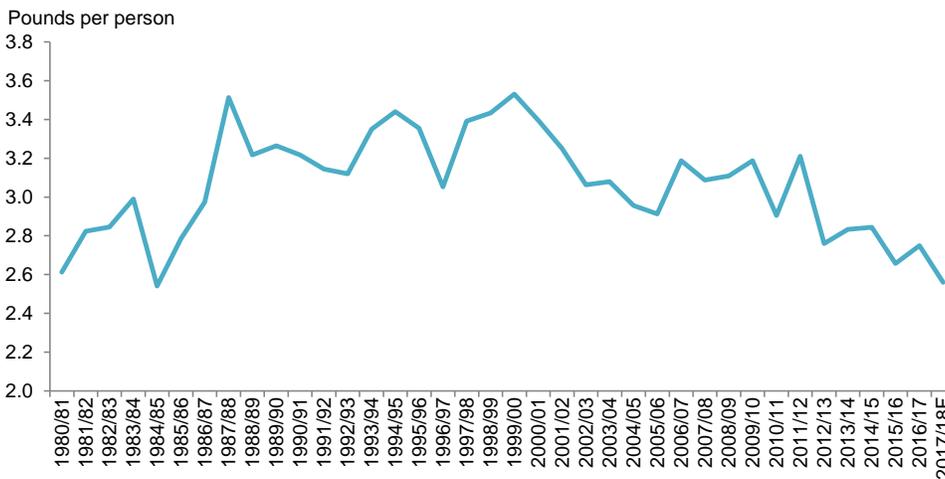
na = not available.

¹ Includes unharvested production and production not sold.

² Estimates discontinued in 2016.

Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts 2016 Summary and Crop Production* (August 2017 issue).

Figure 4
U.S. fresh pear per capita use declining



F= forecast.
 Source: USDA, Economic Research Service, *Fruit and Tree Nuts Yearbook*, various years.

At the retail level, average prices in July for Bartlett, Bosc, and D’Anjou pears also averaged lower year-over-year but have generally gained ground in August, according to AMS data on advertised retail prices. Bartlett prices fell below year-ago levels again through most of September while, those for Bosc and D’Anjou pears remained fairly strong.

The combined three-State Bartlett pear production forecast for 2017 is 674 million pounds, down 2 percent from last year. Bartlett pears account for over 80 percent of U.S. pears harvested each year for processing. Likely mirroring last year, this year’s reduced Bartlett pear crop points to fewer pears moving through the processing sector, putting upward pressure on 2017/18 processing-pear grower prices. During the previous season, about one-third of total utilized production moved through the processing sector for a total of 230,870 tons, down 20 percent from the 2015/16 total. Processor demand for raw material pears remained fairly strong in 2016/17, especially as imports of canned pears declined more than 10 percent from the previous season. This provided a boost to processing-pear grower prices, raising the 2016/17 season-average price by 11 percent from the previous season to \$346 per ton—the highest since 1980. Imports declined from China and South Africa, which are among the top foreign suppliers of canned pears to the United States, with the former accounting for 86 percent of the total volume.

U.S. Grape Crop Forecast Down Slightly in 2017

U.S. grape production is forecast at 15.0 billion pounds (or 7.51 million tons) in 2017, down 2 percent from a year ago and the lowest during the past 5 years, if realized. Production in California is forecast to decline at the same pace, totaling 13.2 billion pounds (equal to 6.60 million tons or 88 percent of the total crop) (table 5). While California’s wine- and table-type grape crops are forecast fairly unchanged from last year’s levels (only showing a less than 1 percent decline each), the raisin crop is expected to be down 6 percent. If realized, the State’s wine- and

Table 5--Grapes: Total production and season-average price received by growers in principal States, 2014-16 and indicated 2017 production

State	Production				Price		
	2014	2015	2016	2017	2014	2015	2016
	-- Million pounds --				-- Cents per pound --		
Arkansas	3	3	na	na	45.1	38.1	na
Georgia	8	10	na	na	73.5	75.5	na
Michigan	127	161	187	128	15.8	16.0	16.2
Missouri	8	11	11	10	39.5	44.0	46.7
New York	376	290	342	350	19.3	19.7	18.9
North Carolina	12	15	10	14	40.4	38.1	44.8
Ohio	8	7	11	10	24.1	20.5	28.0
Oregon	116	144	134	148	102.0	105.0	107.0
Pennsylvania	182	154	172	182	15.9	16.0	16.8
Texas	19	23	27	31	75.0	80.0	76.5
Virginia	18	18	17	18	92.5	97.5	99.0
Washington							
Wine	454	444	540	520	55.5	57.5	58.0
Juice	570	378	436	400	8.8	9.2	10.7
All	1,024	822	976	920	29.5	35.2	36.9
Total ¹	1,900	1,658	1,886	1,811			
California:							
Wine	7,790	7,410	8,062	8,000	38.0	39.1	45.2
Table	2,330	2,270	2,318	2,300	67.5	76.5	66.5
Raisin ²	3,748	3,904	3,072	2,900	19.1	17.5	13.1
All	13,868	13,584	13,452	13,200	37.8	39.1	41.5
United States	15,768	15,242	15,338	15,011	37.0	38.8	40.8

na = not available.

¹ Sum of State production, excluding California. ² Fresh weight of raisin-type grapes.

Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts 2016 Summary and Crop Production* (August 2017 issue).

table-type grape crops will each rank third largest since 1980, while the raisin crop will be the smallest for the same time period.

A wet, cold winter and spring slowed crop progress, delaying grape harvesting in California. A June heat wave caused some sunburn damage to the early crop in the Coachella. Other heat spikes during the summer also slowed crop maturity as grapes require cool nights to achieve color. This has resulted in harvest delays in the San Joaquin Valley, the State's main grape-producing region shipping during the summer and fall.

Elsewhere across the country, combined production is also forecast to be lower (down 4 percent from last year), mostly due to expected smaller crops in key producing States—Washington (down 6 percent) and Michigan (down 32 percent). Second in rank to California, Washington's grape crop is forecast at 920 million pounds (or 6 percent of the total crop), with reductions expected for wine and juice-type grapes.

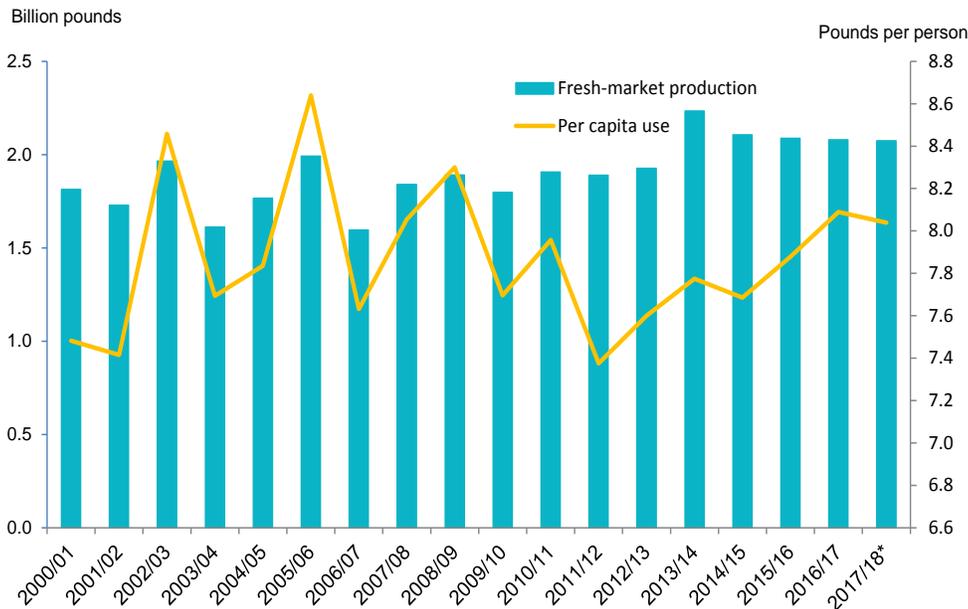
Fresh-Market Grape Production Likely Flat: With the California table grape crop anticipated to be down less than 1 percent from a year ago, U.S. grape tonnage for fresh use will likely be fairly flat during the 2017/18 season (May-April). USDA/ERS projects fresh-market production in the United States at around 2.1 billion pounds, consisting mostly of table grapes but also some raisin grapes. If achieved, fresh-use production will be close to the previous 5-year average level,

indicating still ample supplies to meet current demand (fig. 5). Domestic fresh-grape per capita use averaged 7.8 pounds over the past 5 years and is projected to keep at the 8.0-pound mark in 2017/18.

The 2017 harvest in California’s San Joaquin Valley is in full swing. Based on AMS data, total shipment volume for the season through early September was running about 10 percent behind the same time a year ago, reflecting harvest delays. Tighter supplies have resulted in fairly strong fresh-grape grower prices thus far. NASS reported the June 2017 average price at \$1,690 per ton, up from the 2010-15 June average of \$1,444 per ton (no average price was reported in June 2016). With seasonal increases in supplies, the July 2017 average price declined to \$1,530, but remained up 3 percent from the July 2016 average price. Year-over-year price declines were noted at the retail level during the same period, due in part to increased imports from Mexico. As with the BLS reported monthly retail prices for Thompson seedless grapes, weekly information from AMS show advertised retail prices for various seedless-type grapes at major U.S. supermarket outlets have declined seasonally since May. Movement of prices relative to last year, however, varied across these varieties.

U.S. fresh-grape exports reached 765.5 million pounds in 2016/17, up 6 percent from 2015/16 but lower than the 809.0 million-pound average of the previous 5 years. Declines to Canada and Hong Kong were more than offset by increases to most other leading markets, including a rebound in shipments to China. While anticipated ample domestic production in 2017/18 will help support exports, tight

Figure 5
U.S. fresh-grape production and per capita use



* USDA, Economic Research Service projection.

Source: USDA, Economic Research Service calculations on per capita use; USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts Summary*, various issues.

early-domestic supplies due partly to harvest delays have slowed exports for the season through July. Export volumes to date were down to all the major markets.

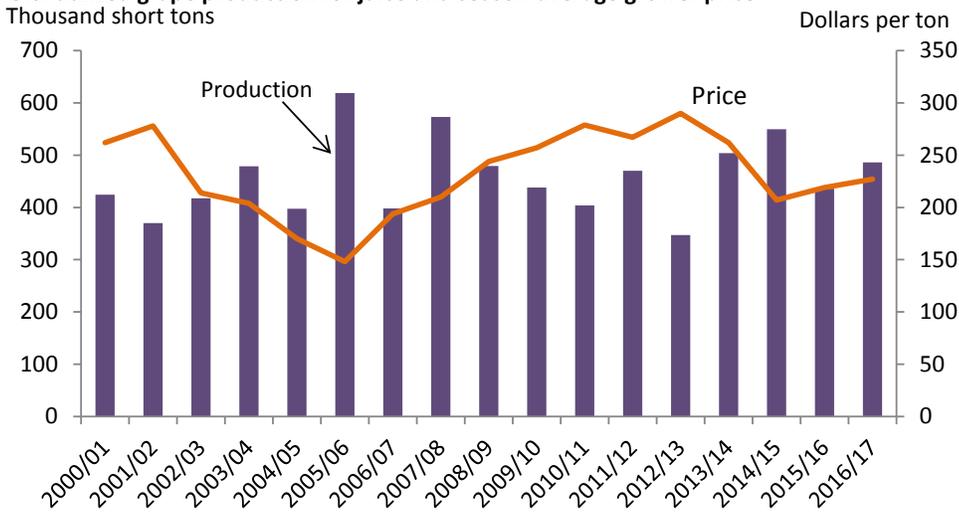
Fewer Grapes Destined for Wineries: California accounts for over 90 percent of domestic grapes for making U.S. wines. NASS forecast the State's wine grape production at 8.0 billion pounds (or 4.0 million tons) in 2017, down less than 1 percent from a year ago. Compounding this is the forecast of a 4-percent decline in Washington's wine grape production and expected smaller grape crops in New York, Michigan, Missouri, and Ohio. Together, this indicates the potential for lower grape crush tonnage this year, likely putting upward pressure on 2017/18 grower prices for grapes sold to wineries. Washington is the only other State, besides California, that reports wine grape production annually. This year, the forecast for wine grape output in the State is for 520 million pounds (or 260,000 tons), making up 57 percent of the State's total crop.

