



Fruit and Tree Nuts Outlook: September 2021

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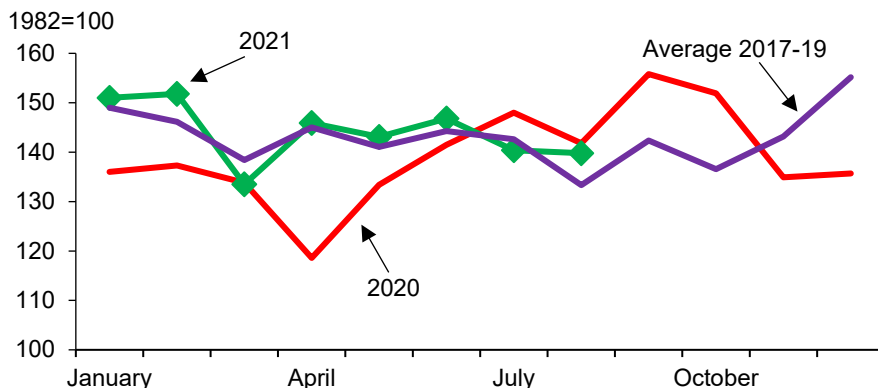
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U.S. Production of Major Noncitrus Fruit Forecast to Rise in 2021

The 2021/22 marketing year is underway for many noncitrus fruit crops. USDA’s National Agricultural Statistics Service (NASS) forecast 2021 apple, grape, peach, cranberry, and sweet and tart cherry production up but forecast pear production down. For many crops, the impact of record high heat in some areas and California’s on-going drought is uncertain. Producer prices fluctuated throughout 2021 but are generally slightly above 2017–19 levels. The 2020/21 U.S. citrus season finished with declines in all citrus commodities except California tangerines, likely contributing to higher citrus prices for the season. U.S. tree nut supplies in 2021/22 are forecast down from last year’s record. Smaller crops of almonds and walnuts due to severe weather and drought conditions are likely to increase grower prices for these crops.

Index for prices received by producers for fresh fruit



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

Price Outlook

Fruit and Tree Nut Grower Price Index Remains High

Fruit grower prices started high in the beginning of 2021 and despite a drop in March 2021, remained strong. The Bureau of Labor Statistics producer price index for fresh fruit was 139.8 (1982 = 100) for August 2021, down 1.4 percent from last year and down 0.43 percent from July 2021. The USDA, National Agricultural Statistics Service (NASS) grower price index for fruit and tree nuts was 131.5 (2011 = 100) for July 2021, up 1.8 percent from June 2021 but down 10 percent from July 2020. Higher lemon, grapefruit, apple, grape and pear prices more than offset lower peach, strawberry, and orange prices compared to a year ago (table 1).

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

Commodity	June		July		Year-to-year change	
	2020	2021	2020	2021	June	July
	-----Dollars per box-----				Percent	
Citrus fruit: ¹						
Grapefruit, all	13.80	23.72	16.13	22.98	71.9	42.5
Grapefruit, fresh	--	--	--	--	--	--
Lemons, all	19.50	28.94	21.01	31.78	48.4	51.3
Lemons, fresh	27.49	36.04	30.29	37.74	31.1	24.6
Oranges, all	16.15	11.09	15.53	13.79	-31.3	-11.2
Oranges, fresh	22.37	19.42	19.41	18.36	-13.2	-5.4
	-----Dollars per pound-----					
Noncitrus fruit:						
Apples, fresh ²	0.586	0.718	0.600	0.735	22.5	22.5
Grapes, fresh ²	1.315	1.505	1.140	1.205	14.4	5.7
Peaches, fresh ²	0.595	0.635	0.655	0.605	6.7	-7.6
Pears, fresh ²	0.525	0.665	0.670	0.715	26.7	6.7
Strawberries, fresh	1.080	1.310	1.990	1.300	21.3	-34.7

-- 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.

Note: Beginning with the February 2020 estimates, all monthly price estimates for the noncitrus fruits are derived exclusively from data provided by USDA's Agricultural Marketing Service (AMS) and reflect free on board shipping point basis.

Previously these estimates were based on a combination of survey data and information from AMS.

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

Some factors behind the grower price movements for selected fresh-market fruit are as follows:

- A reduction in grapefruit supply largely due to Winter Storm Uri in Texas (February 2021) likely put upward pressure on grower prices.
- All lemon prices increased as a result of record low supplies.
- The U.S. Apple Association (USApple) reports an 18.8-percent decrease in fresh-market apple holdings in June 2021 compared to June 2020 that may keep grower prices

strong. Prices could decrease, however, if the USDA, NASS forecast of a large 2021/22 Washington State crop is realized.

- July 2021 California strawberry shipments were 13 percent higher than a year ago and led to lower prices.
- Peach prices were up in June 2021 from 2020 but decreased in July 2021 as more supplies entered the market.

Consumer Price Index for Fresh Fruit Up

The Bureau of Labor Statistics Consumer Price Index (CPI) for fresh fruit was reported at 372.2 (1982-84 = 100) in August 2021, up from 358.8 in August 2020 (table 2). The CPI for fresh fruit increased in 2021 from January to August. Retail prices for strawberries and grapes were up relative to August 2020 prices. The same reasons for the increase in grower prices likely caused retail prices to go up. One reason for the rise in fresh fruit CPI may be the reopening of the foodservice industry and less fruit going to retail. High demand and low supply of citrus likely increased the citrus CPI.

Table 2--U.S. monthly Consumer Price Index for fresh fruit and retail prices for selected fruit, 2020-21

Commodity	Unit	2020		2021		2020-21 change	
		July	August	July	August	July	August
		----- 1982-84 = 100 -----				--- Percent ---	
Fresh fruit		353.7	358.8	372.0	372.2	5.2	3.7
Apples		330.3	333.7	350.0	352.3	6.0	5.6
Citrus fruit		264.3	267.0	272.5	277.5	3.1	3.9
		--- Dollars ---		--- Dollars ---		--- Percent ---	
Fresh:							
Navel oranges	Pound	--	--	--	--	--	--
Grapefruit	Pound	--	--	--	--	--	--
Lemons	Pound	--	--	--	--	--	--
Red Delicious apples	Pound	na	na	na	na	na	na
Bananas	Pound	0.580	0.576	0.594	0.589	2.4	2.3
Peaches	Pound	--	2.088	--	--	--	--
Anjou pears	Pound	--	--	--	--	--	--
Strawberries ¹	12-oz. pint	2.020	2.214	2.256	2.434	11.7	9.9
Thompson seedless grapes	Pound	2.121	2.183	2.177	2.326	2.6	6.6

na = not available.

-- Insufficient marketing to establish a price.

¹ Dry pint.

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

Noncitrus Fruit Outlook

The Northwest Heat Dome Introduces Production Uncertainty

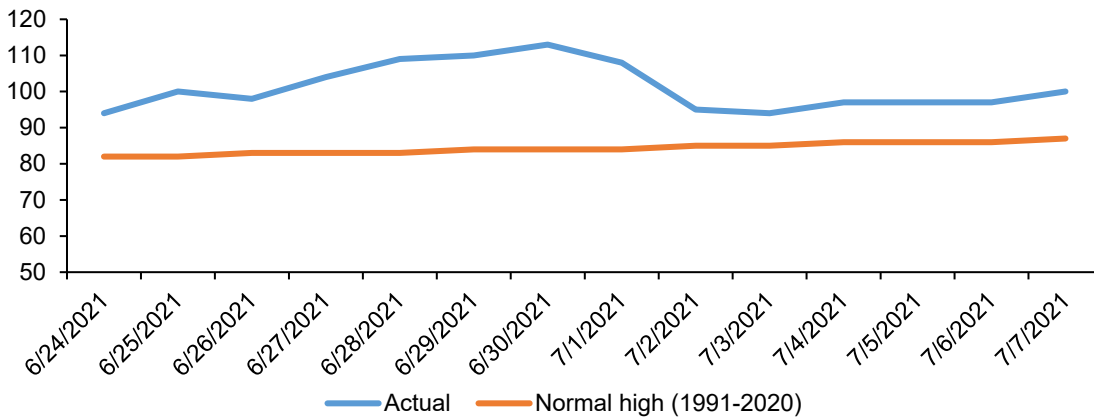
During the Northwest heat dome in late June and early July, growers experienced high temperatures in Washington, Oregon, Idaho, Nevada, Montana, California, and parts of Western Canada. In Wenatchee, Washington, one of the main tree fruit production areas, temperatures reached a record 113 degrees on June 30, 29 degrees above normal (figure 1). Between June 25 and July 1, 6 out of 7 days reached 100 degrees or more. Highs reached 100 again on July 7. The normal highs for these days, based on data from 1991 to 2020, ranged from 82 to 87 degrees. Portland International Airport reached 116 degrees on June 28th. Many growers think they could have lower production, smaller sizes, more sunburn damage, and/or internal fruit damage. Complete harvest totals are not available for most crops yet, and the full impact of the heat remains to be seen, although many factors affect production besides heat. Even after harvest, there will be some uncertainty about how stored fruit will hold up. Many factors affect how heat can affect tree fruit, including hours of direct sunlight, topography, tree architecture, availability of overhead cooling or shade cloth to mitigate heat damage, and type of fruit.

The heat was hard on workers in the orchards and fields. One nursery worker in Oregon died while moving irrigation pipes on June 26, a day when the temperature reached 104 degrees. Washington and California have workplace regulations regarding outdoor heat exposure for workers (Minnesota is the only other State with this kind of regulation). Washington modified its regulations by emergency rule in 2021 to add more requirements for training, breaks, and shade. Oregon, already in the process of developing regulations regarding heat, issued a temporary rule on July 8.

Figure 1

Wenatchee, Washington, 2021 daily temperatures and normal high temperatures,

Degrees Fahrenheit



Source: U.S. National Oceanic and Atmospheric Administration, National Weather Service.

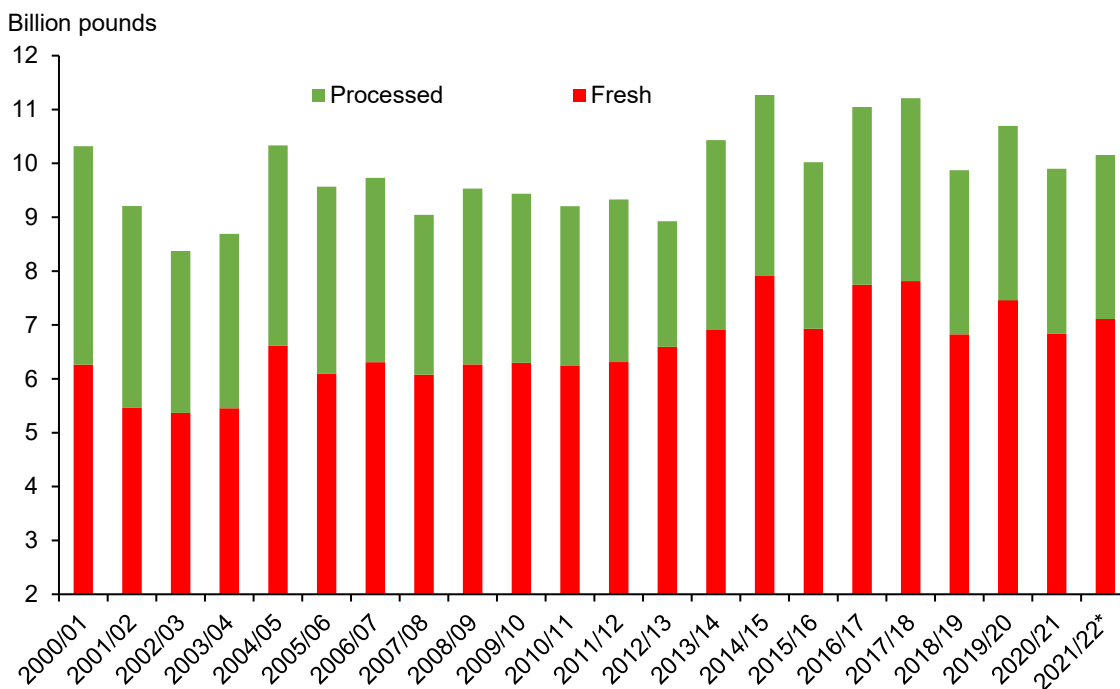
Apple crop forecast up, but Washington growers are watching the crop for signs of heat damage: USDA, NASS estimated the total 2021/22 season (August–July) apple harvest to be 10,525 million pounds, up 3 percent from 2020/21 but down 5 percent from 2019/20 (figure 2). The biggest apple producing States are Washington, New York, Michigan, and Pennsylvania. Increases in predicted production in Washington, Virginia, Pennsylvania, and Oregon outweigh predicted losses in California, Michigan, and New York. In contrast, the U.S. Apple Association forecast the 2021 apple harvest to be 8.2 percent lower than the USDA, NASS estimate.

Even with record high temperatures in Washington during the summer, the USDA, NASS August 1 production estimate for the 2021/22 Washington crop was up 7 percent from the previous year to 7,400 million pounds. The latest Washington State Tree Fruit Association’s fresh estimate was 124.8 million 40-pound boxes—an average crop—up 2.3 percent from last year. Washington growers are watching their crop for any evidence of heat damage which could reduce the yield below forecast levels. With high tariffs on apples in India and China as well as challenging overseas shipping conditions, the export market will probably remain sluggish, pushing more apples into the domestic market and exerting downward pressure on prices. These same conditions led to a 10 percent decrease in 2020/21 exports compared with 2019/20.

USDA, NASS estimated New York 2021/22 production to be 3 percent lower than last season and Michigan production to be down 18 percent because of frost damage and poor pollination due to cold weather. USDA, NASS estimated Pennsylvania 2021/22 production up 10 percent from the previous season, California was estimated down 32 percent, Oregon up 9 percent, and Virginia up 10 percent. Declines in New York and Michigan, which together accounted for 38

percent of all processed apples in 2021, could put upward pressure on processing prices. Last year, Washington accounted for 45 percent of processed apples. In Washington, processing is generally a residual market but with the potential damage due to heat, more fruit could go to processing, and put downward pressure on processing prices.

Figure 2
U.S. apple production forecast up in 2021/22

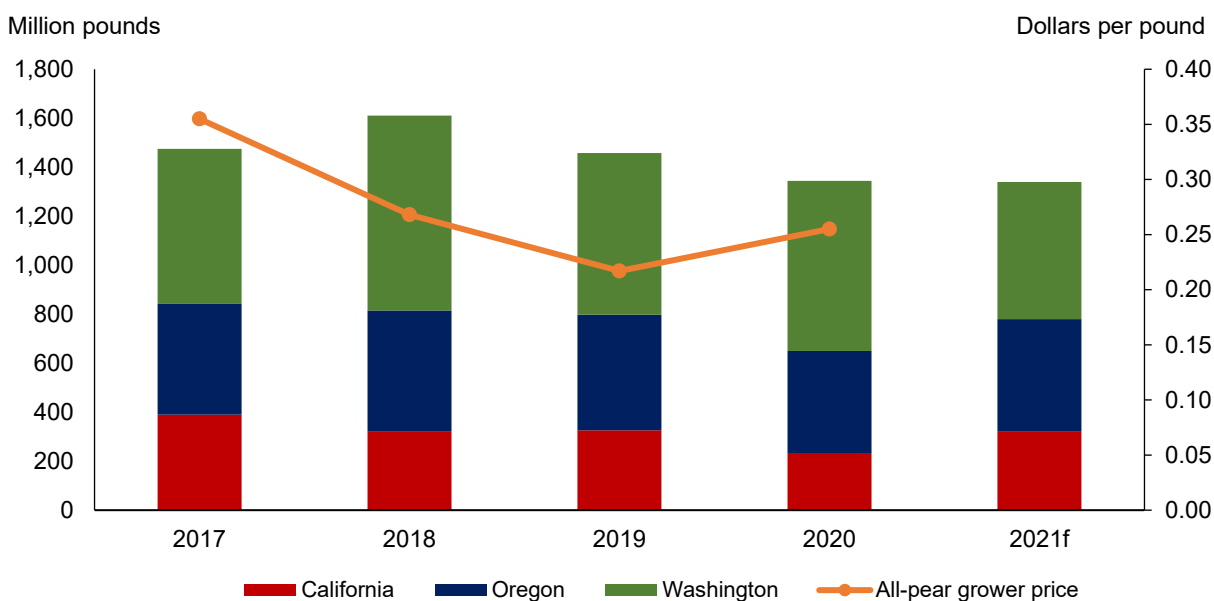


* USDA, Economic Research Service projection.
 Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts Summary*, various issues.

U.S. pear crop forecast similar to last year with losses in Washington and gains in Oregon and California: In early June, before the heat dome in the Pacific Northwest, USDA NASS predicted the 2021/22 (July–June) pear harvest to be 670,000 tons, down less than 1 percent from the previous season but lower than the 2017–19 crop (figure 3). Washington, the largest pear producer in 2020/21, is expected to have 19 percent less production than the previous year. Production in Oregon and California is expected to be up 10 percent and 39 percent, respectively, in spite of earlier production problems, which included drought in California and freezes and/or stinkbug damage in Oregon. In previous years, the combined volume of California and Oregon in both the fresh and processed markets was about equal to Washington’s fresh and processing production. The Northwest heat wave may have some negative impact on production levels, but growers are waiting to see the whole harvest before trying to assess any damage. Most pear trees are traditional trees—tall with large canopies

providing shade; this may protect pears to some degree compared with new apple orchards, which are trained into a fruiting wall with little shade and with leaves pruned to maximize sunlight to the fruit.

Figure 3
U.S. pear crop in 2021 forecast down slightly from a year ago



f = forecast

Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts 2020 Summary and Crop Production* (August 2021 issue).

Overall U.S. grape crop and California table-type grape production forecast up: The 2021 U.S. grape harvest in California and Washington—the only two States remaining in the USDA, NASS annual grape enumeration since 2018—is expected to be 6.47 million tons, up 9 percent from 2020, despite drought in California and high-heat conditions in both States. The harvest of California table-type grapes, which can be harvested for table grapes or juice, is expected to be 1.2 million tons, up 8 percent from last year. The California Table Grape Commission forecast the table grapes harvest to be 0.97 million tons (1,947.5 million pounds) in 2021, up 1.5 percent from the previous year.

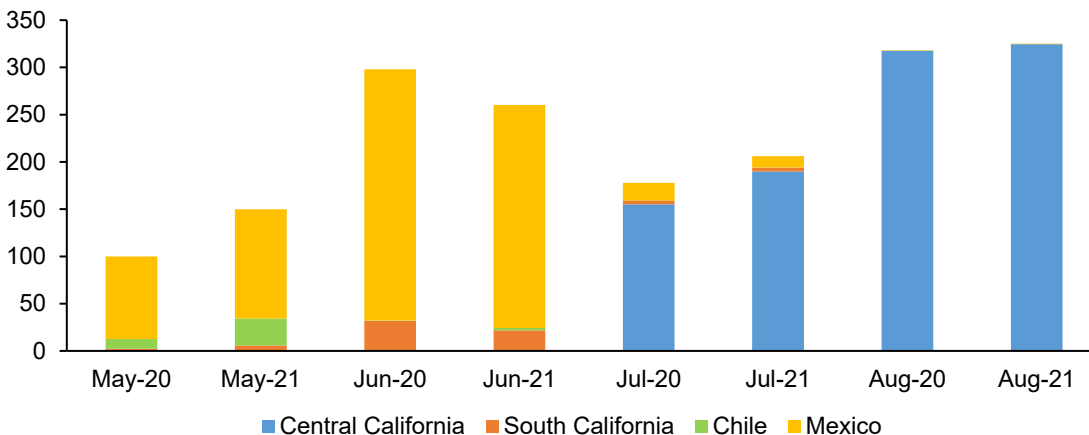
The California table grape industry also experienced high heat this year. The Coachella Valley, in Southern California along the border with Mexico, completed its early-season harvest. Shipments from Coachella were down 17 percent this year compared to last year, and some industry observers believe that was due to the heat (figure 4). Shipments from Central California from May through August were 9 percent higher than last year, but the harvest will continue into December. So, the overall impact of the heat and other factors that can affect yield are not yet known (USDA, Agricultural Marketing Service shipment data compiled September 14, 2021).

Imports from Mexico, the main competitor to California in the early part of the season, were down 2 percent from May through August but total shipments (domestic and imported) during the same period were about 6 percent higher in 2021 than last year. California table grape prices were up every month compared with last year.

Figure 4

Domestic and imported table grape shipments for the May through August period, 2020 and 2021

Million pounds

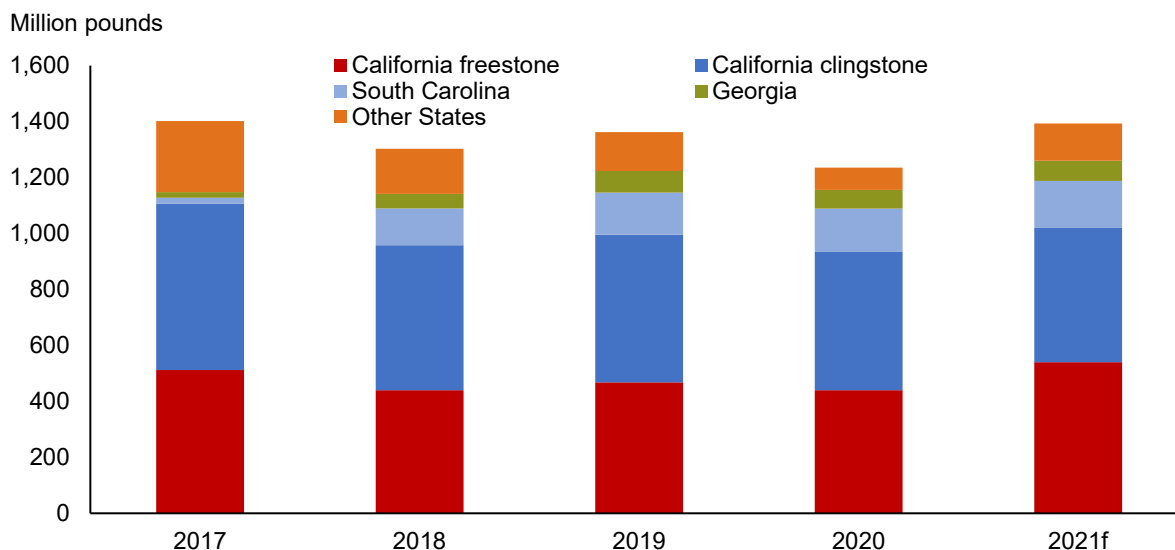


Source: USDA, Agricultural Marketing Service, *Market News*, Movement data.

Peach production forecast up in top three States: In 2021, the total peach crop is expected to be up 13 percent from the year before (including fresh-market freestone peaches and processing clingstone peaches). If realized, this will be the biggest peach crop since 2017 (figure 5). In 2020, the biggest fresh-market producers were, in declining order, California (59 percent), South Carolina (21 percent), and Georgia (9 percent). The 2021 California freestone production forecast is 270,000 tons, up 23 percent from the previous year despite drought and high temperatures. The California freestone peach industry is expecting a good crop this year with the harvest ending in mid-October. South Carolina is forecast up 10 percent and Georgia up 8 percent despite weather problems in both regions.

USDA, NASS only reports clingstone peach production for processing for California. The 2021 forecast is 240,000 tons, down 3 percent from the previous year. In contrast, the California Canning Peach Association reports their total 2021 crop was 225,476 tons, down 9 percent from last year's harvest. The Canning Cling Peach Association, the cooperative bargaining association in the cling peach industry, reported the 2021 base price agreement was ratified with processors at \$518 per ton, up 4 percent from last year.