Grape Tonnage for Juice Likely Down: A forecast 8-percent decline in Washington's juice grape production this year, along with forecast smaller crop in Michigan, suggest a reduction in grape tonnage crushed for juice during the 2017/18 marketing season (August-July). However, anticipated bigger crops in New York and Pennsylvania will likely mute some of the downward movement in crushed tonnage. Reduced tonnage headed to juice processors will likely strengthen juice-grape grower prices this season. During the 2016/17 season, tonnage for juice increased 12 percent from the prior season as reported by NASS, but juice-grape grower prices rose 4 percent to \$227 per ton (fig. 6). Declines in grape juice imports in 2016/17 have offset the gains in domestic production and together with improved export demand helped support juice-grape grower prices last season. Moreover, according to the California Department of Food and Agriculture and the USDA/NASS Pacific Regional Office, California grape tonnage for concentrate production totaled 393,045 tons in 2016, 9 percent of the State total crushed tonnage and down 10 percent from the previous season. The share of total concentrate tonnage used specifically for juice remains unreported. Also lacking is information pertaining to growing district, type, or variety of grape. Nonetheless, it is an indication that crushed tonnage for juice in California likely was down, aiding grower prices.

U.S. grape juice imports in 2016/17 dipped to a 15-year low at 32.5 million single-strength-equivalent (sse) gallons on continuing lower supplies from Argentina, the dominant source for the imported product in the United States. Among other leading suppliers, imports were also down from Chile and Australia, but were up significantly from Spain and Mexico. International demand for U.S. grape juice increased 10 percent last season after falling to a 30-year low in 2015/16. Export volume climbed to 9.3 million sse gallons, with the value up 3 percent to \$70.2 million. Export volumes last season increased significantly to most of the top 10 global markets for U.S. grape juice, except to Canada, Mexico, the Philippines, and Taiwan. Over 90 percent of total export volume went to the top 10 markets.

Figure 6

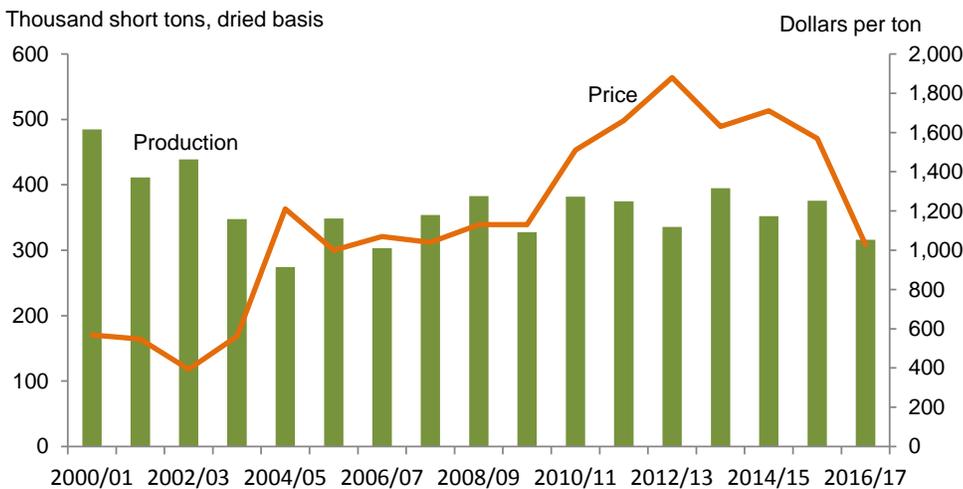
U.S. utilized grape production for juice and season-average grower price



Source: USDA, National Agricultural Statistics, *Noncitrus Fruits and Nuts Summary*, various issues.

Figure 7

California raisin grape production dried into raisins and average grower price



Source: USDA, National Agricultural Statistics, *Noncitrus Fruits and Nuts Summary*, various issues.

U.S. Raisin Production To Continue to Drop: At 2.9 billion pounds (or 1.45 million tons, fresh basis), the forecast 6-percent smaller California raisin-grape crop points to a reduction in the quantity of available grapes for drying in 2017/18. Over 95 percent of the California grapes dried are raisin grapes, while the rest are table grape varieties. Reduced tonnage for drying should help strengthen grower prices for raisin grapes in 2017/18, especially as domestic raisin stocks are at below-average levels and global production forecast is down. U.S. raisin production is forecast by USDA’s Foreign Agricultural Service (FAS) to drop to 275,000 metric tons (or 303,150 short tons) in 2017/18, down 8 percent from last season. Tighter supplies will likely slow domestic and export sales, while ending stocks will

continue to diminish. Imports are projected to rise on flat to slightly higher production and exports in Chile, Argentina, and the Republic of South Africa—top suppliers of imported raisins to the United States. Despite reduced grape tonnage for drying in the previous 2016/17 season, large raisin stocks at the beginning of the season put downward pressure on prices for raisin grapes. The 2016/17 raisin-grape average grower price declined 34 percent from the previous season to \$1,030 per ton (dried basis) (fig. 7). Nevertheless, as other factors normally come into play, production and price for raisin grapes have depicted an inverse relationship through most of years since 2000/01.

U.S. Peach Production Continues To Decline

Forecast estimates from USDA/NASS indicate that the 2017 U.S. peach crop will be down for the eighth consecutive year to 1.47 billion pounds, down 8 percent from last year. If realized, this year's crop will rank smallest since the 1980s. The crops in South Carolina and Georgia, the top two peach-producing States after California, were devastated by low chill hours, an early bloom, and a late-spring freeze. Production in these two States is forecast to be down in the range of 75-80 percent (table 6).

At the same time, production in California—the dominant producer—is forecast at 1.16 billion pounds, up 2 percent from last year; the freestone crop is expected to be up 13 percent, while the clingstone crop is expected to be down 7 percent. Adequate chill hours contributed to a good bloom and heavy fruit set. Some clingstone growers, however, reported tree losses due to heavy rainfall this winter, according to the California Canning Peach Association. Fruit size was improved from last year for the early varieties, but the high temperatures in late July raised some concerns, especially for the late varieties. Elsewhere, production is forecast to be mostly up due to generally favorable conditions; the exceptions are in Alabama, Colorado, Idaho, Illinois, Michigan, and Utah, where declines range between 7 percent (in Illinois) to 34-39 percent (Michigan and Alabama).

Peach crops in other States are of the freestone type, which when combined with California's freestone crop, indicate an 8-9 percent year-over-year decline. Close to 75 percent of U.S. freestone peaches serve the fresh market; clingstones—virtually all produced in California—make up the rest of the U.S. peach crop and are mostly canned. A lighter clingstone crop suggests tighter processing supplies, potentially boosting grower prices for processing-use peaches this year.

Tighter overall supplies in the fresh market have strengthened fresh peach prices. Average grower prices in June and July were at record-high levels for the month at \$1,530 per ton and \$1,710 per ton, respectively, up significantly from the same time a year ago. These strong prices also translated to higher prices at the retail level.

The reduced fresh-market crop will limit exportable supplies and domestic availability. Year-to-date export volume through July was down substantially from the same time last year, and is projected to be down as much as 25 percent overall. Amid reduced supplies, U.S. exports face competition from expected larger supplies traded in the world market, especially from the European Union and from China. U.S. per capita use is projected to decline for the fourth consecutive year to about

Table 6--Peaches: Total production and season-average price received by growers, 2014-16 and indicated 2017 production

State	Production				Price		
	2014	2015	2016	2017	2014	2015	2016
	-- Million pounds --				-- Cents per pound --		
Alabama	7	11	7	4	60.0	56.0	69.5
Arkansas ¹	1	2	na	na	92.0	92.0	na
California	1,240	1,215	1,138	1,160	28.8	28.1	30.8
Freestone	576	534	494	560	40.6	34.0	37.2
Clingstone	664	681	644	600	18.5	23.5	25.9
Colorado	27	22	27	23	121.5	112.5	102.0
Connecticut ¹	4	3	na	na	125.0	104.0	na
Georgia	71	81	87	21	54.5	52.0	53.5
Idaho	16	14	16	12	53.5	47.2	45.0
Illinois	7	7	12	11	63.5	73.5	128.5
Maryland	8	8	5	8	52.0	51.5	62.5
Massachusetts ¹	2	3	na	na	112.0	116.5	na
Michigan	18	14	21	14	46.0	41.7	43.9
Missouri	8	5	6	8	57.0	68.5	87.0
New Jersey	45	42	40	48	66.0	65.5	71.5
New York	15	14	6	14	89.5	62.5	71.0
North Carolina	9	11	7	8	72.5	66.0	64.5
Ohio	0	2	3	7	84.0	76.0	87.5
Pennsylvania	30	36	32	38	59.5	58.5	60.5
South Carolina	131	138	127	25	56.0	53.5	64.5
Texas	8	10	9	9	100.0	90.0	110.0
Utah	13	8	10	7	49.1	54.0	82.0
Virginia	11	10	8	12	58.5	67.0	67.0
Washington	25	26	25	28	43.4	53.5	54.5
West Virginia	11	12	7	12	51.0	53.5	54.5
United States	1,706	1,694	1,591	1,470	37.6	36.7	40.4

na = not available.

¹Estimates discontinued in 2016.

Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts 2016 Summary* and *Crop Production* (August 2017 issue).

2.4 pounds, down from the 2.8 pounds a year ago and the average 3.2 pounds over the past 5 years. Serving a minor role in meeting domestic demand, imports are projected to decline slightly, reflecting lower deliveries from Chile at the front- and back-end of 2017.

Cranberry Production Slightly Short of the 2016 Record Crop

The NASS August forecast for U.S. cranberry production in 2017 is at 905 million pounds (or 9.05 million barrels), down 6 percent from the record 963 million pounds reported for 2016. If achieved, production will be the second-largest historically and 9-percent above the average 2011-2015 crop size. Declines are expected in Wisconsin, Massachusetts, and New Jersey—the top three producing States (table 7). Production in Wisconsin, the largest producer, is anticipated to be down 9 percent from record production last year, but statewide volume will still be above the previous 5-year average, if achieved. Excessive rainfall may have contributed to the State's lower output. Despite the expected decline in U.S. production, continued ample production and large beginning inventories will likely ease any upward pressure on cranberry grower prices during the 2017/18 marketing season (September-August).