Figure 5
U.S. peach production to increase in 2021



f = forecast

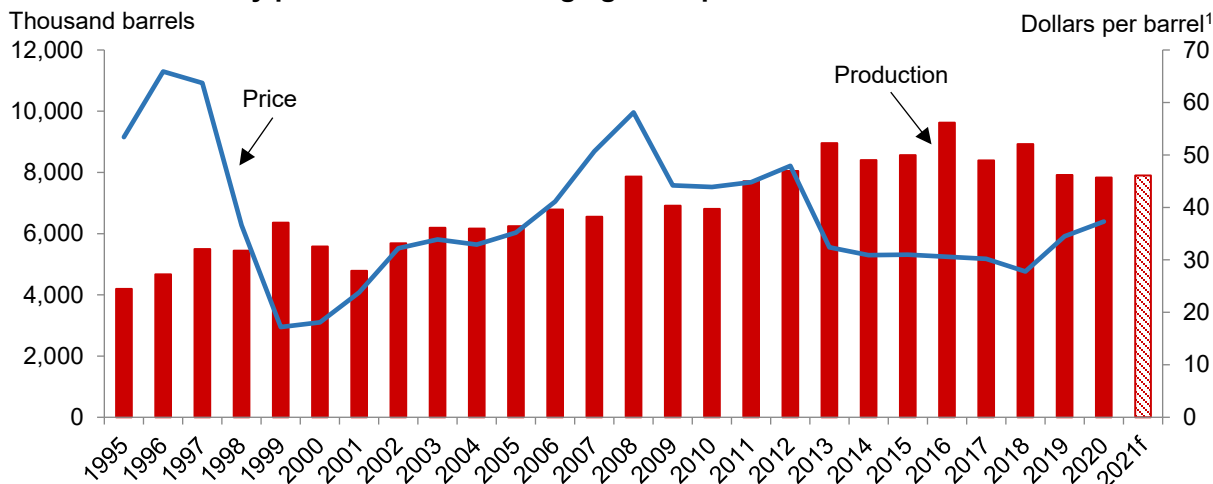
Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts 2020 Summary and Crop Production* (August 2021 issue).

NASS predicts cranberry production about the same as last year: The USDA, NASS August forecast for the 2021 U.S. cranberry production was up less than 1 percent from last year. NASS forecast that the two largest producers, Wisconsin and Massachusetts, will have production increases of 1 percent and 2 percent, respectively. The Cranberry Marketing Committee is expecting a lower level of production compared with last year.

Prices generally declined since 2008 as production expanded (figure 6). In 2017 and 2018, the Cranberry Marketing Committee used volume control regulations authorized in its Federal Marketing Order to try to reduce the volume of fruit on the market. Ending stocks declined 39 percent from 2016 to 2018 and the 2018 price edged higher. With lower production in 2019 and 2020 and lower stocks, prices increased. With the Cranberry Marketing Committee expecting another low production year and lower carry-in-stocks, prices may increase this year.

Figure 6

U.S. total cranberry production and average grower price



f = forecast

¹ 1 barrel = 100 pounds.

Source: USDA, National Agricultural Statistics Service, *Noncitrus Fruits and Nuts Summary*, various issues and *Crop Production* (August 2021 issue).

Sweet and tart cherry production forecast up: The 2021 NASS June forecast for sweet cherries was 369,000 tons, up 14 percent. Washington State accounted for 62 percent of production in 2020, with California at 21 percent, and Oregon at 17 percent.

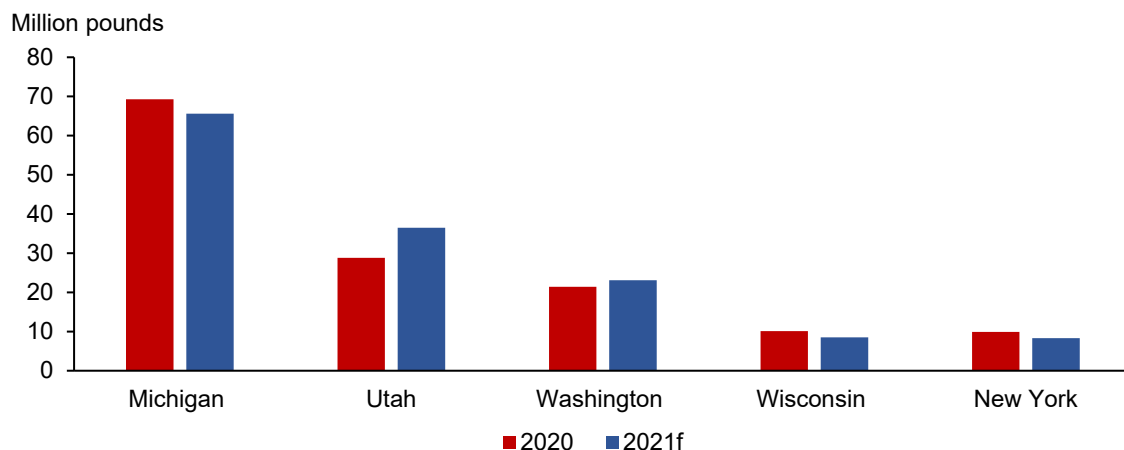
USDA, NASS forecast California sweet cherry production to be up 20 percent, despite warm winter weather. According to the California Cherry Board, fresh-market sweet cherry shipments were 91,827 tons, their highest level ever. Despite large volume, fruit sizes were very small because of the heat, and prices, therefore, were lower than expected. USDA, NASS forecast Washington sweet cherry production to be up 19 percent despite cold winter weather. Total Washington cherry harvest numbers are not yet available since the last fruit is harvested in August, but they could be lower than expected due to the high heat. Oregon had a warm spring with low precipitation, which reduced expected yield down 13 percent. Cherries were the only Washington and Oregon tree fruit harvested in late June and early July during the heat dome. Cherry growers tried various strategies to protect the harvesters and fruit from the heat, including shorter workdays or switching some workers to night harvest.

Cherry exports from May–July 2021 were up 14 percent from a year ago, the first pandemic year, but down 7 percent from 2019 and down 24 percent from the high in 2017. Exports to Canada, Korea, Japan, and Mexico were up, but down to China and Taiwan. High retaliatory tariffs continue to impede export shipments to China.

For tart cherries, almost exclusively used for processing, USDA, NASS forecast the 2021 harvest at 142 million pounds, up 2 percent from the previous year. The 2020 crop, however,

was small: down 47 percent from 2019 and the third-lowest production level since 2000. Michigan is the largest producer of tart cherries and in 2020 accounted for 50 percent of production, followed by Utah (21 percent), Washington (15 percent), Wisconsin (7 percent), and New York (7 percent). USDA, NASS predicted Michigan, New York, and Wisconsin to have lower production for 2021, with Utah and Washington predicted higher (figure 7). USDA, NASS forecast Michigan production to be down 5 percent due to frosts and freezing temperatures as well as drought. Timely rain increased Michigan production beyond expectations. The Cherry Industry Administration Board reported Michigan production up 40 percent from its initial estimate and national production up 24 percent. Higher domestic production will put downward pressure on prices. Frozen tart cherry stocks coming into January 2021 were down 35 percent from the previous year, which will reduce downward pressure on prices. Imports from January through July for 2021 were up 48 percent from the year before, but imports are generally a small share of domestic availability. Exports, which are also small, were up 21 percent from a year ago.

Figure 7
U.S. tart cherry forecast by State



Note: f = forecast.
 Source: USDA, National Agricultural Statistics Service, Crop Report (June 2021).

Citrus Fruit Outlook

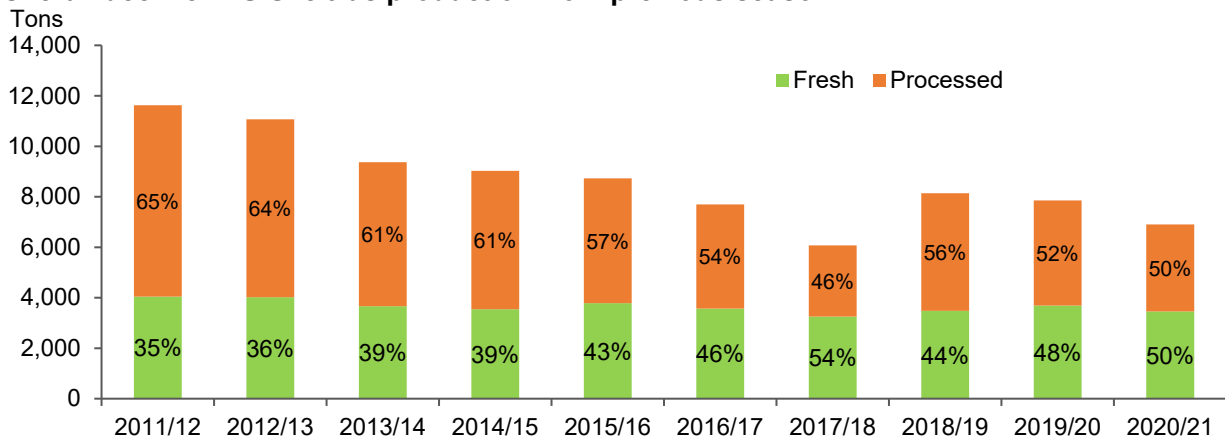
U.S. Citrus Production Hits Three-Year Low

USDA, NASS final estimates for the 2020/21 citrus season show U.S. citrus production reached 6.9 million tons, down 12 percent from 2019/20 (figure 8). Total production is below levels forecast at the outset of the season, mostly due to a lower than anticipated Valencia orange crop in Florida and navel orange crop in California (table 3). Additionally, grapefruit losses due to Winter Storm Uri in February 2021 reduced the Texas grapefruit crop to only half the volume predicted in the initial season forecast (October 2020). There were reductions in both the processing and fresh orange crops, with total orange production split evenly between these markets. Total citrus volume in 2020/21 is the lowest since Hurricane Irma's aftermath reduced Florida's citrus harvest in 2017/18 and the second-lowest in more than half a century.

Citrus production in Florida decreased to 2.6 million tons in 2020/21, down 21 percent from the previous season. Texas growers also experienced declines in production and reached a 28-year low of 141,000 tons—down 40 percent from last year. Despite a robust tangerine crop, California experienced declines in orange, grapefruit, and lemon production this season with an overall reduction of 3 percent (125,000 tons) from last season. Arizona experienced a major reduction in lemon production this year, decreasing more than 55 percent from 2019/20. Declines in citrus production this season can be attributed to multiple factors. These factors include the continued negative effects of citrus greening disease also known as Huanglongbing (HLB), on the Florida industry, extreme temperature damage to the crop in Texas, and Arizona, and attrition in bearing acreage in Florida, Texas, and California.

Figure 8

Overall decline in U.S. citrus production from previous season



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

Table 4--Citrus: Utilized production, 2018/19 to 2020/21¹

Crop and State	Utilized			Utilized		
	2018/19	2019/20	2020/21	2018/19	2019/20	2020/21
Oranges:	---- 1,000 boxes ² ----			----1,000 tons ----		
Early/midseason and navel:						
California	42,000	43,300	40,600	1,680	1,732	1,624
Florida ³	30,400	29,650	22,700	1,368	1,334	1,022
Texas	2,210	1,150	1,000	94	49	43
Total⁴	74,610	74,100	64,300	3,142	3,115	2,688
Valencia:						
California	10,200	10,800	9,500	408	432	380
Florida	41,450	37,750	30,100	1,865	1,699	1,355
Texas	290	190	50	12	8	2
Total	51,940	48,740	39,650	2,286	2,139	1,737
All oranges	126,550	122,840	103,950	5,428	5,254	4,425
Grapefruit:						
California	4,200	4,700	3,900	168	188	156
Florida	4,510	4,850	4,100	192	206	174
Texas	6,100	4,400	2,400	244	176	96
All grapefruit	14,810	13,950	10,400	604	570	426
Tangerines and mandarins:						
California	26,500	22,400	28,100	1,060	896	1,124
Florida ⁴	990	1,020	890	47	48	42
All tangerines and mandarins	27,490	23,420	28,990	1,107	944	1,166
Lemons:						
Arizona	1,350	1,800	800	54	72	32
California	23,700	25,300	21,300	948	1,012	852
All lemons	25,050	27,100	22,100	1,002	1,084	884
All citrus⁵	193,900	187,310	165,440	8,140	7,853	6,901

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

² Net 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); tangerines and mandarins in CA-80 (75 prior to the 2010-11 crop year), FL-95.

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

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

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

Source: USDA, National Agricultural Statistics Service, *Citrus Fruits 2021 Summary* (August 2021).

The U.S. citrus crop was valued at \$3.3 billion in 2020/21. This amounts to a 2-percent decrease in value of production from 2019/20. Despite lower production, the decrease in value was minimal due to higher average prices in 2020/21.