With the record-high domestic production in 2016/17, NASS reported the average all-cranberry grower price at \$30.6 per barrel, down 1 percent from \$31.0 per barrel in 2015/16 (fig. 8). The average fresh-market price declined 20 percent to \$49.80

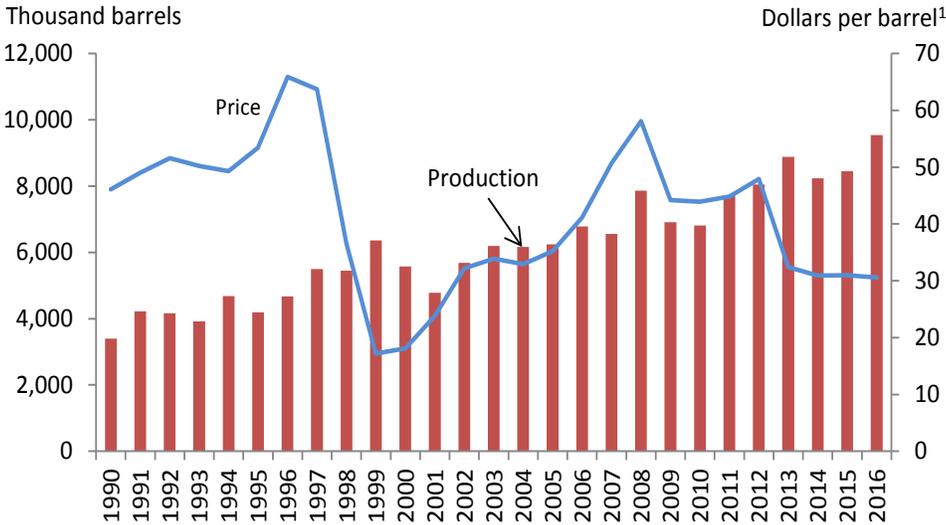
per barrel on increased fresh-market supplies (domestic and imports) and lower fresh sales volume to foreign markets. The average processing-use price, on the other hand, rose almost 2 percent to \$29.70, despite increased production for the processing sector. Carry-in inventory volume last season rose at a slowed pace compared with the previous 5 years. Also, Cranberry Marketing Committee (CMC) data show that sales to USDA/AMS commodity purchase programs in 2016/17 through June, while down from the same period in 2015/16, remained sharply higher than the average of previous years. USDA purchases, as well as marketing and promotion undertakings by the industry to boost domestic and export demand, have been critical in managing recent large supplies in the industry and preventing grower prices to once again dip to the lows of the late 1990s.

Table 7--Cranberries: Total production and season-average prices received by growers, 2014-16, and indicated 2017 production

State	Production				Price		
	2014	2015	2016	2017	2014	2015	2016
	-- Million pounds --				-- Cents per pound --		
Massachusetts	207	235	227	220	37.1	32.8	30.7
New Jersey	65	60	65	59	36.9	37.7	43.1
Oregon	50	56	40	48	23.1	26.5	26.5
Washington	16	20	18	18	44.6	44.2	44.2
Wisconsin	502	486	613	560	27.9	29.2	29.2
United States	840	856	963	905	30.9	31.0	30.6

Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruits and Nuts 2016 Summary and Cranberries* (released August 2017).

Figure 8
U.S. utilized cranberry production and average grower price



¹ 1 barrel = 100 pounds.

Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruits and Nuts Summary*, various issues.

Continued large carry-in inventories and record-high domestic production have outpaced overall market demand during the 2016/17 through June thus far, indicating ending inventories to move forward to the 2017/18 season will continue to increase. According to CMC data, U.S. cranberry sales in 2016/17 through June remained higher than the average volumes in previous years but were relatively unchanged from the same period in 2015/16. Sales volume to the domestic market to date was up 1 percent, but total volume delivered to foreign markets was relatively flat.

Citrus Fruit

U.S. Citrus Production in 2016/17 Down From Previous Season

As the 2016/17 season ends for most citrus fruits, final production estimates were published by USDA/NASS in the August 31 release of the *Citrus Fruits 2017 Summary* and the September issue of the *Crop Production* report. The final estimate for all citrus crops is 7.77 million tons, an 11-percent decline, year over year (table 8). Production declined for most citrus fruit except “tangerines and mandarins,” which grew 10 percent to 1.03 million tons. The nation’s orange production, which accounts for approximately two-thirds of total citrus volume, was estimated at 5.16 million tons, down 15 percent. The U.S. grapefruit crop shrunk also at the same rate, slipping to 682,000 tons, while lemon production declined 2 percent to 886,000 tons.

Table 8--Citrus: Utilized production, 2014/15, 2015/16 and forecast for 2016/17¹

Crop and State	Utilized		Forecast for	Utilized		Forecast for
	2014/15	2015/16	2016/17 as of 8-2017	2014/15	2015/16	2016/17 as of 8-2017
	---- 1,000 boxes ² ----			----1,000 tons ----		
Oranges:						
Early/midseason and navel:						
California	39,000	47,200	39,300	1,560	1,888	1,572
Florida ³	47,400	36,100	33,000	2,133	1,625	1,485
Texas	1,170	1,351	1,090	50	57	46
Total ⁴	87,570	84,651	73,390	3,743	3,570	3,103
Valencia:						
California	9,200	11,300	11,000	368	452	440
Florida	49,550	45,600	35,750	2,230	2,052	1,609
Texas	282	340	280	12	14	12
Total	59,032	57,240	47,030	2,610	2,518	2,061
All oranges	146,602	141,891	120,420	6,352	6,088	5,164
Grapefruit:						
California	4,800	3,800	4,000	192	152	160
Florida	12,900	10,800	7,760	548	459	330
Texas	4,250	4,800	4,800	170	192	192
All grapefruit	21,950	19,400	16,560	910	803	682
Tangerines and mandarins:						
Arizona	170	--	--	7	--	--
California	18,700	21,700	23,900	748	868	956
Florida	2,265	1,415	1,620	108	67	77
All tangerines and mandarins	21,135	23,115	25,520	862	935	1,033
Lemons:						
Arizona	2,000	1,600	1,650	80	64	66
California	20,600	21,000	20,500	824	840	820
All lemons	22,600	22,600	22,150	904	904	886
Tangelos ⁴						
Florida	665	390	--	30	18	--
All citrus ⁵	212,952	207,396	184,650	9,059	8,748	7,765

¹The crop year begins with bloom of the first year shown and ends with completion of harvest the following year.

²Net pounds per box: oranges in California (CA)-80 (75 prior to the 2010-11 crop year), Florida (FL)-90,

Texas (TX)-85; grapefruit in CA-80 (67 prior to the 2010-11 crop year), FL-85, TX-80; lemons-80 (76 prior to the 2010-11 crop year); tangelos-90; tangerines and mandarins in AZ and CA-80 (75 prior to the 2010-11 crop year), FL-95.

³Includes Temples. Beginning in 2016/17, Temples included in tangerines and mandarins for Florida.

⁴Beginning in 2016/17, tangelos are included in tangerines and mandarins for Florida.

⁵Totals may not be equivalent to the sum of the categories due to rounding.

Source: USDA, National Agricultural Statistics Service, *Crop Production*, various issues, and *Citrus Fruits 2017 Summary* (August 2017).

Despite reduced overall volume, the 2016/17 U.S. citrus crop was valued at \$3.4 billion, relatively unchanged from the previous season, as higher crop values for lemons and tangerines/mandarins were offset by lower returns for oranges and grapefruit. Declines in crop volume outpaced gains in grower prices, driving down production values for oranges and grapefruit. The reverse can be said for the U.S. lemon and tangerine/mandarin crops.

California produces more than half of citrus crop; Florida sees largest drop:

California continues to be the leading citrus-producing State and the largest supplier of U.S. citrus for the fresh market. Of the U.S. citrus crop volume in 2016/17, California produced 51 percent, and of this volume, 79 percent went to the fresh market. Florida ranks second in the nation's citrus production, with a 45-percent share in 2016/17, geared primarily toward the processing market. Texas and Arizona produce the remaining 4 percent, with higher volumes going to the fresh market.

When broken down by States, Florida experienced the largest reduction in citrus production in 2016/17, down 17 percent from the previous season. California and Texas followed, with declines of 6 and 5 percent, respectively. Increased lemon production pushed Arizona's final citrus volume up 3 percent, year over year.

Season's Florida fresh citrus shipments down: The Florida Department of Citrus (FDOC) released its latest weekly fresh citrus shipment report on August 7. In line with declining production, FDOC reports a slowdown in Florida fresh citrus shipment volumes and revenues through July 16, down 28 percent and 26 percent, respectively, from the same period in 2015/16. Fresh shipments totaled 12.5 million 4/5-bushel cartons in 2016/17, compared with 17.4 million the previous season. Fresh grapefruit accounted for 52 percent of total fresh citrus shipment volume, which were mainly for offshore markets (57 percent). At the same time, the proportion attributed to oranges was reported at 32 percent, mostly for the domestic market.

2016/17 Orange Production Down In All Main Producing States

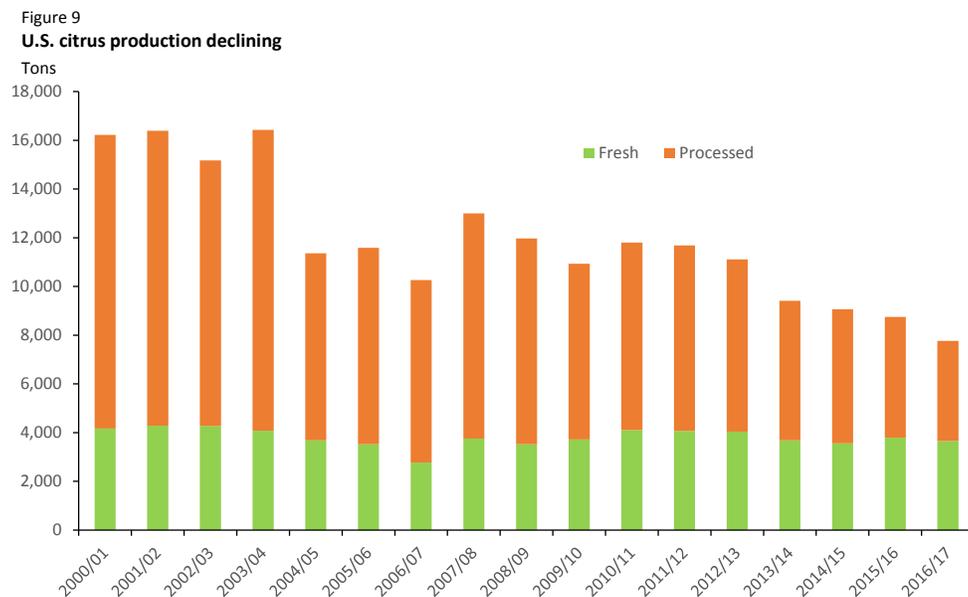
The reported 15-percent smaller U.S. orange crop in 2016/17 reflects declines in navel and Valencia orange production in the three producing States—California, Florida, and Texas. Total U.S. navel harvest declined 13 percent from the previous season to 3.1 million tons, while U.S. Valencia orange production declined 18 percent. As the largest supplier of U.S. citrus for the fresh market, California witnessed a 14-percent decline in all-orange production, driving up fresh-market orange prices. Florida's all-orange production declined 8 percent to 3.1 million tons. Texas' orange production dropped 18 percent to 58,800 tons.

Fewer bearing acres across most orange-producing States: Citrus-producing States reported less orange bearing acres in 2016/17 at 529,900 bearing acres, down nearly 4 percent from the previous season. The only exception was Texas, where bearing acreage has remained unchanged at 7,400 acres. Florida experienced the greatest loss in orange-bearing acres in 2016/7 (down 6 percent from the previous season). This is reflective of ongoing disease pressure with citrus greening, which was discovered in Florida in 2005 and is blamed for most of the lost citrus cropland.

As Florida’s production continued to shrink in 2016/17, the share of U.S. oranges for processing dropped further to 53 percent of all U.S. oranges, down from a 64-percent share the previous season and down from 74 percent in 2000/01. The fresh-market share of U.S. orange production, on the other hand, has remained stable over the last 17 seasons (fig. 9).

A lighter crop boosting California’s navel prices: U.S. orange prices rose during the 2016/17 season, especially in the fresh market. California’s all-orange average price increased 39 percent relative to the 2015/16 season. California’s navel season ended earlier and with a lighter crop because of drought-stressed trees from the previous season, while Valencia oranges experienced regreening issues due to high temperatures this summer. Tighter supplies in navel oranges contributed to higher grower prices for California navels in 2016/17 (November through July), with the season-average equivalent-on-tree price to date at \$19.30 per box—a 27-percent increase from \$15.23 per box in 2015/16. Florida all-orange on-tree equivalent prices registered a 2-percent drop, reflecting lower prices for oranges bound for the processing market. Specifically, prices for Florida’s processing oranges averaged \$9.30 per box this season (December through May), down from \$9.68 the same time last year.

Tighter domestic supply leads to strong fresh orange imports: With lighter domestic production, U.S. imports of fresh oranges are very strong in 2016/17 through July, increasing 24 percent from the same period in 2015/16 and reaching 121,000 tons. Mexico, Chile, and South Africa were the top three suppliers, accounting for 96 percent of total U.S. import volume. July through October is normally characterized by the heaviest volumes of imported oranges. A 23-percent increase in imports registered in July indicates the likelihood of continuing strong imports for the remainder of the season. Fresh orange exports through July, on the other hand, were 6 percent lower than the same period the previous season, partly due to tight domestic supplies.



Source: USDA, National Agricultural Statistics Service, *Citrus Fruits Summary*, various issues.

Another Season of Lower Grapefruit Production

Increases in California's grapefruit crop were not enough to offset another year of lower production in Florida. Thus, U.S. grapefruit production in 2016/17 is down 15 percent from the previous season, with Florida having a short season overall. Tighter domestic supplies raised grapefruit grower prices for the season and hampered fresh grapefruit exports. Exports through July witnessed a 22-percent decline in volume. Grapefruit prices (October through May) have been, on average, 12 percent above the prices registered during the same period in 2015/16. These higher prices will help Florida producers deal with lower yields and rising production costs. Modest increases in grapefruit imports thus far this season are not expected to put downward pressure on grower prices.

Increased Lemon Imports Have Not Led to Lower Domestic Prices

Early in the season, lemon supply is almost exclusively from California and Arizona, followed by imports, mostly from Chile and Mexico, during summer months. While the 2016/17 season registered the largest lemon import volume in the last 6 years, strong demand and reduced domestic production contributed to lemon average producer prices up 6 percent from the previous season, with the largest price increases registered late in the season. There was a drop in anticipated Argentinian lemon production due to a late frost, high temperatures, and excess rain, according to USDA's Foreign Agricultural Service (FAS). Though the United States does not import fresh lemons from Argentina, competition from sourcing countries (mostly Europe and Asia) for limited supply could put upward pressure on U.S. grower prices through the summer when fruit supplies begin to dwindle in Northern Hemisphere countries. Domestic lemon producers continue to monitor the ongoing negotiations toward ending the U.S. ban on lemons imported from Argentina, a major global producer and exporter of lemons.

Citrus Production Likely to Continue to Decline in 2017/18

In October, USDA/NASS will release its 2017/18 forecast for all-citrus production in the United States, but estimates for California's navel production are already published. In addition, recent weather events will certainly impact next season citrus forecast for Florida.

California and Florida orange production forecast: The *2017-18 California Navel Orange Objective Measurement Report* was released September 12 by the NASS Pacific Regional Office. Its initial navel orange forecast is at 68.0 million cartons (40-lb cartons) or 1.4 million tons, down 10 percent from last season. Reported data was collected from the Central Valley between July 8 and September 1, with 576 navel groves randomly selected. The survey measurements indicate that fruit set is below last year's measurements but average fruit size is larger. Specifically, survey data indicate 273 fruit per tree for the Central Valley, below the 5-year average of 348. The average September 1 fruit diameter was 2.341 inches, up from 2.213 inches in the previous season. Larger size fruit is not expected to offset the lighter fruit set. Over the past 3 years, 80 percent of California's orange crop was comprised of navel and miscellaneous varieties, with Valencia oranges accounting for the remaining proportion.

The results of the first orange and grapefruit maturity tests for Florida's 2017/18 season were published by USDA/NASS in the September 12 release of the *Citrus Maturity Tests*. Sampled fruit included early oranges, midseason oranges, and red and white seedless grapefruit grown in trees throughout the five production areas of the citrus growing region on August 29-30, 2017. Reported results show that all oranges and grapefruit had higher unfinished juice and solids per box for 2017/18.

Impact of hurricane Irma on Florida citrus production for 2017/18: Hurricane Irma made landfall in Florida on September 10 as a category 3 and 4 hurricane. Though the hurricane veered west to hit southwest Florida and Tampa, most of the State was affected by severe weather conditions due to the storm's magnitude. While the full impact of Hurricane Irma on Florida's citrus industry is still being assessed, early indications suggest statewide production will slip again in 2017/18. This is because the inclement weather affected commercial citrus production counties in central and southwest Florida. According to early reports, the negative impacts to citrus production include knocked down fruit, uprooted trees, and flooded orange groves. The full extent of the impact will also depend on the stage of production of different citrus crops. The USDA/NASS *Citrus Fruits 2017 Summary* reports the following marketing seasons for Florida citrus:

- Oranges, early, midseason, and navel – October 1 to March 31.
- Oranges, Valencia – January 1 to July 31
- Grapefruit – September 15 to June 30
- Tangelos – October 15 to March 15
- Tangerines – September 15 to April 30.

The impact of anticipated losses in domestic orange juice production may be mitigated by increases in Brazil's total frozen concentrate orange juice (FCOJ) production—55 percent up relative to the previous year. This is due to expected higher volume of oranges for crushing, with the FAS projecting the Brazilian orange crop for 2016/17 at 471 million boxes, a 34 percent increase relative to the previous season. Furthermore, Brazil's orange juice production (fresh and FCOJ) for 2017/18 (June/July) is forecast to increase 72 percent relative to this season, suggesting the potential for higher exportable supplies. Brazil produces more than half of the world's orange juice and exports 98 percent of its production.

California Walnut Crop To Decline for the 2017/18 Season

The 2017 California Walnut Objective Measurement Report, released September 6, forecast walnut production at 1.30 billion pounds (or 650,000 tons), in-shell basis, down 5 percent from last year's record crop of 1.32 billion pounds (or 686,000 tons). This decline reverses the past 3-year trend of production climbing to record-breaking levels (table 9, reported on a shelled basis), likely boosting walnut grower prices during the 2017/18 season (September-August). If the forecast crop size materializes, it will be larger than the previous 5-year average. However, these ample supplies will likely be partly offset by reduced carry-over stocks on strong overall demand during the previous season.

Walnut orchards received sufficient chilling hours and a lot of rain during the winter and spring. Some orchards, however, were reported to have had increased insect problems and compromised root systems due to excessive rains. With the heat waves over the summer, growers had to take preventive measures to protect their crop from sunburn damage.

Statewide bearing acreage for walnuts in 2017 continued its longrun upward trend, increasing 6 percent from last year to a record 335,000 acres. Likewise, at 74.1 trees per acre, trees density is at a peak in 2017, up 1 percent from a year ago. Despite these increases, the anticipated smaller crop this year could be blamed on lower yields. The average yield in 2017 is reported at 1.94 tons per acre, down from the record 2.18 tons in 2016. While the State average nut-meat weight is reported up 8 percent from last year to 23.4 grams, nut sets are down to a record low at 1,141 nuts per tree, 19 percent below last year's average of 1,406.

Table 9--Walnuts: Supply and utilization (shelled basis), 2000/01 to 2016/17 ¹

Season ²	Loss			Imports	Beginning stocks	Total supply	Ending stocks	Exports	Utilization	
	Utilized production	and exempt ³	Marketable production						Domestic	Per capita
----- 1,000 pounds -----										
										Pounds
2000/01	204,857	857	204,000	371	63,393	267,763	46,218	97,083	124,462	0.44
2001/02	257,556	844	256,711	203	46,218	303,132	80,004	103,420	119,708	0.42
2002/03	243,963	865	243,098	194	80,004	323,295	57,505	113,966	151,825	0.52
2003/04	279,429	857	278,571	439	57,505	336,515	63,210	126,356	146,950	0.50
2004/05	282,360	869	281,491	801	63,210	345,503	52,577	137,908	155,017	0.53
2005/06	315,989	890	315,099	1,050	52,577	368,726	39,288	205,380	124,058	0.42
2006/07	296,931	858	296,073	2,258	39,288	337,619	19,687	156,355	161,577	0.54
2007/08	280,427	855	279,573	8,714	19,687	307,973	19,885	144,673	143,415	0.47
2008/09	396,364	909	395,455	2,064	19,885	417,404	52,553	220,074	144,777	0.47
2009/10	387,870	888	386,982	3,378	52,553	442,913	37,321	235,463	170,129	0.55
2010/11	441,521	876	440,645	494	37,321	478,459	35,859	303,214	139,386	0.45
2011/12	400,631	869	399,762	4,848	35,859	440,469	42,740	266,439	131,290	0.42
2012/13	442,099	890	441,209	8,417	42,740	492,367	40,749	304,292	147,326	0.47
2013/14	437,651	890	436,762	11,910	40,749	489,420	34,325	307,371	147,724	0.46
2014/15	506,052	886	505,166	21,166	34,325	560,658	73,992	355,701	130,964	0.41
2015/16	526,957	870	526,087	10,782	73,992	610,861	56,571	427,295	126,995	0.39
2016/17 P	604,044	881	603,164	11,600	56,571	671,334	47,387	470,025	153,922	0.47

P = Preliminary.

¹ Conversion factors from in-shell to shelled basis varies year to year for production, stocks, and exports. For imports, the conversion factor was a constant 0.35.

² Season began in August through 2007/08. As of 2008/09, season begins September 1.

³ Inedibles and noncommercial usage.

Source: USDA, Economic Research Service calculations.

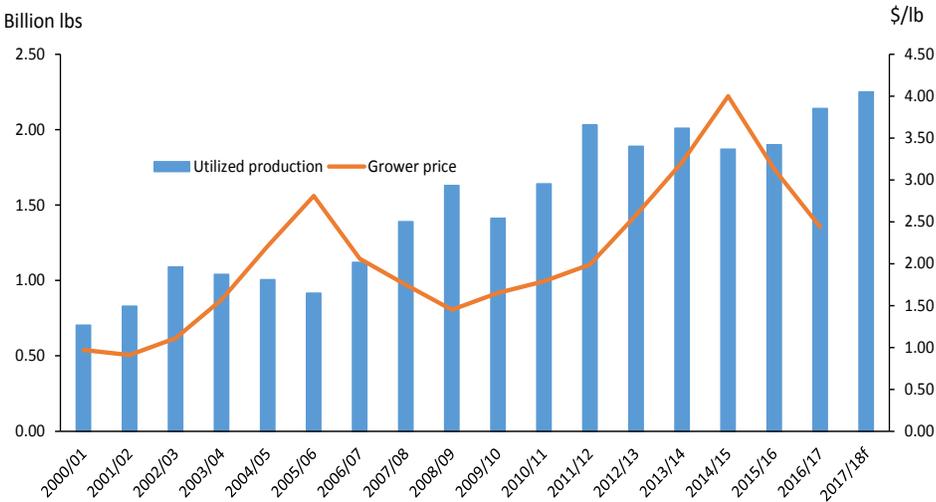
During the 2016/17 season, strong overall demand aided California walnut grower prices from falling a second year in a row. Despite the record-large crop and higher-than-average beginning stocks, 2016/17 grower prices improved to an average \$0.91 per pound (or \$1,810 per ton), in-shell basis, up from \$0.84 per pound (or \$1,670 per ton) in 2015/16—the lowest average price since 2010/2011. Global sales of California walnuts increased in 2016/17, particularly for the in-shell product. Total U.S. exports of in-shell walnuts in 2016/17 through July were up 48 percent, reaching 399 million in-shell pounds on substantial gains to most major markets, including Turkey, Italy, India, and the United Arab Emirates. For the same time period, total shelled-walnut exports declined 11 percent mostly on huge declines to China and Turkey. Over 60 percent of U.S. walnut supplies are destined for the international market.