U.S. citrus fresh-market crop smaller in 2020/21: U.S. citrus production for the fresh market was estimated at 3.45 million tons in 2020/21, down 6 percent from the previous season, with

smaller fresh-market crops of oranges (down 11 percent), grapefruit (down 15 percent), and lemons (down 6 percent). Representing just under half of all U.S. citrus production for the fresh market, the fresh-market orange crop decreased from the previous season to 1.68 million tons due to smaller crops in California, Florida and Texas. With a supply contraction and robust demand, prices increased. Overall, the average equivalent-on-tree price for a box of fresh oranges increased from \$16.57 in 2019/20 to \$21.43 in 2020/21 due to higher prices in September through May. Furthermore, lower exports this season (a decrease of 8 percent) are indicative of higher domestic demand. Exports to South Korea, Canada, and Hong Kong (the top three export markets for U.S. oranges) were all down by 12, 15, and 20 percent, respectively.

U.S. imports of fresh oranges in 2020/21 (November through July) were down 6 percent, from the same period last year. Although fresh orange imports from Mexico were up 8 percent there were marked decreases in imports from Chile and South Africa, the second- and third-largest suppliers of fresh oranges to the United States.

Florida continues to lead in grapefruit production in 2020/21: Florida led other States in grapefruit production this season, with Florida growers producing a combined 174,000 tons for the fresh and processed markets. California came in second producing 156,000 tons, while Texas was third at 96,000 tons. This marks a 46-percent decrease in Texas grapefruit production from last season and is less than half (49 percent) of the volume forecast at the outset of the 2020/21 season. This reduction was largely due to Winter Storm Uri, which touched down in Texas in mid-February 2021; the storm occurred at a time when less than half of the Texas grapefruit crop had been harvested. Lower production quantities in Florida compared to last season can be attributed to the ongoing effects of citrus greening disease, with grapefruit-bearing acreage decreasing in Florida by 16 percent year over last. Lower production levels of grapefruit in California this season—a decrease of 17 percent (800,000 boxes)—can mostly be attributed to prolonged drought in the San Joaquin Valley.

As might be expected given historically low domestic production levels this season, imports of fresh grapefruit from September through July 2020/21 were up by 31 percent from the same period last year while exports were down by 17 percent. Despite these changes in trade from last season, total domestic availability is 17 percent below last season at only 1.41 pounds per capita. With the decrease in total supply this season, average prices rose with an on-tree equivalent price of \$25.19 per box in 2020/21 compared with \$17.96 in 2019/20.

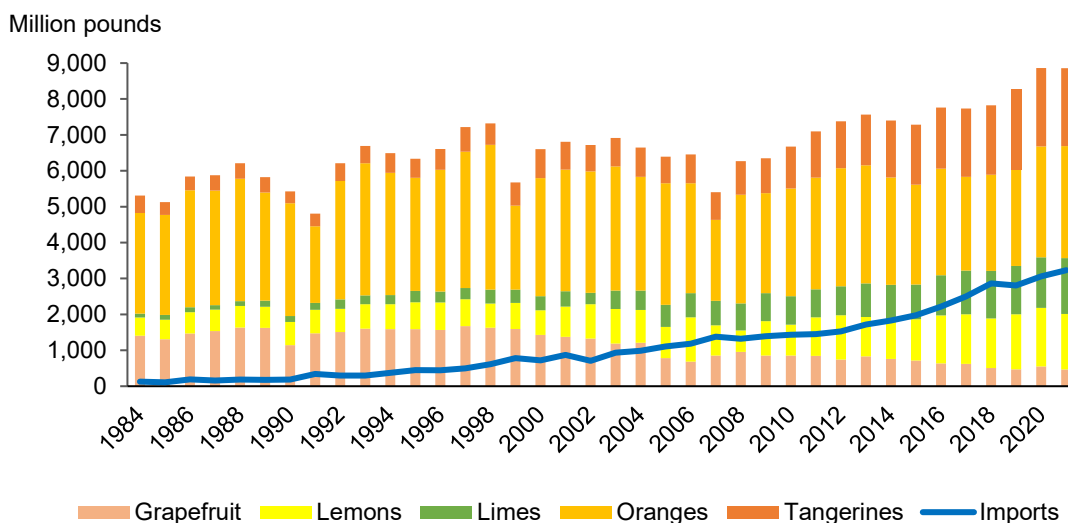
U.S. lemon crop in 2020/21 lowest in 5 years: U.S. growers produced 884,000 tons of lemons in 2020/21, the smallest lemon crop since 2016/17. Eighty percent of these lemons (710,000 tons) went to the fresh market, a 6 percent decrease in quantity from 2019/20. Although most U.S. lemons are grown in California, Arizona growers typically supply about 5 percent of the U.S. crop. Both California and Arizona had smaller crops this year, with a 2-percent volume decline in fresh market lemons in California and a 50-percent volume decline in the same category in Arizona. The large decrease in the Arizona crop can be attributed to higher fruit drop and lower sizing than expected, as well as the decreasing yields among aging lemon groves in the State. The sizing and drop issues in Arizona this season can be attributed to near-record high temperatures in the Yuma valley during spring 2020, when the future 2020/21 lemon crop was at a nascent stage and highly susceptible to heat damage. Likely in response to the smaller crop, fresh lemon imports to the United States this season (August through July 2019/20) were up by 66 million pounds (22 percent) from last season. Argentina, Mexico and Chile remain the main suppliers of lemons to the U.S. market and together supply 97 percent of lemon imports. Correspondingly, U.S. fresh lemon exports this season lagged 16 percent behind 2019/20, reaching the lowest level in 30 years. Higher imports and reduced exports offset lower domestic production levels, resulting in a slight increase in per capita availability of fresh lemons in the United States over last year. This led to U.S. grower prices increasing from \$27.76 in 2019/20 to \$29.86 in 2020/21, a 7-percent increase.

Larger U.S. tangerine crop in 2020/21: Production of U.S. tangerines, mandarins, and tangelos (collectively referred to hereafter as tangerines) for the fresh market reached its second highest level in 50 years at 788,000 tons this season due to a larger crop in California. Imports of tangerines were down slightly in the 2020/21 season, 3 percent, from last season's record high, with 835 million pounds imported primarily from Chile, Peru, and Morocco. Exports of fresh tangerines were up this year, with a 9-percent (10 million pound) increase from 2019/20. Canada, Japan, and Mexico remained the three largest export markets for U.S.-grown tangerines. Near-record high domestic production this season led to the highest-per capita availability of tangerines on record of 6.95 pounds.

Greater per capita availability of fresh citrus may suggest increased purchases during the pandemic: Total availability of fresh citrus (oranges, lemons, limes, grapefruit, and tangerines), which is a proxy for consumption, peaked at a record 8,861 million pounds in the 2019–20 season, after which it only slightly decreased to 8,856 million pounds (still above pre-pandemic levels) (figure 9). Per capita availability of fresh citrus fruit increased by 7 percent

between 2018/19 and 2020/21 to 26.7 pounds in 2020/21, the second highest per capita availability in 37 years which may suggest increased purchases of these fruits during the pandemic. Imports accounted for a record 36 percent of availability during the 2020/21 season, with imports of limes alone accounting for nearly half (48 percent) of all fresh citrus imports, followed by tangerines (45 percent), and oranges (13 percent). On a related note, purchases of orange juice temporarily surged during the first few months of the coronavirus (COVID-19) pandemic in the United States during the 2019/20 marketing season, with some suggesting the pandemic reinvigorated consumer interest in orange juice for its perceived immunoenhancing properties. Similar concerns and perceptions may be motivating consumers' purchase decisions regarding fresh citrus.

Figure 9
Total availability of fresh citrus remains high in 2020/21



Source: USDA, Economic Research Service calculations.

The majority of U.S. citrus went to processing in 2020/21: In 2020/21, 57 percent of U.S. citrus went to the processing market, most of which was oranges. Florida produced 81 percent of all U.S oranges for processing, while California and Texas produced the remainder. Florida and Texas had smaller orange crops for the processing market in 2020/21 compared with 2019/20. Florida's production was 22 percent below last season, while Texas's production was down 26 percent. California orange production for the processing market was up 8 percent, with an increase over last season of 44,000 tons of navel and early mid-season oranges going to processing. A total of 329 million gallons of orange juice were produced domestically in the United States in 2020/21, 27 percent below production from last season. This marks the lowest

production volume of orange juice in over 50 years, excluding 2017/18 when Hurricane Irma reduced the Florida Valencia crop by up to 30 percent.

U.S. orange juice imports in 2020/21 (October through July) were up by 104 million gallons (30 percent) from the same period last season. This increase in orange juice imports from 2019/20 may be due to slightly lower-than-average beginning stocks (417 million gallons), but also due to larger crops in Brazil and Mexico compared with last year. Brazil and Mexico remain the primary suppliers of orange juice to the U.S. market accounting for 54 percent and 35 percent, respectively, of the orange juice imported. U.S. exports of orange juice for 2020/21 decreased over last season by 10 percent (4.3 million gallons). Canada remains the primary export market for U.S.-produced orange juice, accounting for 70 percent of exports. The Dominican Republic and South Korea were the second- and third-largest purchasers of U.S. orange juice accounting for 11 and 3 percent of U.S. exports, respectively.

U.S. grapefruit for processing is down in 2020/21: U.S. grapefruit production for the processing market reached the lowest levels in 50 years at 151,800 tons down 39 percent from the 2019/20 season (October through September). This decrease can be attributed to lower production levels in all major producing States, especially in Texas, which was hard hit by Winter Storm Uri.

U.S. import levels of grapefruit juice this season (2.07 million gallons) are down 58 percent from last year (2019/20) in the period from October to July. The primary suppliers of grapefruit juice to the United States were Mexico, South Africa, and Spain. Grapefruit juice exports are up slightly this season (3 percent) for the period from October to July 2020/21. The three top export markets for U.S. grapefruit juice from October to July 2019/20 were Canada, Japan, and the Netherlands. While grapefruit juice exports are up slightly from the 2019/20 at 5.2 million gallons, they remain below levels observed previously in the decade, which is consistent with declining U.S. production.

U.S. Citrus Production 2021/22 Likely Below 2020/21 Levels

USDA, NASS will release initial 2020/21 forecasts for all-citrus production in the United States in October 2021. The 2021–22 *California Navel Orange Objective Measurement Report* released September 10 by the USDA, NASS Pacific Regional Office predicted navel orange production in California at 70 million 40-pound cartons, down 14 percent from the previous year. This forecast decrease in production is most likely due to a reduction in fruit set and size, and, to a lesser extent, bearing acreage.

The results of the first orange and grapefruit maturity tests for Florida's 2021/22 season were published by USDA, NASS on September 10. Sampled fruit included early oranges (which include navels), mid-season oranges (mostly Valencias), and red and white seedless grapefruit. The survey showed that all oranges have lower unfinished juice per box for 2021/22 but slightly higher solids compared with the same time last season. Unfinished juice refers to preprocessed juice content before pulp and other solids are removed. Grapefruit (both red and white seedless) have unfinished juice and solids roughly equivalent to 2020/21.

Citrus greening disease remains a threat to citrus grove health and productivity across all producing States. In Florida, where greening is rampant, total bearing acreage decreased by another 3 percent this season to 369,300 acres. In the other citrus-producing States, greening is less prevalent yet can lead to higher production costs, especially as infected trees are removed and/or replaced. In 2020/21, there was also a decrease in total bearing acreage of California citrus of 2,000 acres, or less than 1 percent, over last season due to reduced navel and Valencia orange acreage. Bearing acreage in Arizona and Texas remained steady with 2019/20 levels at 7,300 and 23,800 acres, respectively. Assuming present trends continue, total production in 2021/22 can be expected to be below 2020/21 levels.

Tree Nuts Outlook

Almond and Walnut Forecast to Decline

The 2021/22 domestic season has begun for most tree nuts. Almond and walnut production is forecast to decline. In California, almond and walnut orchards faced harsh weather conditions and an on-going drought. In the previous season (2020/21), record production of most U.S. tree nuts, along with large beginning stocks, contributed to overall record supplies and generally lower grower prices (table 4). Overall, exports increased despite tariffs and port issues, including port congestion, shipping delays and container shortages in California. The marketable quantity of all U.S. tree nuts, led by almonds, walnuts, and pistachios, was estimated at 4.5 billion pounds (shelled basis) in 2020/21, up 24 percent from the previous season. The production may be reduced in the 2021/22 season as a result of the alternate bearing nature of tree nuts.

Almond crop expected to decline in 2021/22: The 2020/21 (August–July) almond production was the largest on record, over 3 billion pounds and valued at \$5.6 billion. California’s average yield was 2,490 pounds per acre, a 320-pound increase from the previous year. Strong international demand led to a 30-percent increase in U.S. exports in 2020/21 compared with 2019/20, including shipments to the top markets of India and China. The large supply and high ending stocks, likely lowered grower prices in 2020/21.

The 2021 *California Almond Objective Measurement Report*, released by USDA, NASS in July 2021, forecast a 2.80-billion-pound crop (shelled basis) for the 2021/22 season, a 10 percent decrease in production from the previous season. Bearing acreage increased in 2021 but due to low water allocation and record high temperatures in June the crop did not develop as well as expected, reducing nut set per tree. The forecast smaller crop and strong demand should put upward pressure on 2021/22 grower prices.

Walnut production forecast to decline in 2021/22: 2020/21 (September–August) was a record year for walnut production, at 785,000 tons, with bearing acres of 380,000, up 4 percent from last season. This volume drove U.S. walnut grower prices to their lowest level since 2008 (table 5, reported on shelled basis). Combined with abundant supplies and international demand, exports grew 25 percent from last season. The 2021 *California Walnut Objective Measurement Report*, released by USDA, NASS on September 1, forecast walnut production to decline to 1.34 billion pounds (or 670,000 tons) on an in-shell basis, down 15 percent from last

year. A high degree of frost damage and the on-going drought decreased nut sets per tree, likely supporting 2021/22 walnut grower prices.

Hazelnut production forecast on par with 2020/21: As of September 2021, the Hazelnut Marketing Board projected Oregon’s production to be 62,600 tons for 2021/22 (July–June). The Hazelnut Marketing Board released its annual *Subjective Yield Survey*, conducted in mid-July. Some growers project growth, while others expect a decrease due to an ice storm in February, and heat and drought in the summer months. In May 2021, the USDA, NASS *Noncitrus Fruit and Nuts 2020 Summary* estimated 2020 hazelnut production at 63,000 tons, on high-bearing acres and average yield. Oregon’s hazelnut 2021/22 production is estimated to be less than one percent lower than the 2020/21 harvest. High carryover stocks in 2020/21 will likely put downward pressure on hazelnut grower prices this season.

Record high U.S. pistachios in 2020/21: U.S. production rose 41 percent from the previous season (September–August) to over 1 billion pounds (in-shell basis), or 525 million pounds (shelled basis) in 2020/21. Pistachios are an alternate-bearing crop, and the 2020/21 season was an “on” year for California. In addition, favorable weather, increases in bearing acres, and new plantings led to a record for pistachio production, valued at \$2.87 billion.

U.S. exports (September through July) were up 21 percent from the same period last season, with higher volumes to China and Germany, top foreign markets for U.S. pistachios. Imports although very small —roughly 1 percent of the U.S. pistachio market in 2020/21— are up this season. U.S. imports are expected to increase roughly 100 percent compared with the previous season due to higher shipments from Turkey. A record-setting domestic crop will leave 2020/21 ending stocks at above-average levels, putting downward pressure on grower prices.

Lower pecan prices in 2020/21: Domestic pecan production in 2020/21 (October–September) is expected to be 13 percent higher than last season to 153 million pounds (shelled basis). Georgia’s production increased, making it the top supplier again. Freezing temperatures earlier in the season lowered yields in other top-producing States, including Arizona, New Mexico, and Oklahoma. Increasing domestic supply and above-average beginning stocks, drove down 2020/21 grower prices from the previous season. U.S. exports to China were up this season through July, likely a result of high Chinese demand, and low pecan prices. USDA, NASS will release the initial U.S. pecan production forecast for the 2021/22 season in its October 2021 *Crop Production* report.

Smaller macadamia nut crop for 2020/21: Hawaii’s macadamia production in declined 2020/21, as growers reported disease and labor shortages, putting upward pressure on 2020/21

grower prices. The smaller crop and higher prices slowed export volumes to several markets, including Hawaii's top export markets—China, Japan, and Canada. Shelled Imports, largely from South Africa, Kenya, and Australia, declined in 2020/21.

Table 4--Tree nuts: Supply, utilization, and grower price in the United States, by commodity and marketing year, 2016/17-2020/21

Season ¹	Utilized production	Loss and exempt ²	Marketable production ³	Imports	Beginning stocks	Total supply	Ending stocks	Exports	Utilization		Season-average grower price
									Domestic	Per capita	
-----1,000 pounds (shelled basis)-----											
									Pounds	\$/lb	
Almonds											
2016/17	2,140,000	46,984	2,093,016	26,585	412,001	2,505,017	398,677	1,436,349	669,991	2.07	2.39
2017/18	2,270,000	54,734	2,215,266	32,523	398,677	2,646,466	359,013	1,534,858	752,596	2.31	2.53
2018/19	2,280,000	55,821	2,224,179	32,282	359,013	2,615,476	318,319	1,524,772	772,383	2.36	2.50
2019/20	2,560,000	59,809	2,500,191	26,318	318,319	2,844,828	450,122	1,611,200	783,506	2.38	2.45
2020/21 P	3,115,000	70,187	3,044,813	21,625	450,122	3,516,560	608,137	2,092,588	815,834	2.46	1.83
Hazelnuts											
2016/17	35,106	741	34,365	11,508	211	46,084	3,106	25,372	17,605	0.05	1.35
2017/18	25,600	85	25,515	13,775	3,106	42,396	1,401	20,039	20,956	0.06	1.15
2018/19	40,800	261	40,539	16,764	1,401	58,704	6,524	20,622	31,557	0.10	0.90
2019/20	35,200	278	34,922	13,522	6,524	54,968	3,724	21,786	29,458	0.09	0.96
2020/21 P	48,854	1,182	47,672	10,539	3,724	61,936	7,166	27,032	27,738	0.08	1.05
Pecans											
2016/17	127,935	-	127,935	132,637	55,633	316,205	69,489	103,655	143,062	0.44	2.59
2017/18	141,146	-	141,146	137,100	69,489	347,734	80,081	113,472	154,182	0.47	2.33
2018/19	103,600	-	103,600	166,009	80,081	349,690	87,953	93,892	167,844	0.51	1.75
2019/20	134,701	-	134,701	153,759	87,953	376,413	103,045	96,667	176,701	0.54	1.84
2020/21 P	152,679	-	152,679	137,967	103,045	393,692	84,192	115,056	194,443	0.60	1.43
Walnuts											
2016/17	608,431	883	607,548	15,731	56,571	679,850	49,372	446,957	183,521	0.57	0.93
2017/18	557,143	884	556,259	12,740	49,372	618,370	56,046	399,256	163,068	0.50	1.25
2018/19	601,476	886	600,591	2,556	56,046	659,192	58,504	419,333	181,355	0.55	0.68
2019/20	559,240	854	558,386	2,680	58,504	619,570	54,521	387,819	177,231	0.54	0.95
2020/21 P	685,381	873	684,508	1,933	54,521	740,961	62,000	483,564	195,397	0.59	0.61
Macadamias											
2016/17	-	-	19,081	17,478	na	36,558	na	13,327	23,231	0.07	1.00
2017/18	-	-	22,261	21,107	na	43,367	na	9,978	33,389	0.10	1.10
2018/19	-	-	16,037	28,114	na	44,150	na	7,325	36,825	0.11	1.19
2019/20	-	-	18,490	25,483	na	43,973	na	8,844	35,129	0.11	1.20
2020/21 P	-	-	17,945	18,517	na	36,461	na	5,578	30,884	0.09	1.24
Pistachios											
2016/17	446,299	-	446,299	1,363	51,133	498,795	126,769	231,847	140,179	0.43	1.68
2017/18	226,915	-	226,915	1,585	126,769	355,269	39,548	179,090	136,631	0.42	1.69
2018/19	487,457	-	487,457	1,284	39,548	528,289	65,247	303,577	159,465	0.49	2.65
2019/20	370,725	-	370,725	1,628	65,247	437,600	72,078	207,612	157,910	0.48	2.81
2020/21 P	524,822	-	524,822	3,317	72,078	600,217	142,637	251,764	205,816	0.62	2.75
Other nuts											
2016/17	-	-	-	491,927	-	491,927	-	124,291	367,637	1.13	-
2017/18	-	-	-	519,958	-	519,958	-	138,514	381,444	1.17	-
2018/19	-	-	-	473,195	-	473,195	-	117,694	355,501	1.08	-
2019/20	-	-	-	532,551	-	532,551	-	106,343	426,208	1.29	-
2020/21 P	-	-	-	511,832	-	511,832	-	80,620	431,211	1.30	-
Total											
2016/17	3,376,852	48,609	3,328,244	697,229	575,549	4,601,024	647,413	2,381,797	1,571,811	4.85	-
2017/18	3,243,064	55,704	3,187,361	738,837	647,413	4,573,611	536,089	2,395,209	1,642,263	5.04	-
2018/19	3,529,370	56,967	3,472,403	720,219	536,089	4,728,711	536,547	2,487,232	1,704,931	5.20	-
2019/20	3,678,356	60,941	3,617,415	755,941	536,547	4,909,903	683,490	2,440,270	1,786,143	5.42	-
2020/21 P	4,544,681	72,242	4,472,439	705,729	683,490	5,861,659	904,132	3,056,202	1,901,325	5.74	-

P = Preliminary.

¹ Season begins in July for hazelnuts, macadamias, and other tree nuts (includes Brazil, pignolias, chestnuts, cashews, and mixed nuts); August for almonds; September for pistachios and walnuts; and October for pecans.

² Utilized production minus marketable production, which includes inedibles and noncommercial usage.

³ Marketable production is used to calculate consumption.

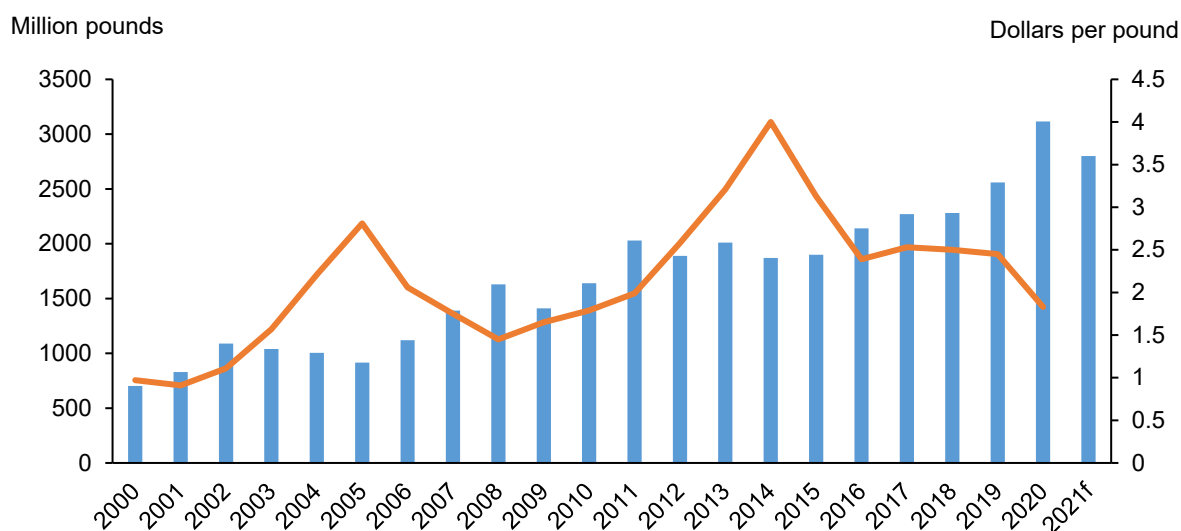
Source: USDA, Economic Research Service calculations.

Commodity Highlight: Almonds

Jaclyn Kramer

Americans consume more almonds than any other tree nut. U.S. per capita availability grew 200 percent from 0.8 pounds per person in the 2000/01 season (August–July) to a record high of 2.5 pounds per person in 2020/21. U.S almond production has steadily grown as demand, both domestic and foreign, soars. The United States is the world’s leading almond producer. In 2020, U.S. almond production reached a record high of over 3.1 billion pounds, valued at \$5.6 billion. On the production side, the expansion of U.S. almond production is likely due to a combination of an increase in acres, precision irrigation management systems, the use of mechanical harvesting, and new varieties. The record high production in the past three years coincided with lower prices (figure A1).

Figure A1
U.S. almond production and grower prices, 2000-2021



Note: f= forecast.