Record-Large California Almond Crop Forecast for the 2017/18 Season

In July, the NASS Pacific Regional Office released the *2017 California Almond Objective Measurement Report*, which revised production up 2 percent from May’s *Almond Subjective Measurement Report*, to reach 2.25 billion pounds. If realized, the 2017/18 almond crop will surpass the 2016/17 record harvest of 2.14 billion pounds, setting a new high (fig.10). Bearing acreage and number of trees per acre both increased to record levels in 2017, driving up production for the 2017/18 marketing season (August-July). Bearing acreage has expanded year after year from 428,000 acres in 1996 to 1.0 million acres in 2017, along with generally increasing numbers of trees per acre.

Growers reported that, though adequate, there were fewer chill hours this winter than in 2016, and the bloom period was longer due to the cold spring. Orchard work was made complicated by significant rains, especially before and during the bloom period. As the nuts were developing, a heat wave in June propelled growers to

Figure 10
California almond production and season-average grower price*



*Shelled basis.
f = forecast.
Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts Summary*, various issues.

irrigate more frequently to prevent stress on the trees. The excessive heat delayed the period when the hulls start to split, delaying harvest. Meanwhile, pest and disease pressures were reported light.

The 2016/17 almond season ended in July, with total marketable production at 2.09 billion pounds, an increase of 13 percent from the previous season (table 10). This, along with record-large beginning stocks, boosted overall domestic supplies. Total supplies available for the domestic market increased 18 percent from the previous season, translating to 2.07 pounds per person during the 2016/17 marketing year. Improved demand in export markets helped alleviate stock levels, but ending stocks remained relatively large. As these sizeable ending stocks meet up with the anticipated record harvest this year, continued huge overall supplies will likely suppress almond grower prices again in 2017/18.

The 2016/17 season experienced a significant drop in the average grower price for almonds as supplies continued to outpace demand. At \$2.44 per pound, shelled basis, the average price last season dropped for a second consecutive year, from a peak of \$4.00 per pound in 2014/15 and \$3.13 in 2015/16. While the value of utilized production fell 30 percent below the 2014/15 high of \$7.4 billion and down 12 percent from 2015/16, it was the fourth-highest crop value on record at \$5.2 billion.

Total 2016/17 almond export volume rose 13 percent to 1.44 billion pounds, shelled weight, from the previous season. Export demand was strong for shelled and in-shell almonds but weak for prepared and preserved almonds. Shelled almond exports climbed 18 percent, totaling 1.14 billion pounds. Shelled shipments to Spain increased 8 percent to 208 million pounds and were matched by moderate to significant gains to most other foreign outlets, including major markets Hong Kong, Canada, Japan, the United Arab Emirates, and most key markets in Europe. Total California in-shell almond exports increased 12 percent to 453 million pounds in

Table10--Almonds: Supply and utilization (shelled basis), 2000/01 to 2016/17

Season ¹	Utilized pro-duction	Loss and exempt ²	Marketable production	Imports	Beginning stocks	Total supply	Ending stocks	Utilization		
								Exports	Domestic	Per capita
								--1,000 pounds--		
								Pounds		
2000/01	703,000	26,000	677,000	427	175,850	853,277	107,266	513,344	232,667	0.82
2001/02	830,000	29,300	800,700	809	107,266	908,775	80,922	585,723	242,130	0.84
2002/03	1,090,000	20,200	1,069,800	1,862	80,922	1,152,584	162,045	673,616	316,923	1.09
2003/04	1,040,000	21,800	1,018,200	2,772	162,045	1,183,017	148,940	698,896	335,181	1.15
2004/05	1,005,000	39,922	965,078	5,662	148,940	1,119,681	137,684	712,680	269,317	0.91
2005/06	915,000	36,470	878,530	9,207	137,684	1,025,421	112,222	728,470	184,730	0.62
2006/07	1,120,000	33,502	1,086,498	8,139	112,222	1,206,859	133,950	767,963	304,946	1.01
2007/08	1,390,000	41,491	1,348,509	7,107	133,950	1,489,566	231,151	891,443	366,972	1.21
2008/09	1,630,000	48,438	1,581,562	4,233	231,151	1,816,946	413,734	980,247	422,965	1.38
2009/10	1,410,000	46,326	1,363,674	5,610	413,734	1,783,018	321,355	1,030,754	430,910	1.40
2010/11	1,640,000	27,916	1,612,084	8,105	321,255	1,941,444	253,959	1,188,153	499,332	1.61
2011/12	2,030,000	40,493	1,989,507	15,926	253,959	2,259,393	335,233	1,357,972	566,188	1.81
2012/13	1,890,000	35,583	1,854,417	39,445	335,233	2,229,095	317,226	1,281,083	630,786	2.00
2013/14	2,010,000	60,571	1,949,429	33,928	317,226	2,300,583	350,564	1,336,899	613,120	1.93
2014/15	1,870,000	58,124	1,811,876	31,190	350,564	2,193,629	376,614	1,269,157	547,857	1.71
2015/16	1,900,000	43,494	1,856,506	31,776	376,614	2,264,896	421,884	1,272,305	570,708	1.77
2016/17 P	2,140,000	46,984	2,093,016	26,592	421,884	2,514,900	404,228	1,436,518	674,153	2.07

P = Preliminary.

¹Season begins in August.

²Utilized production minus marketable production.

Source: USDA, Economic Research Service calculations.

2016/17. Exports to India, which accounted for nearly half of total in-shell volume, were up 12 percent, while shipments to Vietnam, Turkey, and Pakistan saw even greater gains. Demand for California almonds in China was weak as indicated by significant declines in U.S. export volumes for shelled (down 36 percent from previous season), in shell (down 23 percent), and prepared and preserved (down 94 percent) almonds.

Smaller Hazelnut Crop Expected as Harvest Begins in Oregon

In late August, the NASS Northwest Regional Field Office released the *2017 Hazelnut Crop Forecast*, which measured the crop to be 72 million pounds (or 36,000 tons), in-shell basis, down 18 percent from the 2016 on-year crop. The volume, however, is up 7 percent from the previous off-year, 5-year average of 67.6 million pounds (or 33,800 tons). Yields this year were likely hampered by the wet spring, excessively hot and dry conditions this summer, and continuing concerns with the Eastern Filbert Blight disease. The percentage of good nuts sampled was slightly higher than last year at 88.1 percent, and the average dry weight per good nut was 3.03 grams, only fractionally higher than last year. However, the number of nuts picked per tree declined from 224 nuts to 201 nuts during the same period. Of the total good nuts, the proportion of large nuts was 49 percent, up from the 46 percent in 2016. At the same time, the proportion of small nuts remained unchanged at 11 percent, while that for jumbo nuts declined from 36 percent to 28 percent.

On a shelled basis, increases in marketable production and imports during the 2016/17 season (July-June) provided a significant boost to overall supplies, even as carryover stocks from 2015/16 were very low (table 11). As overall supplies rebounded markedly last season, the average grower price for California hazelnuts declined 4 percent from \$2,800 per ton in 2015/16 to \$2,700 per ton in 2016/17.

Table 11--Hazelnuts (filberts): Supply and utilization (shelled basis), 2000/01 to 2016/17

Season ¹	Loss			Imports	Beginning stocks	Total supply	Ending stocks	Utilization			
	Utilized production	and exempt	Marketable production ²					Exports	Domestic	Per capita	
					----- 1,000 pounds -----						
											Pounds
2000/01	18,052	639	17,414	11,650	5,609	34,673	1,854	14,701	18,118	0.06	
2001/02	39,600	1,512	38,088	15,195	1,854	55,137	6,784	22,529	25,823	0.09	
2002/03	15,600	338	15,262	16,387	6,784	38,434	5,930	9,929	22,575	0.08	
2003/04	30,224	734	29,490	10,902	5,930	46,321	3,633	25,589	17,099	0.06	
2004/05	28,548	1,359	27,189	12,768	3,633	43,591	1,114	21,687	20,790	0.07	
2005/06	20,806	783	20,023	12,082	1,114	33,218	540	26,035	6,643	0.02	
2006/07	37,116	671	36,445	13,534	540	50,520	2,298	25,203	23,019	0.08	
2007/08	29,355	788	28,568	13,428	2,298	44,294	2,104	27,014	15,176	0.05	
2008/09	26,667	494	26,173	10,010	2,104	38,287	2,255	22,267	13,765	0.04	
2009/10	38,145	1,378	36,767	8,108	2,255	47,130	2,369	30,644	14,117	0.05	
2010/11	21,836	1,028	20,808	10,883	2,307	33,999	2,283	16,838	14,878	0.05	
2011/12	31,218	2,134	29,085	9,617	2,283	40,985	2,969	20,851	17,165	0.05	
2012/13	28,400	709	27,691	15,235	2,969	45,895	870	26,519	18,506	0.06	
2013/14	36,923	250	36,673	14,533	870	52,077	4,023	32,031	16,023	0.05	
2014/15 ³	26,100	41	26,059	10,861	4,023	40,943	1,289	16,002	23,652	0.07	
2015/16	23,312	551	22,761	9,224	1,289	33,274	211	19,298	13,765	0.04	
2016/17 P	35,106	1,124	33,982	11,580	211	45,773	3,043	25,357	17,372	0.05	

P = Preliminary.

¹ Season begins in July.

² Utilized production minus loss and exempt.

³ Inshell export figure from Hazelnut Marketing Board.

Source: USDA, Economic Research Service calculations.

Although down significantly from the record \$3,600 in 2014/15, last season's average price was higher than those reported for any other year since the 1970s. The decline in the average price was more than offset by the production gain, raising the value of the 2016 crop to \$118.8 million, up from \$86.8 million. Increased production and lower grower prices helped stimulate demand in 2016/17, with significant gains in export volume (up 31 percent from 2015/16) and domestic availability (up 26 percent). Despite these gains, ending stocks rose sharply to be the second highest in the past 10 years. As the industry expects a smaller crop this season, these large ending stocks should provide some supply cushion in the market, likely keeping a lid on 2017/18 U.S. hazelnut prices.

Pistachio Crop Rebounded To A Record for the 2016/17 Season

After poor yields cut production by nearly 50 percent during the 2015/16 season (September-August), the California pistachio crop bounced back to 896.5 million pounds, in-shell equivalent, in 2016/17—the largest crop harvested on record (fig. 11). Production was more than three times the size of the 2015/16 crop and 79 percent larger than the 2010/11-2014/15 average output. In addition to continued increases in bearing acreage, yields were also up in the on-year cycle of the pistachio crop's alternate-bearing nature. The crop also benefitted from adequate chill hours and rains during the winter of 2016. Bearing acreage was reported at a record 239,000 acres in 2016/17, while yields rose to a near record 3,750 tons per acre, up from only 1,160 pounds in 2015/16.

While the 2016/17 season started out with significantly lower carryover stocks, the record-large crop, not to mention increased imports, significantly boosted overall supplies for the industry's marketing needs (table 12, reported on a shelled basis). California pistachios have generally seen positive demand in both the domestic and export markets over the last decade. U.S. pistachio exports, however, declined significantly in 2015/16 in part due to the small crop. During that period, export volumes were down to major international markets (which include Hong Kong, Belgium, the Netherlands, Federal Republic of Germany, and China) for combined shelled and in-shell pistachios, and Hong Kong, Mexico, Australia, and Turkey for prepared and preserved pistachios. In 2016/17, year-to-date exports through July have rebounded strongly in all the top markets, and domestic availability was also up sharply from the previous season.

Data from the Administrative Committee for Pistachios indicate domestic shipments in 2016/17 were up 49 percent from the same period in 2015/16 at the same time that export shipments were up very sharply. Bumper supplies have led to lower pistachio grower prices in 2016/17, averaging \$1.68 per pound and the lowest price over the last 7 years, based on NASS data.

The pistachio harvest for the 2017/18 season begun in early September. Yields are likely to be dampened by the cold, rainy spring and intense heat over the summer, especially as this year's production is following a very large crop last year. Any potential for reduced production in 2017/18 will be partly offset by likely record-high ending stocks in 2016/17.