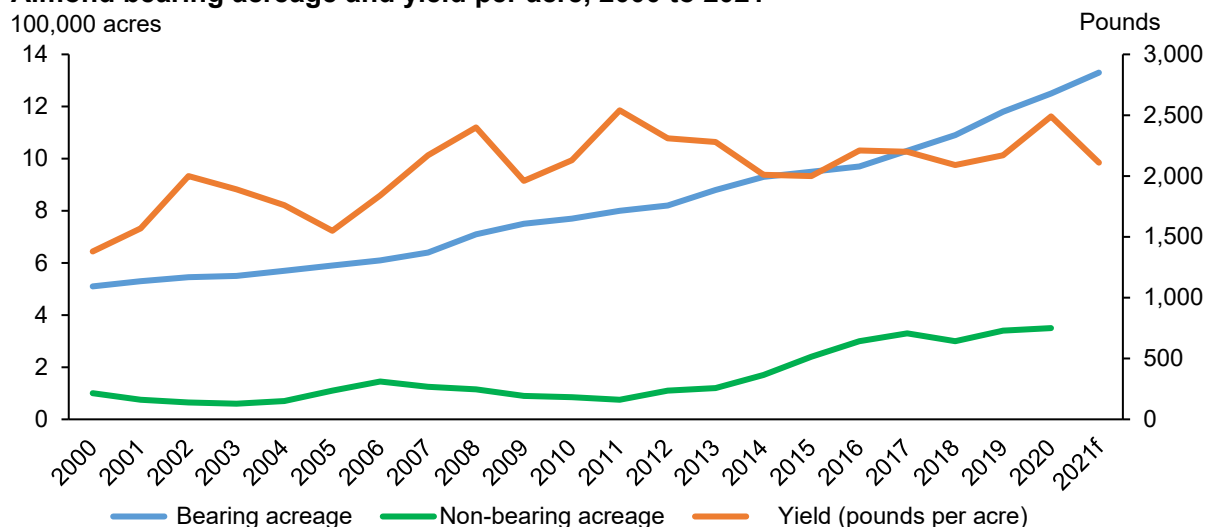
Source: USDA, Economic Research Service using USDA, National Agricultural Statistics Service data.

Overall yield is trending upward. The fluctuation in yield from year to year is due to the alternative-bearing cycle of almonds (figure A2). The 2021 forecast yield is 2,110 pounds per acre, a reduction from the 2020 yield of 2,490 pounds per acre. California’s bearing acreage for 2021 is an estimated 1.33 million acres, a slight increase from 1.25 million bearing acres in 2020.

Almonds are a high-value crop, attracting producers that switched to growing almonds from other commodities. With a tight labor market, another possible reason for a shift to almond production is the reduced demand for labor. Almonds are almost all harvested by mechanical trunk shakers and later picked up by mechanical carts, requiring less labor for harvesting than other crops.

Figure A2

Almond bearing acreage and yield per acre, 2000 to 2021



Note: f = forecast.

Source: USDA, Economic Research Service using USDA, National Agricultural Statistics Service and Almond Board of California Data.

Nearly all U.S. commercially produced almonds are from California. Fresno, Kern, Stanislaus, Merced, and Madera are the leading almond-producing counties. These five counties, located in the Central Valley, accounted for 73 percent of the total bearing acreage in 2020. Dry and warm weather and ideal soil conditions provide excellent bloom conditions for almond trees in Central California.

The almond harvest is typically August to October. USDA, NASS 2021 *California Objective Measurement Report*, released in July 2021, estimated that 2021/22 almond production will decline 10 percent to 2.8 billion pounds. Production was affected by low water levels due to below average rainfall and low snowpack levels, in addition to warm weather in June 2021.

The current drought in California emphasizes the resources necessary for almond production. Tree nuts require more water than all other California tree crops. The University of California, Davis (UC Davis) reported that roughly 40 inches of water per acre is needed annually to grow almonds. That is the third highest water use per acre in California for tree fruit, exceeded only by pistachios and walnuts. While the industry’s adoption of advanced precision irrigation

systems aids in improving yields and conserving water, the current drought in California presents a challenge for many almond growers. Water availability is causing some growers to make tough decisions, including removing almond trees.

Almond production also requires pollination. In the winter months, when almond flowers bloom, bees are brought to the orchards. UC Davis reported last year that over 80 percent of U.S. beehives were used to pollinate almond orchards. With colony collapse disorder, the future of bee health may pose a challenge to the growth of the almond industry.

Over the last two decades, the United States exported 60 percent of the almond crop. U.S. exports reached an all-time high of over 2 billion pounds in the 2020/21 season (table A1). Exports are up 6 percent this season from the prior season despite port and trade disruptions. The rise of exports is due to international demand from markets including, India, China, Spain, the Netherlands, Germany, Japan, and Hong Kong. Almond shipments to China are up 154 percent compared to last season after a reduction in shipments since 2018/19 as a result of retaliatory tariffs. Last year, the reduction in retaliatory tariffs, down from 55 percent to 25 percent, and lower almond prices, stimulated exports to China.

Imports are small, just 3 percent of domestic availability in 2020/21. Imports reached 22 million pounds in the 2020/21 season compared with less than 1 million in 2000/01. Australia and Spain supply about 70 percent of U.S. almond imports annually. Australia production has been increasing however future growth is constrained due to water scarcity. Production in Spain is also slowing. Imports from Spain are mostly organic almonds to help meet U.S. demand and specialty Marcona almonds. The United States both exports and imports almonds from Spain.

Slowed growth in foreign production and strong domestic and international consumption will continue to keep U.S. almonds in demand. California's bearing acres continue to rise, although growth in non-bearing acres has slowed. This growth in California's overall almond acres comes despite the challenges and rising costs growers face in a State known as the world's leading supplier of almonds.

Table A1 --Almonds: Supply and utilization (shelled basis), by marketing year, 2000/01-2020/21

Marketing year 1/	Beginning stocks	Marketable production 2/	Imports	Total supply	Exports	Ending stocks 3/	Domestic consumption	
							Total	Per capita
--Million pounds--								
								Pounds
2000/01	175.9	677	0.4	853	513	107.3	232.7	0.82
2001/02	107.3	801	0.8	909	586	80.9	242.1	0.84
2002/03	80.9	1,070	1.9	1,153	674	162.0	316.9	1.09
2003/04	162.0	1,018	2.8	1,183	699	148.9	335.2	1.15
2004/05	148.9	965	5.7	1,120	713	137.7	269.3	0.91
2005/06	137.7	879	9.2	1,025	728	112.2	184.7	0.62
2006/07	112.2	1,086	8.1	1,207	768	133.9	304.9	1.01
2007/08	133.9	1,349	7.1	1,490	891	231.2	367.0	1.21
2008/09	231.2	1,582	4.2	1,817	980	413.7	423.6	1.38
2009/10	413.7	1,364	5.6	1,783	1,031	321.3	431.0	1.40
2010/11	321.3	1,612	8.1	1,941	1,188	254.0	499.3	1.61
2011/12	254.0	1,990	15.9	2,259	1,358	335.2	566.2	1.81
2012/13	335.2	1,854	39.4	2,229	1,281	317.2	630.8	2.00
2013/14	317.2	1,949	33.9	2,301	1,337	350.6	613.1	1.93
2014/15	350.6	1,812	31.2	2,194	1,269	376.6	547.8	1.71
2015/16	376.6	1,857	31.8	2,265	1,272	412.0	580.5	1.80
2016/17	412.0	2,093	26.6	2,532	1,436	398.7	696.6	2.07
2017/18	398.7	2,215	32.5	2,646	1,535	359.0	752.6	2.31
2018/19	359.0	2,224	32.3	2,615	1,525	318.3	772.4	2.36
2019/20	318.3	2,500	26.3	2,845	1,611	450.1	783.5	2.38
2020/21	450.1	3,045	21.6	3,517	2,093	608.1	815.8	2.46

1/ Marketing season begins August 1 for almonds. 2/ Utilized production minus inedibles and noncommercial useage.

3/ Stock figures from the Almond Board of California.

Source: USDA, Economic Research Service using National Agricultural Statistical Service and U.S. Department of Commerce, Bureau of the Census data.

Special Article

Fresh Fruit Availability Expands in the United States

Jaclyn Kramer

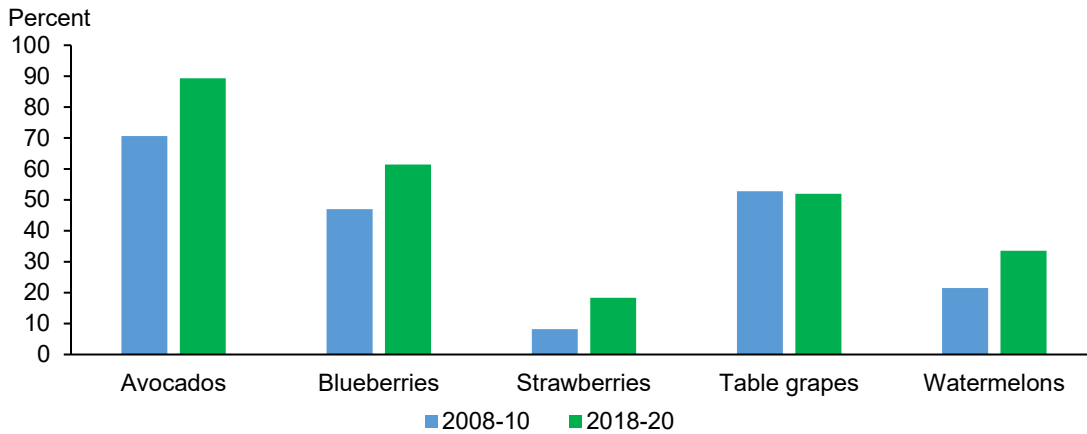
Year-round demand for fresh fruit, increased interest in healthier diets, and a general rise in population drove change in the produce industry. For many fresh fruit commodities, U.S. production is growing to meet demand while imports are expanding. Greater supply benefits U.S. consumers but may hurt domestic producers if they face increased competition from imports during the U.S. production season. This article examines trends in annual import availability and changes in seasonal shipment patterns for five fresh fruit commodities—avocados, blueberries, table grapes, strawberries, and watermelon between 2008 and 2010 to 2018 to 2020.

Per capita availability of blueberries from all sources grew the most among these five commodities—up 132 percent from 0.96 pounds per person in 2008–10 to 2.23 pounds per person in 2018–20. Avocado per capita availability increased from an average of 5 pounds per person in 2008–10 to 8 pounds per person in 2018–20. U.S. availability of fresh strawberries, the most consumed berry, grew 22 percent from 2008–10 to 7 pounds per person in 2018–20. Fresh table grape and watermelon per capita availability trended flat over the last two decades. Fresh table grape availability has been about 8 pounds per person since 2008–10, while watermelon per capita availability ranged from 14 to 16 pounds per person.

In 2018–20, imports played a larger role in domestic availability for four of the five fruit than they did in 2008–10 (figure SA1). For table grapes, the import share of availability declined slightly because imports were down in 2018. Import shares ranged from 18 percent for strawberries to 90 percent for avocados. The import share of domestic availability depends on changes in imports and changes in domestic production. Imports can be from the foreign operations of U.S. firms, many of them are large U.S. grower/shippers. These firms may import to increase supplies in months when their own production may be too low to meet their buyers' demands or to reduce production costs. Smaller growers, which may not have the ability to optimize profit across national boundaries, may face more pressure from import competition.

Figure SA1

U.S. imports share of domestic availability, 2008-10 to 2018-20



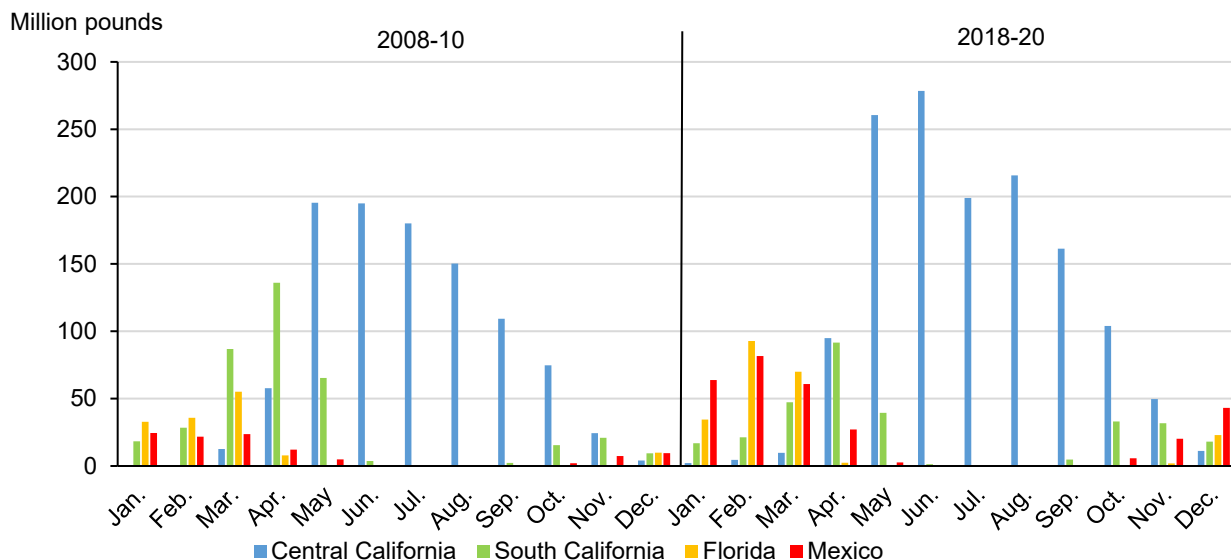
Note: import share = U.S. imports/total domestic availability.

Strawberries

U.S. strawberry production grew 16 percent from 2008–10 to 2018–20, to roughly 2 billion pounds (figure SA2). Strawberries are primarily grown in California (about 90 percent) and Florida (about 8 percent). Some California growers ship strawberries every month, most ship during April to October. Florida growers supply fresh strawberries mainly from December to May. Comparing shipments from the last decade shows Florida’s production from 2018-20 is higher in December through March. Central California’s production increased every month except March. Shipments from the South California region declined every month but May. Producers in the southern region were affected by more imports from Mexico during their season and they operate in an area with high-cost land. Production in that area declined, with some moving to other parts of California with lower land prices or to Mexico.

Figure SA2

Fresh strawberry shipments, 2008-10 to 2018-20



Source: USDA, Agricultural Marketing Service, *Market News*, Movement data.

Strawberry imports increased over 127 percent from 2008–10 to 2018–20. Over 99 percent of fresh strawberry imports are produced in Mexico. The majority of import shipments arrive between November and March, with some smaller shipments in other months. The increase in Mexican strawberry shipments may be due to increased plantings, and the use of tunnel production to better control the growing environment.

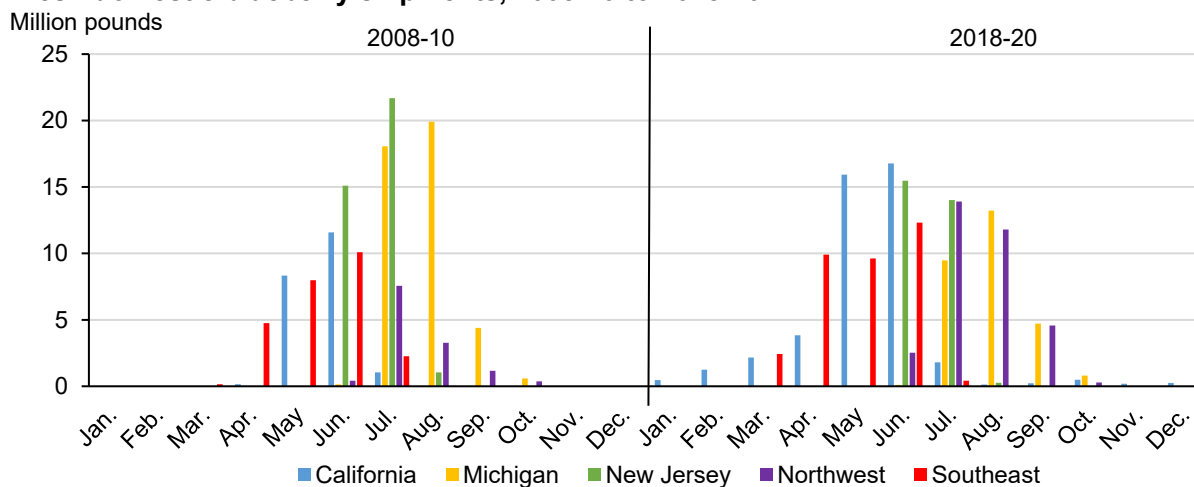
With imports growing much faster than domestic production, the import share of availability rose rapidly—from 8 percent of strawberries available in 2008–10 to nearly 20 percent in 2018–20. Annual imports reached a record high in 2020 of over 430 million pounds. Imports overlap with domestic supply in the winter and early spring months, directly competing with Florida as well as Southern California, where production seems to have experienced the most impact from imports.

Blueberries

U.S. blueberries are produced in many States, unlike strawberries which are mainly grown in California and Florida (figure SA3). Since 2008–10, fresh U.S. blueberry production increased 55 percent. In 2008–10, the largest U.S. producers of fresh-market blueberries were New Jersey and Michigan. California, Washington, and Florida were smaller producers. In 2018–20, California, Georgia and Oregon were the largest suppliers; smaller producers included Florida, Michigan, New Jersey, North Carolina, and Washington. In 2008–10, most shipments occurred between April through September. In 2018–20, the season extended to every month although shipments outside of the March–September season are small. California has year-round

production, with very little in the winter. Florida’s production peaks from May to June, which leads to production in Georgia, North Carolina, and New Jersey. Blueberry production in Michigan, Oregon, and Washington then follows, with the largest shipments from July to September.

Figure SA3
Fresh domestic blueberry shipments, 2008-10 to 2018-20

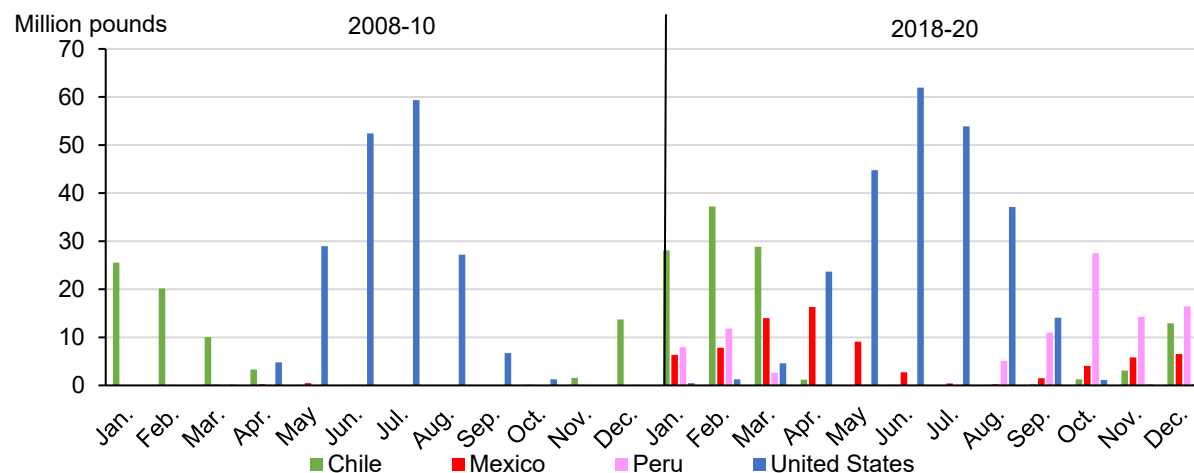


Note: Northwest = Oregon and Washington, Southeast = Florida, Georgia and North Carolina.
 Source: USDA, Agricultural Marketing Service, *Market News*, Movement data.

Imports of fresh blueberries rose over 200 percent between 2008–10 and 2018–20. In 2010, Chile was the main foreign supplier of fresh blueberries to the United States during the U.S. off-season. Since 2010, Chile lost market share of the U.S. fresh blueberry market to Mexico and Peru. In 2020, about 80 percent of U.S. blueberry imports came from three countries: Peru, Mexico, and Chile (figure SA4). Peru’s blueberry exports increased rapidly; in 2019, Peru became the leading supplier of U.S. blueberry imports— accounting for 40 percent of U.S. fresh blueberry availability. Peru’s shipments supply the U.S. market in the fall months. Imports from Mexico increased on average 500 percent from 2008–10 to 2018–20. Mexico’s shipments are the largest in the spring months.

Figure SA4

Fresh domestic and import blueberry shipments, 2008-10 to 2018-20



Source: USDA, Agricultural Marketing Service, *Market News*, Movement data.

Fresh blueberry per capita availability has grown over 130 percent since 2008–10. With imports growing faster than domestic production, Imports comprised 61 percent of U.S. blueberry availability in 2018–20—up from 47 percent in 2008-10. In 2008-10, Chile was the main supplier of fresh blueberries to the United States in the off-season. Since then, Mexico shipments grew in the winter and early spring months competing with California and Florida. Peru’s shipments increased in the fall months, overlapping with the end of U.S. season production from Michigan, Washington and Oregon.

Increases of imports of seasonal and perishable fruit, including blueberries, led to a hearing with testimony from different sides in 2020. At the request of the U.S. Trade Representative, the U.S. International Trade Commission (USITC) opened an investigation in 2020 to determine whether fresh, chilled, or frozen blueberries were entering the United States in such increased quantities as to be a substantial case of serious injury, or the threat of serious injury, to the U.S. blueberry industry. In March 2021, the USITC decided that imports did not seriously injure the domestic industry, citing increased acreage, production, employment, productivity, shipments, and investments as evidence to the contrary. The USITC looks at the entire industry, not a group of seasonal producers to determine injury.

Watermelons

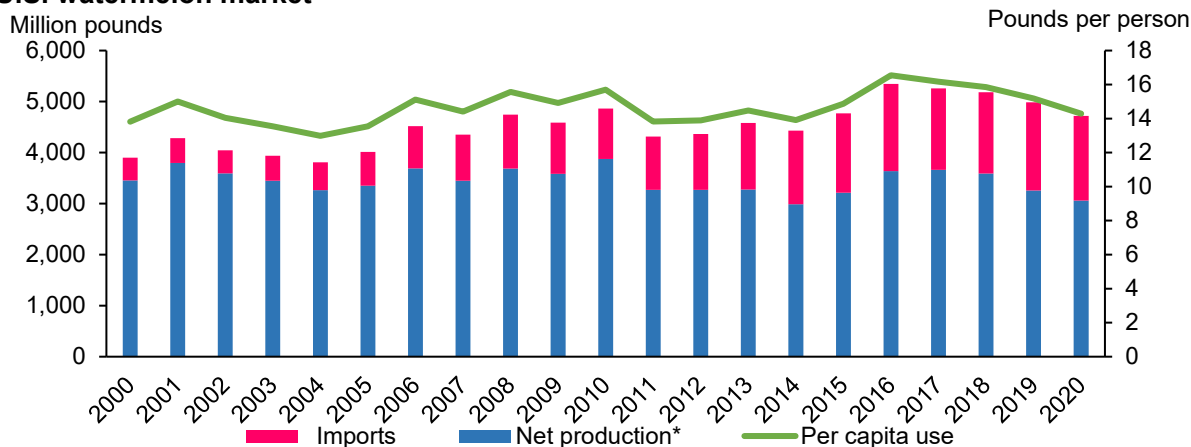
Watermelons are consumed more than any other melon in the United States—per capita availability, from all sources, ranged from 14 to 16 pounds per person over the last two decades (figure SA5). U.S. production decreased 10 percent between 2008–10 and 2018–20.

Watermelon is another crop that is produced in many States, including Florida, Georgia, Texas,

California, South Carolina, and Arizona. Domestic shipments are primarily April to October. The majority of watermelons consumed are produced domestically.