Figure 11
Pistachio production and season-average grower price¹



¹ In-shell basis.
 Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruits and Nuts Summary*, various issues.

Table 12--Pistachios: Supply and utilization (shelled basis), 2000/01 to 2016/17¹

Season ²	Utilized production	Loss and exempt ³	Marketable production	Imports	Beginning stocks	Total supply	Ending stocks	Exports	Utilization	
									Domestic	Per capita
----- 1,000 pounds -----										
Pounds										
2000/01	114,164	0	114,164	920	10,462	125,547	33,329	32,641	59,577	0.21
2001/02	80,733	0	80,733	532	33,329	114,594	12,425	44,744	57,426	0.20
2002/03	149,513	0	149,513	764	12,425	162,702	56,180	44,449	62,073	0.21
2003/04	56,217	0	56,217	1,459	56,180	113,857	22,941	35,551	55,365	0.19
2004/05	170,515	0	170,515	798	22,941	194,254	42,317	74,550	77,387	0.26
2005/06	139,003	0	139,003	912	42,317	182,233	56,066	69,332	56,834	0.19
2006/07	119,000	0	119,000	1,388	56,066	176,454	56,629	80,061	39,764	0.13
2007/08	206,998	0	206,998	943	56,629	264,569	67,304	128,494	68,771	0.23
2008/09	135,392	0	135,392	941	67,304	203,637	32,922	139,797	30,918	0.10
2009/10	174,769	0	174,769	1,294	32,922	208,986	21,213	133,177	54,596	0.18
2010/11	250,125	0	250,125	550	21,213	271,887	72,296	145,884	53,707	0.17
2011/12	222,000	0	222,000	920	72,296	295,215	45,331	172,788	77,096	0.25
2012/13	278,255	0	278,255	1,198	45,331	324,784	55,102	185,858	83,824	0.27
2013/14	234,484	0	234,484	542	55,102	290,128	38,471	194,980	56,677	0.18
2014/15	246,332	0	246,332	910	38,471	285,714	79,032	146,124	60,558	0.19
2015/16	134,593	0	134,593	1,151	79,032	214,776	51,133	98,028	65,616	0.20
2016/17 P	446,299	0	446,299	1,321	51,133	498,753	126,769	290,000	81,984	0.25

P = Preliminary.

¹ Conversion factor from in-shell to shelled basis varies year to year for production, stocks, and exports. For imports, the conversion factor was a constant 0.40.

² Season begins in September.

³ Utilized production minus marketable production.

Source: USDA, Economic Research Service calculations.

U.S. Pecan Production Up in 2016/17

U.S. pecan production during the 2016/17 marketing season (October-September) was slightly up from the initial NASS forecast in October 2016, with the current estimate reported at 268.8 million pounds, utilized in-shell basis, up 8 percent from the previous year. Despite eliminating six States from the NASS annual production survey for pecans, the 2016/17 crop was larger than the previous year, reflecting bigger crops in most producing States, including Georgia and Texas. Together, these two producers supplied more than half of the U.S. crop. Georgia, New Mexico, and Texas remain the top three pecan-producing States in 2016/17. New Mexico's production is estimated down 1 percent from the previous year.

Higher domestic production, beginning stocks, and imports have boosted overall domestic supplies in 2016/17, but strong demand for U.S. pecans, especially in the international market, supported grower prices. NASS reported pecan prices averaged \$2.59 per pound in 2016/17, up from \$2.20 in 2015/16. When combined with the larger crop, the higher prices drove up the value of production in 2016/17 to \$696.8 million—an all-time high. Cumulative exports for the season through July show volume gains in in-shell (up 8 percent) and shelled (up 58 percent) pecan sales relative to the same time in 2015/16, with increased deliveries to many of the key markets in North America, Europe, the Middle East, and East and Southeast Asia.

Two recent hurricanes have raised uncertainty about potential crop size for the 2017/18 season. Hurricane Harvey made landfall in Texas on August 25, bringing powerful winds and heavy rainfall that caused flooding in parts of southeastern Texas. Hurricane Irma made landfall in Florida on September 10, affecting most of the State and then weakened into a tropical storm before hitting Georgia and South Carolina. While the full impact of damage to agriculture from these two weather events are still being assessed, the NASS Southern Plains Regional Field Office reported that as of mid-September, pecans were making favorable progress for the 2017/18 harvest. Reports from the NASS Southern Regional Office, on the other hand, indicated significant damage to pecan orchards in Georgia, citing downed trees, broken tree limbs, and a significant proportion of nut drop. NASS will release the initial U.S. pecan production forecast for the 2017/18 season in the October 2017 issue of the *Crop Production* report.

Contacts and Links

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Data

The *Fruit and Tree Nuts Situation and Outlook Yearbook* has over 130 tables of annual or monthly time-series data on specific fruit commodities. Data include bearing acreage, production, prices, trade, per capita use, and more. To order a copy, call 1-800-999-6779.

Related Websites

Fruit and Tree Nuts Outlook

<http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1378>

Fruit and Tree Nuts Topic Page

<http://www.ers.usda.gov/topics/crops/fruit-tree-nuts.aspx>

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Fruit and Tree Nuts Outlook: Economic Insight

U.S. Cherries

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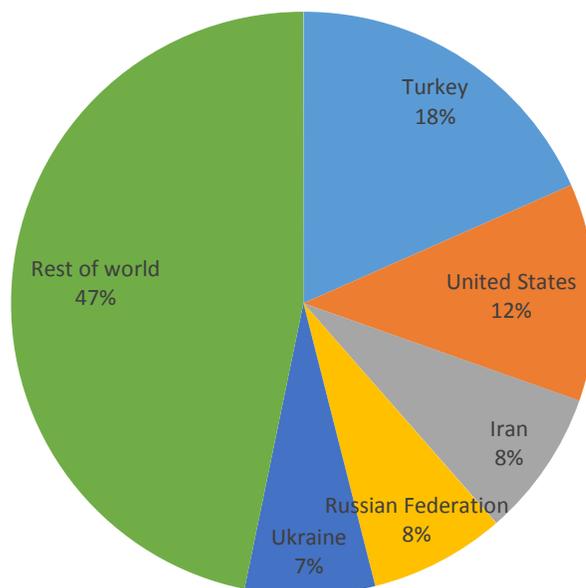
The United States is recognized as one of the leading global producers and suppliers of cherries. By growing both sweet and tart (or sour) varieties, U.S. cherry production caters to the fresh and processed markets. Fresh-market cherries, however, continue to dwarf production for processing, reflecting the influence of growing domestic and international demand and the grower-price advantage in the fresh market. With expanding bearing acreage, the sweet cherry crop—produced primarily for the fresh market—increasingly dominates domestic production. The proportion of sweet cherries produced to the overall U.S. crop has increased from slightly over 50 percent in the 1990s to around 75 percent in recent years. While the domestic market continues to be the main channel for U.S. fresh cherries, export volumes have generally risen. The United States is still competitive worldwide, but the U.S. role in the international cherry market has diminished slightly as other major exporters have gained ground over the past two decades. Meanwhile, U.S. imports, while significantly higher than in the 1990s, remain small and steady in recent years.

Approved by the
World Agricultural
Outlook Board.

United States Is World's Second-Largest Cherry Producer

World cherry production averaged 3.5 million metric tons during 2010-14, up 27 percent from the 1995-99 average output, according to data from the Food and Agriculture Organization of the United Nations. The United States produced 12 percent of this average volume. With average per-acre yields well above the world average and harvested acreage ranking sixth largest globally, the United States is the world's second largest producer of cherries, closely following Turkey (fig. 1). Together, these top two producers make up one-third of global cherry output. Iran, the Russian Federation, and Ukraine complete the top five producers, with each accounting for 7-8 percent of global output. Sweet varieties make up a majority of production in Turkey, the United States, and Iran, while the Russian Federation and Ukraine produce mostly sour varieties.

Figure 1
More than half of global cherry production comes from top five nations*



* Average share of 2010-14 world production.

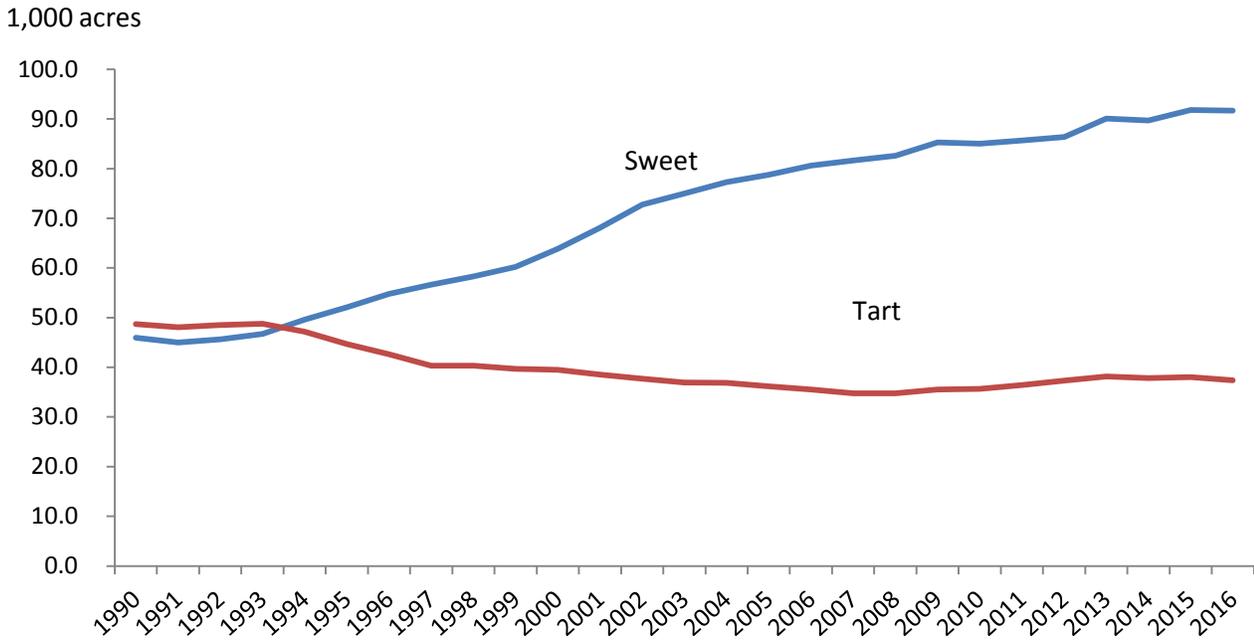
Source: Food and Agriculture Organization of the United Nations.

Sweet Cherries Dominate Production

U.S. cherry production can fluctuate substantially from year to year, due mostly to weather factors and, to some extent, the alternate-bearing tendency of the trees. Overall production, however, has generally trended upward, reaching an average 497,453 tons (994.9 million pounds) during 2014-16, nearly double the average volume produced during the 1990s and climbing from around 395,000 tons during 2000-09. Record production of 1.24 billion pounds was achieved in 2009, attributable to the largest sweet cherry harvest by far and a fairly large tart cherry crop produced that year. Since then, production at the 1.0 billion-pound mark was again achieved in 2014 and 2016 and is expected to have a repeat in 2017 as the sweet cherry crop is forecast to be the second largest on record at 865.5 million pounds. With bearing acreage mostly increasing year-after-year, production of sweet cherries has risen in the past 10 years, while tart cherry output has remained fairly erratic (fig. 2 and fig. 3). Unlike sweet cherries, tart cherry production in 2017 is forecast to decline by 28 percent from the previous year to 238.2 million pounds due to freeze-reduced crops in major producing States. In recent years, sweet cherries made up nearly 75 percent of the volume produced, while tart cherries, also known as sour cherries, make up the remainder.

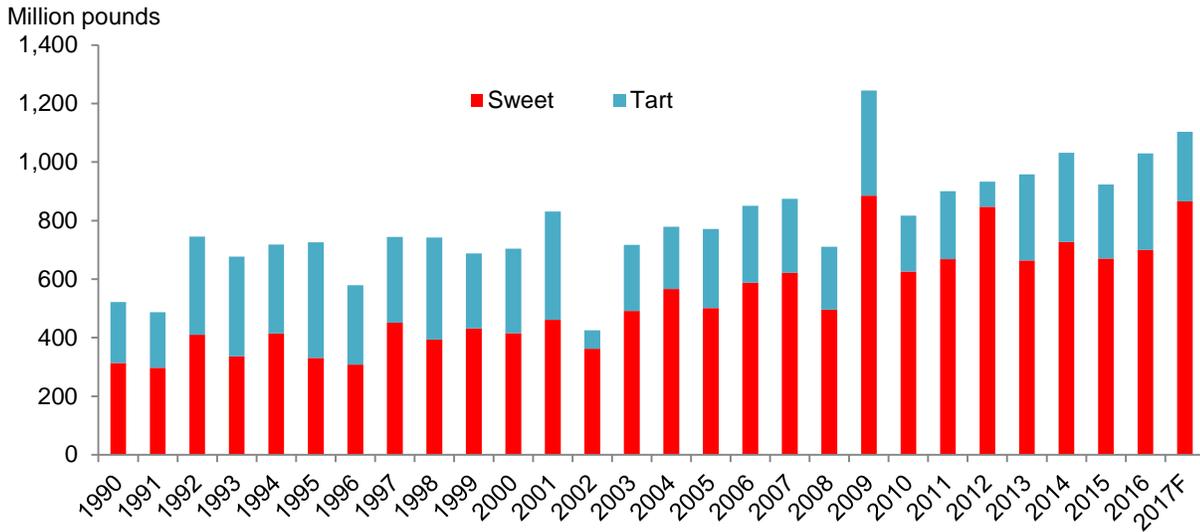
Cherries rank as the eighth most valuable crop in the U.S. fruit and tree nut industry, with production valued at \$862.4 million during crop year 2016, up sharply from \$327.5 million in 2000. Sweet cherries, which are marketed mostly for the fresh market, accounted for 90 percent of this value.

Figure 2
Sweet cherry bearing acres increased over the last two decades



Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruits and Nuts Summary*, various issues.

Figure 3
Total cherry production in the United States



F = forecast.

Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruits and Nuts Summary*, various issues and *Cherry Production*, June 2017 issue.

Mainland Pacific States and Michigan Are Leaders in U.S. Cherry Production

Requiring a winter dormant period for proper development and fruit production, cherries are not well adapted to most areas of the United States. Commercial production is concentrated in the northern portion of the country, where there is sufficient winter cold to get the cherry buds to open properly in the spring. Also, because summers in the southern and central United States are typically long and hot, cherry growers face more difficulties in controlling for pests and diseases.

Over 90 percent of commercial U.S. sweet cherry production is harvested from orchards in the Pacific States—Washington, California, and Oregon, according to data from USDA's National Agricultural Statistics Service (NASS). Much of the remaining volume of production comes from Michigan, which is better known for being the country's dominant producer of tart cherries, producing about two-thirds of the U.S. tart cherry crop in recent years.

The 2012 Census of Agriculture reports that 52 percent of the 7,663 U.S. farms growing sweet cherries and 87 percent of sweet cherry acreage were in the three leading Pacific States. Washington alone accounted for 26 percent of U.S. sweet cherry farms and 27 percent of sweet cherry acreage. NASS also reported annual sweet cherry production in Idaho, Montana, New York, Pennsylvania, and Utah, which together represented less than 1 percent of the U.S. sweet cherry crop. Annual reporting of production for these five States, however, has been discontinued (in 2005 for Pennsylvania; in 2016 for the rest). Meanwhile, census data showed that Michigan housed 22 percent of U.S. tart cherry farms and 74 percent of tart cherry acreage during 2012. In addition to Michigan, NASS also reported annual tart cherry production in six other States: Washington, Oregon, Utah, Colorado, Wisconsin, and New York. Annual reporting was discontinued for Colorado in 2005 and for Oregon and Pennsylvania in 2016.

Cherries Available in Many Product Forms

In the United States, cherries are consumed in many forms—fresh, frozen, canned, juice, wine, brined, and dried. About 76 percent of the U.S. sweet cherry crop is typically used fresh (table 1). Cherries that cannot be effectively marketed during the short harvest season, or those that do not meet fresh-grade standards (usually those that are undersized and/or blemished) are processed. Maraschino cherries—the kind most often used in drinks or ice cream sundaes—are made from sweet cherries. Unlike other processed cherries, maraschino cherries also require preservation of good fruit appearance and shape in their final form. Brining is the first step in the maraschino process. About 57 percent of the sweet cherries processed in 2014-16 were brined and used in candies, ice cream, and fruit cakes, as examples; about 4 percent were canned; and the remainder were likely destined for other processed utilization (frozen, dried, or used for juice).

A majority of sweet cherry production among major producing States is intended for the fresh market. Ninety-nine percent of U.S.-grown fresh-market sweet cherries were from Washington (nearly 70 percent), California (16 percent), and Oregon (14 percent) in 2014-16. Michigan, also an important producer of sweet cherries, produced mainly for the processing market. Very seasonal in nature, fresh-market sweet cherries are marketed from mid-April through August. California opens the market each year, with the bulk of its shipments running from May through June. Shipments from Washington, on the other hand, often begin in June.

The principal market for tart cherries is processing (table 2). Similar to sweet cherries, the harvesting of tart cherries is also highly seasonal and runs from June through mid-August. However, because most of these cherries are processed, supplies are available throughout the year. Only less than 1 percent of the U.S. tart cherry crop is for fresh use; processed products are primarily used in baking and cooking. The frozen product market continues to be the primary outlet for processed U.S. tart cherries. Over 70 percent of the processed tart cherries in 2014-16 were frozen, and more than one-tenth were canned; together they had a combined share of 83 percent. NASS did not report any other processed product category during the same period, so the remaining processed production is assumed to have been destined for other processed uses (e.g. juice, wine, brined, and dried).

Table 1--Cherries, sweet: Production, utilization, and season-average grower price, United States, 1980 to date

Year	Production		Utilization		Grower price		
	Total	Utilized	Fresh	Processed	Fresh	Processed	All
--Million pounds--				--Cents/pound--			
2000	415.8	410.8	241.5	169.3	95.0	26.8	67.0
2001	460.8	439.2	291.4	147.8	79.5	26.4	61.5
2002	362.7	354.6	253.2	101.4	97.0	28.1	77.5
2003	491.4	487.2	351.1	136.0	85.0	31.6	70.5
2004	566.1	558.3	370.1	188.2	103.0	29.9	78.5
2005	501.7	487.1	334.4	152.8	130.5	31.0	99.5
2006	588.3	575.0	381.5	193.5	106.5	30.8	81.0
2007	621.4	612.4	445.1	167.3	115.5	26.4	91.0
2008	496.1	481.4	350.6	130.8	154.0	25.9	119.5
2009	885.7	771.3	593.5	177.8	80.0	22.0	66.5
2010	626.4	615.3	488.7	126.6	140.0	24.3	116.5
2011	668.8	660.6	517.8	142.7	154.0	26.9	126.5
2012	848.0	836.8	665.1	171.7	117.0	38.1	101.0
2013	664.2	591.9	435.9	156.0	162.5	40.5	130.5
2014	727.3	717.8	536.0	181.8	131.5	33.8	107.0
2015	671.0	667.8	501.6	166.2	138.5	34.2	112.5
2016	700.5	686.2	515.7	170.5	140.5	28.5	112.5

Source: Data compiled from USDA, National Agricultural Statistics Service, *Noncitrus Fruits and Nuts Summary*, various issues.

Volume unit converted from tons to million pounds (1 ton = 2,000 lbs), and value unit converted from \$/ton to cents/pound.

Table 2--Cherries, tart: Production, utilization, and season-average grower price, United States, 1980 to date

Year	Production		Utilization		Grower price		
	Total	Utilized	Fresh	Processed	Fresh	Processed	All
--Million pounds--				--Cents/pound--			
2000	288.5	281.4	1.8	279.6	57.5	18.4	18.7
2001	370.1	307.9	1.9	306.0	53.8	18.3	18.6
2002	62.5	62.2	0.8	61.4	84.5	44.3	44.8
2003	226.3	226.3	1.0	225.3	74.4	35.3	35.4
2004	213.0	213.0	1.3	211.7	91.5	32.5	32.8
2005	269.9	267.9	1.2	266.7	89.3	23.5	23.8
2006	262.0	248.6	1.4	247.2	99.0	21.1	21.5
2007	253.2	248.7	1.6	247.1	105.0	26.8	27.3
2008	214.4	213.2	1.0	212.2	139.0	37.2	37.7
2009	359.2	320.8	1.3	319.5	104.0	18.9	19.2
2010	190.4	183.2	0.8	182.4	131.0	21.8	22.2
2011	231.8	230.3	0.5	229.8	118.0	29.8	30.0
2012	85.2	85.0	0.4	84.6	190.0	58.8	59.4
2013	294.2	291.1	1.2	289.9	163.0	35.3	35.9
2014	304.2	300.6	1.9	298.7	125.0	35.0	35.5
2015	252.5	251.1	1.2	249.9	123.0	34.2	34.7
2016	329.3	323.7	0.6	323.1	196.0	27.3	27.6

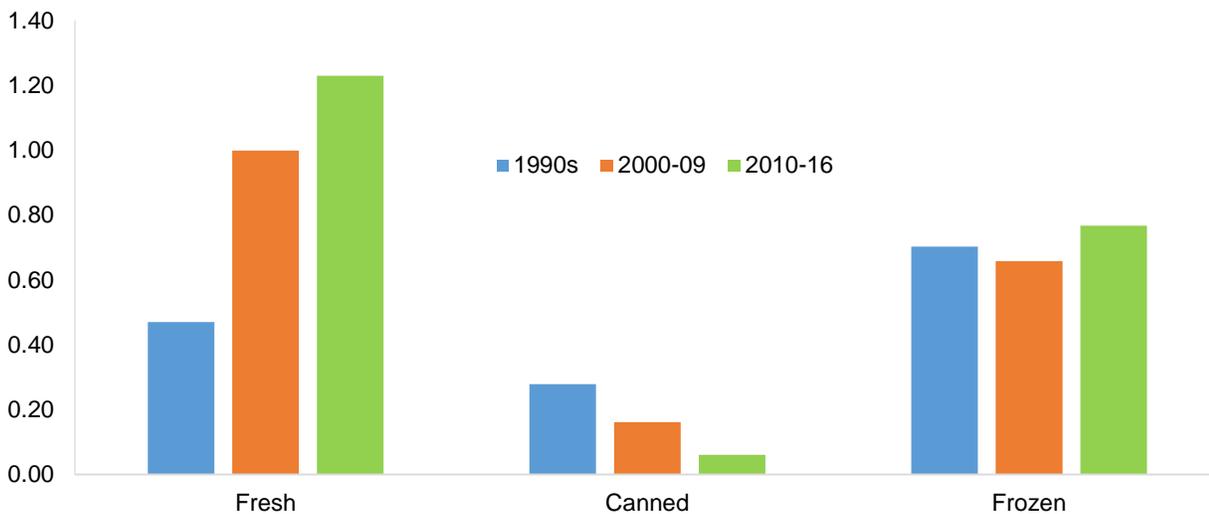
Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruits and Nuts Summary*, various issues.

Fresh Use Accounts for Most of the Growth in U.S. Cherry Demand

Cherries have traditionally been grown and consumed in the United States. Their popularity grew even more throughout the 1990s as more emphasis was given to research findings reporting on the health benefits of consuming specific fruit and vegetables—which has proved helpful in boosting overall fruit and vegetable consumption in the United States.