Figure SA5

U.S. watermelon market

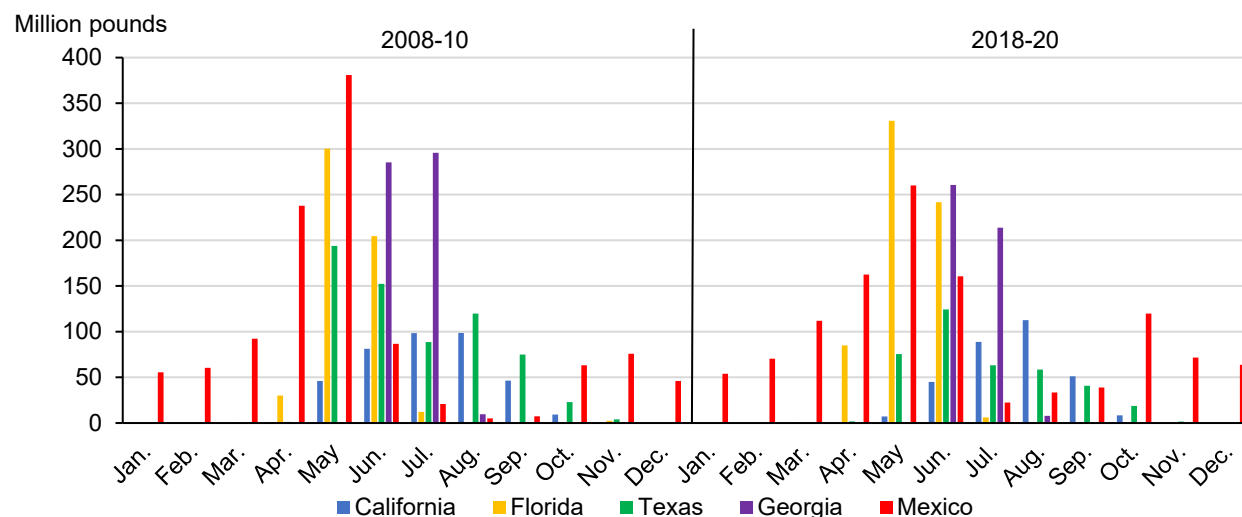


Net Production* = Total Production minus exports.

Source: USDA, Economic Research Service.

Watermelon imports have grown 63 percent from 2008–10 to 2018–20. U.S. imports reached a record high 1.73 billion pounds in 2019. In the past two decades, over 80 percent of watermelon imports came from Mexico. One reason Mexico is the leading supplier to the United States may be transportation costs, since watermelons contain a lot of water and are heavy. In 2018-20, the main Mexican season runs from October through June and shipments peak in May (figure SA6). Foreign suppliers like to extend their season to Memorial Day, since is the most popular day for U.S. watermelon consumption, after the 4th of July. October watermelon imports from Mexico grew larger in the 2018-20 period compared to a decade before.

Figure SA6
Fresh watermelon shipments, 2008-10 to 2018-20



Source: USDA, Agricultural Marketing Service, *Market News*, Movement data.

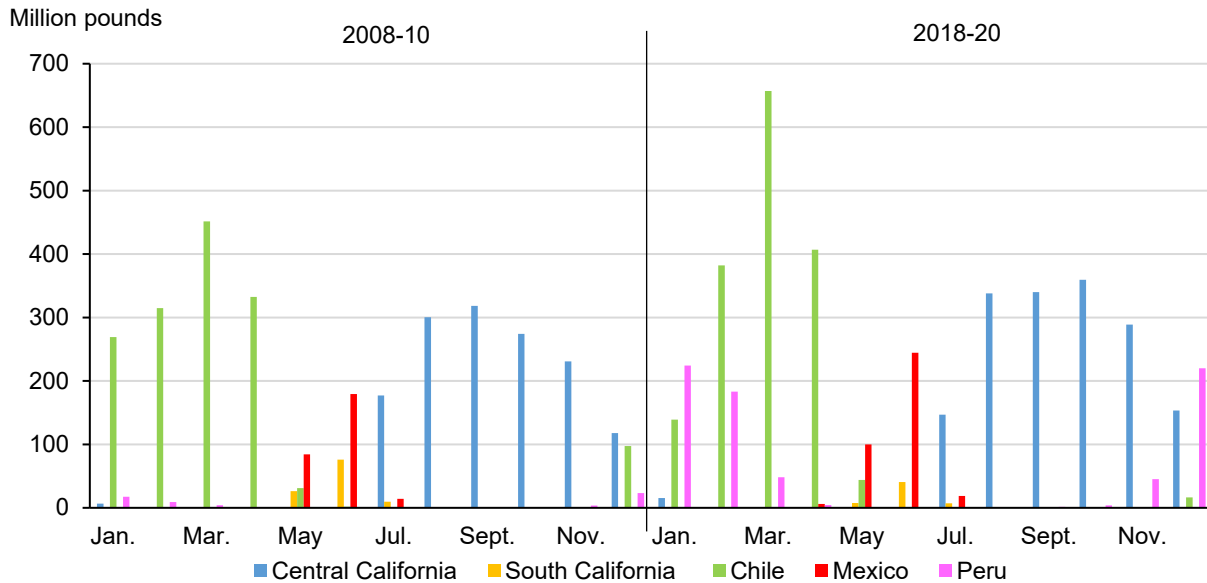
Watermelon import share of availability increased from 22 percent in 2008–10 to 33 percent in 2018–20. Much of the growth in watermelon imports was in the off-season for U.S. producers. There was some overlap between imports and domestic shipments in April and May 2018-20. There is an increase in competition in the late summer months to October, the end of the U.S. season when Texas and California are still shipping. Florida can sometimes produce a fall crop but with increased competition it is not usually economical to do so.

Grapes

California dominates table grape production which grew roughly 9 percent over the last decade (figure SA7). Table grape availability in the United States, from all sources, was 8.2 pounds per person in 2018–20, up from 7.9 pounds in 2008–10. The California table grape marketing year is May to April, with shipments in the late spring, summer, and fall. Since grapes can be stored for a short time, marketing continues into January.

Figure SA7

Grape shipments by major suppliers, 2008-10 to 2018-20



Source: USDA, Agricultural Marketing Service, *Market News*, Movement Data.

Table grape imports grew 9 percent over the last decade. Many countries export fresh grapes to the United States, including Chile, Peru, and Mexico. In 2008-10, table grape imports were contra-seasonal to California’s shipments. Chile was the dominant off-season supplier to the U.S. market in 2008–10. Over time, imports from Peru and Mexico, which are both closer to the U.S. market than Chile, have grown. Peru could overtake Chile as the dominant supplier in the 2021/22 season due to the rapid year-over-year growth in shipments. Peru’s advantages include dry, favorable weather conditions, labor availability, and adoption of advanced drip irrigation systems. Mexico’s table grape exports reached a record high in the 2019/20 season, declining slightly the following season. Mexico’s production is mainly in Sonora, where growers are planting newer varieties, that may allow for an earlier harvest.

Imports from Chile tend to peak in the spring before U.S. production starts and before Mexico shipments. Chile’s shipments declined in January as Peru provides more grapes to the U.S. market. Mexico shipments peak in June, leading into California’s season. Peru starts exporting in November and December, which is toward the end of California’s season.

With domestic production and imports increasing almost equally, the import share of the availability for grapes has remained almost unchanged since 2008–10, down 2 percent. Harvesting seasons are lengthening in the United States and abroad as growers try to capture the high prices at the beginning and end of the season. U.S. early season shipments in May through June from the Coachella Valley in Southern California declined 23 percent between

2008–10 and 2018–20 as imports of grapes from Sonora, Mexico, continued later in the spring and into early summer. Shipments from the San Joaquin Valley, which begin in late June or early July and end in January, increased despite additional imports from Mexico and Peru.

Avocados

California, the main U.S. producer, harvests avocados year-round. Since avocados can mature on the tree for an extended period, U.S. growers look for opportunities to balance fruit quality with market conditions, and often when there is less price pressure from Mexican imports. From 2018–20, peak imports from Mexico occurred from May through July. California avocado production decreased 9 percent from 2008-10 to 2018-20. Some reasons behind the decline include a wildfire in 2017 that destroyed orchards, and mandatory water reductions in certain avocado production areas, that encouraged some growers to abandon orchards or reduce tree size to reduce water needs.

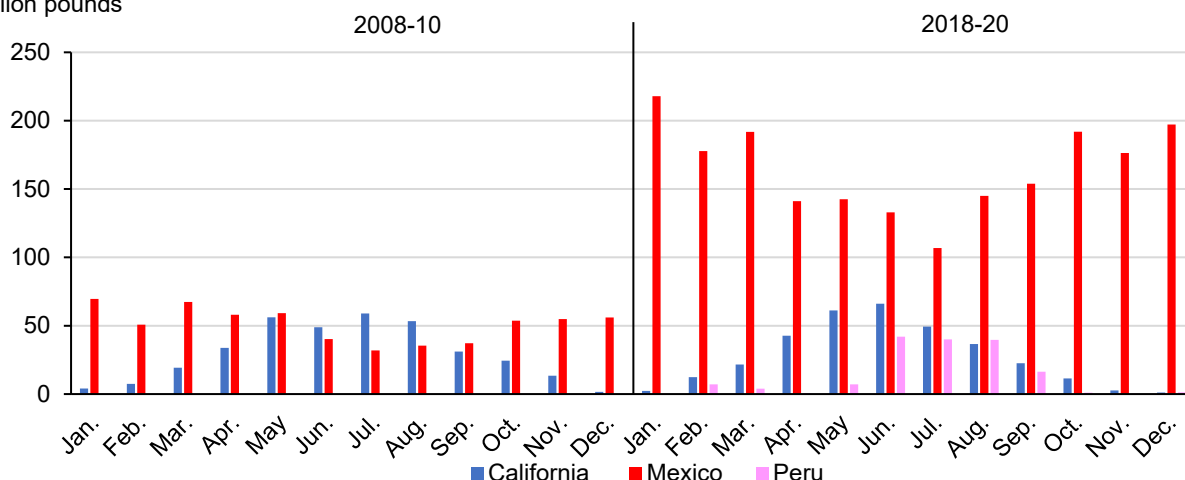
Mexico is the leading global supplier of avocados, with over 80 percent of Mexico's avocado exports shipped to the United States. Between 2008–10 and 2018–20 imports from Mexico increased 260 percent. Mexico ships avocados every month, but fewer in the summer months (figure SA8). Mexico's exports to the United States have grown, likely due to increases in area planted in Michoacán, the main avocado production area in Mexico and the only State allowed to export to the United States because of phytosanitary issues. The USDA Foreign Agricultural Service reported that Mexico growers are working to improve yields to meet U.S. demand. Peru is the second-largest foreign supplier after Mexico; in 2018–20, roughly 7 percent of U.S. imports came from Peru. Peru's good growing conditions, combined with an increase in plantings, will likely continue to increase the country's exports. Peru's harvest usually peaks from May to July.

With domestic avocado production declining 9 percent and imports overall increasing 199 percent, the import share of availability for avocados has increased 28 percent to 90 percent in 2018-20. U.S. growers plan their shipments around Mexican shipments. Now Peruvian imports are arriving during the summer when U.S. growers have traditionally shipped their fruit. With the large increase in per capita consumption, up 88 percent, prices have been adequate to support U.S. growers.

Figure SA8

Fresh avocado shipments, 2008-10 to 2018-20

Million pounds



Source: USDA, Agricultural Marketing Service, *Market News*, Movement data.

Summary

In the last decade, U.S. consumer demand for fruit increased, and domestic production and imports expanded. Over time, U.S. growers and foreign suppliers to the U.S. market have tried to expand their seasons to target high prices that often exist between seasons. In 2018–20, there is more supply in the beginning and end of the U.S. and import season, creating an overlap. The supply changes are likely shifting seasonal prices.

Import share depends on changes in both domestic production and imports. Import share is a measure of imports in domestic availability, but it does not tell the whole story. For instance, avocados have the highest import share, yet the California avocado industry is managing the increase of imports because of the large growth in per capita consumption which raised prices for all producers. In some cases, import share has barely changed, as in the case of table grapes, but certain parts of the grape industry are affected by imports. The Coachella Valley is one example of where domestic production declined because of the competition of imports from Mexico.

There are new foreign suppliers in the U.S. market in the last decade for several commodities, which changed the market dynamics from the earlier period. Chile was the traditional off-season supplier of table grapes and blueberries to the U.S. markets. Peru’s exports of table grapes and blueberries grew rapidly and pose more competition to U.S. growers. Peru’s supplies tend to enter the market when the U.S. table grape and blueberry season tapers off, capturing higher

seasonal prices when there is less supply in the U.S. market. Mexico is a new supplier for blueberries. New avocado imports from Peru compete against U.S. shipments in the summer when Mexican shipments are typically the lightest.

Imports are not always from “foreign” operations and don’t always hurt U.S. producers. Imports are often organized by American firms. Some firms, often large U.S. grower/shippers, choose where to produce in what seasons to maximize profits over an international operation. Smaller firms may not have the resources to organize international operations, leaving them more vulnerable to potential import competition.

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