Sweet cherries represent nearly all fresh cherries consumed in the United States, while tart cherries dominate frozen and canned cherry per capita use. In recent years, combined fresh, canned, and frozen cherry per capita use in the United States averaged 2.1 pounds (fresh-weight equivalent), up from 1.5 pounds in the 1990s and 1.8 pounds during 2000-09. Imports, in general, do little to help stabilize supplies as their volumes continue to be dwarfed by domestic production. In the fresh cherry market, however, a majority of the imports come from the Southern

Figure 4
U.S. average fresh cherry per capita use surpasses frozen per capita use
 Pounds per person*



* = fresh weight equivalent.

Source: USDA, Economic Research Service calculations.

Hemisphere (primarily Chile). Hence, except for the imports from Canada, most fresh imported cherries are available to U.S. consumers from November through February, an off-season for domestic production. Meanwhile, in the canned cherry market, imports are playing a greater role in domestic availability due to declines in domestic production as a result of reduced demand.

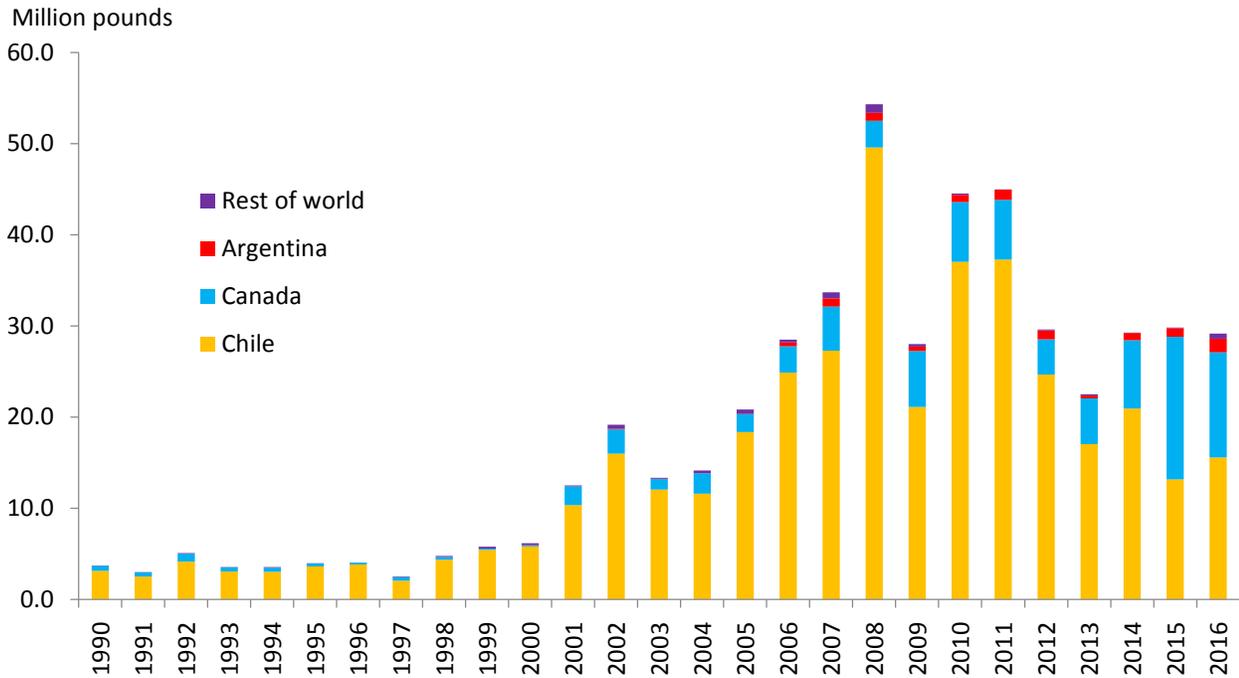
Much of the growth in domestic cherry demand is in fresh use (fig. 4). Average per capita use of fresh cherries rose 23 percent during 2010-16 relative to 2000-09. For the same period, average per capita use of frozen cherries increased at a slower pace (up 17 percent), while average canned cherry per capita use declined 63 percent. The upward trend in fresh cherry demand has been made possible by significant increases in domestic supplies, the result of expanding U.S. production and imports (particularly during the first decade of the new millennium). As average fresh-market sweet cherry production increased over the past two decades, about one-third of this volume has been channeled to growing export markets—a mitigating force in domestic fresh cherry per capita use. Unlike fresh-market cherries, frozen cherries are storable and, therefore, inventories help to smooth out wide swings in production. In addition, frozen cherry exports are small in volume relative to domestic supplies.

Fresh Cherry Imports Fairly Steady in Recent Years

While domestic production still constitutes the majority of supplies sold in the U.S. market, fresh-cherry import volume in this market averaged 32.7 million pounds from 2010-16, up from the average 23 million pounds during 2000-09 and more than an eightfold bump from the 1990s. However, after record-high imports in 2008 (at 54.3 million pounds), imports have remained mostly flat in recent years at around 29 million pounds, except for the relatively high volumes in 2010 and 2011 at 44-45 million pounds. Chile, Canada, and Argentina continue as the top three international suppliers of fresh cherries to the United States (fig.5). Though Chile remains the primary source, the country's share of U.S. import volume has diminished from over 80 percent during 2000-09 to an average 72 percent annually during the past 7 years, partly as China became the top destination for the country's cherry exports. Canada supplies about 25 percent total import volume and Argentina about 3 percent. During the 1990s, there were no imports from Argentina. Vastly increased import volume during this domestic off-season period relative to the 1990s has contributed to the growth in domestic fresh-cherry per capita use. The average import share of total domestic fresh-cherry utilization has risen from 3 percent in the 1990s to 8 percent throughout the 2000s.

Figure 5

U.S. fresh cherry imports flat in recent years



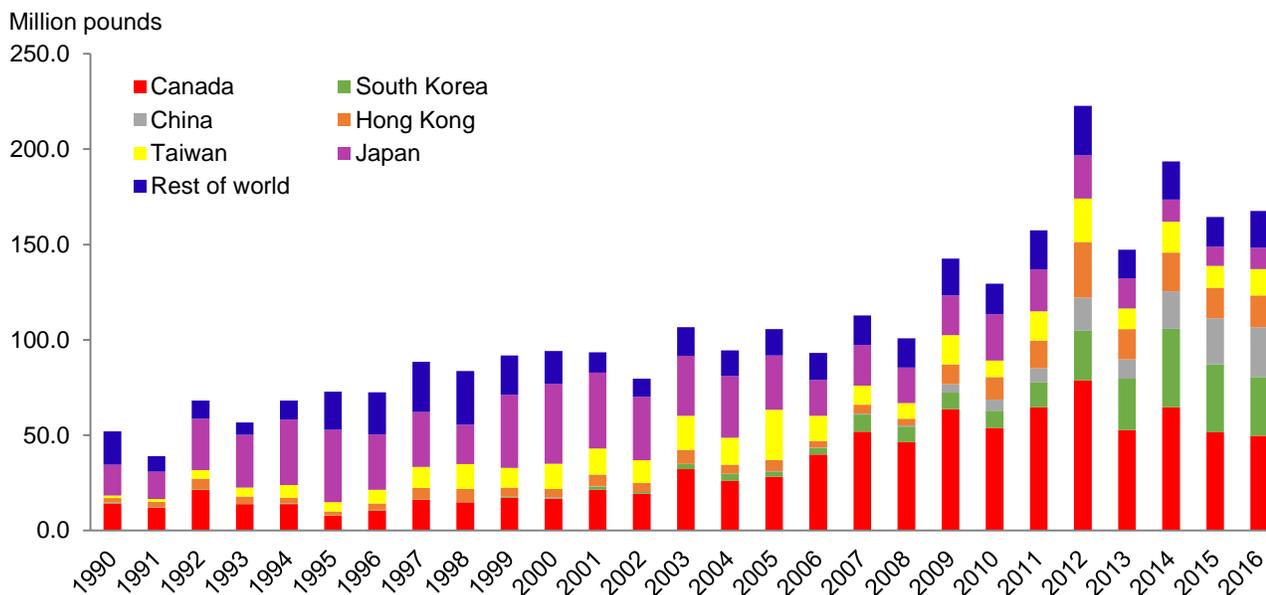
Source: Trade data generated from U.S. Department of Commerce, U.S. Census Bureau.

United States Continues To Be Among Leading Exporters of Fresh Cherries

U.S. sweet cherries continue to be competitive in the international market, although the U.S. role in the global cherry export market has diminished slightly during the past two decades as other major exporters have gained ground. Once the world’s leading exporter of fresh cherries, the United States now ranks second, next to Chile, accounting for nearly 20 percent of the world’s average export volume during 2014-16 and around one-quarter of the average of world cherry export value, based on data from Global Trade Information Services, *Global Trade Atlas*. During this 3-year period, the United States exported an average 175.2 million pounds, valued at an average \$261.4 million. Chile, on the other hand, exported an average of 211.0 million pounds, valued at an average \$451.0 million, during the same period. However, while export ranking was based on the 3-year average period (2014-16), annual fresh-cherry export value in the United States ranked highest in the world in 2014 and 2015, surpassing that of Chile. Rounding out the top five global exporters of fresh cherries among producing nations in terms of average value are Turkey, Spain, and Austria. Together with the United States, these leading exporters supply almost 60 percent of the world’s cherry export volume, generating 70 percent of total export value, based on data from the *Global Trade Atlas*. Chile, partly with the aid of expanding production, has seen gains in world cherry export share at the expense of the United States during the past decade. Export shares have also risen for other exporting countries such as Hong Kong, Austria, and Canada, while those for Turkey and Spain were relatively steady to slightly lower.

Technological advances in U.S. production and marketing helped fulfill export demand over time. Due to strong demand overseas and higher export prices relative to domestic prices, U.S. cherry growers, mainly in Washington and California, have relied on foreign markets to absorb around 25 to 35 percent of domestic fresh-market cherry production over the last two decades. U.S. fresh cherry exports have continued to trend up from the 1990s, reaching a record 223.3 million pounds in 2012, the year when domestic fresh-market production was at the highest level by far (fig. 6). Succeeding-year exports remained at above-average levels. The average per-unit export value of U.S. sweet cherries during 2014-16 was consistently higher than the average for the rest of the world, including other

Figure 6
Canada is largest export market for U.S. fresh cherries



Source: Trade data generated from U.S. Department of Commerce, U.S. Census Bureau.

leading exporters Turkey and Austria, reflecting the premium prices U.S. growers received for the high-quality cherries they marketed internationally.

Canada is now the largest export destination for U.S. fresh cherries, outranking Japan, which dominated this market during the 1990s and most years from 2000-05. More than one-third of total annual U.S. cherry export volume went to Canada during the period 2010-16 and 10 percent to Japan, which received slightly over one-quarter of total export volume during 2000-09. South Korea, China, Hong Kong, and Taiwan are also key markets for U.S. fresh cherries and together receive over 40 percent of total export volume annually.

Summary

Despite mostly weather-induced fluctuations, U.S. cherry production has trended upward since the 1990s in response to growing demand for fresh cherries in the domestic and international markets. Sweet cherries continue to constitute a majority of domestic production as their primary use is in the fresh market. The United States continues to be among the leaders in the global fresh cherry market, although it lost its position as the number one exporter in the world to Chile. U.S. export volumes are up substantially from the 1990s and continue to account for about one-third of domestic fresh-market cherry production, a mitigating force in domestic fresh-cherry demand growth. And while domestic production still provides a majority of the supplies available for domestic consumption, imports continue to aid domestic fresh cherry demand. As they are sourced primarily from the Southern Hemisphere, the bulk of imports are available in the U.S. market counter seasonal to domestic production.

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