



# Fruit and Tree Nuts Outlook: September 2023

Catharine Weber, Skyler Simnitt, Seth Wechsler, and Helen Wakefield

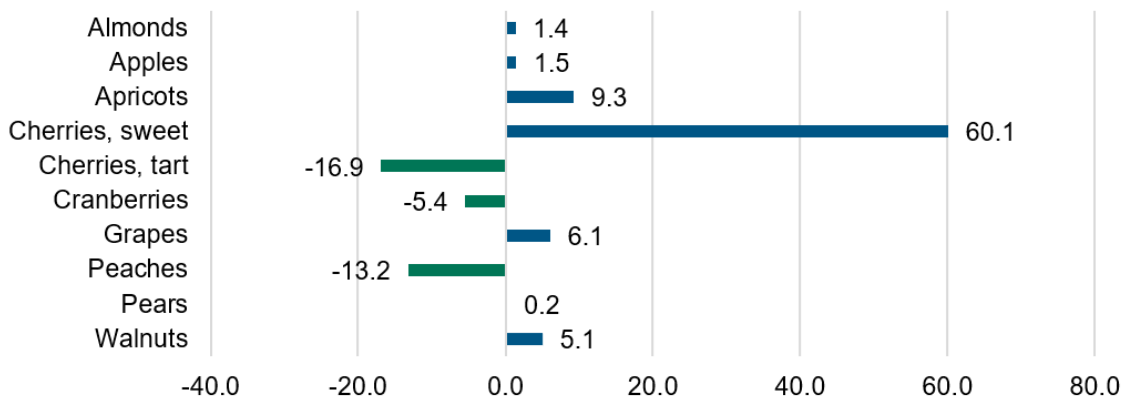
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## U.S. Production of Major Noncitrus Fruit and Tree Nut Forecast Mixed in 2023

The 2023/24 season has begun for many fruit and tree nuts. USDA’s National Agricultural Statistics Service (NASS) forecast almond, apple, apricot, grape, pear, sweet cherry, and walnut production up while peach, tart cherry, and cranberry production are expected to decrease. Good spring weather in 2023 in the Pacific Northwest was a major reason for the increased production of apples and sweet cherries. While winter and spring rainfall in California helped drought conditions, a cool spring lowered yield for some earlier blooming crops. At the same time, inadequate chill hours and spring freeze events also negatively affected production in the mid-Atlantic and Southeast, leading to declines in peaches, tart cherries, and cranberries in several States.

**Year-to-year production changes for selected fruit and tree nuts, 2022–23f**



Note: f = forecast.

2022–23f percent change in total production

Source: USDA, Economic Research Service based on data from the USDA, National Agricultural Statistics Service, *Crop Production* (June, July, and August 2023 issues).

# Price Outlook

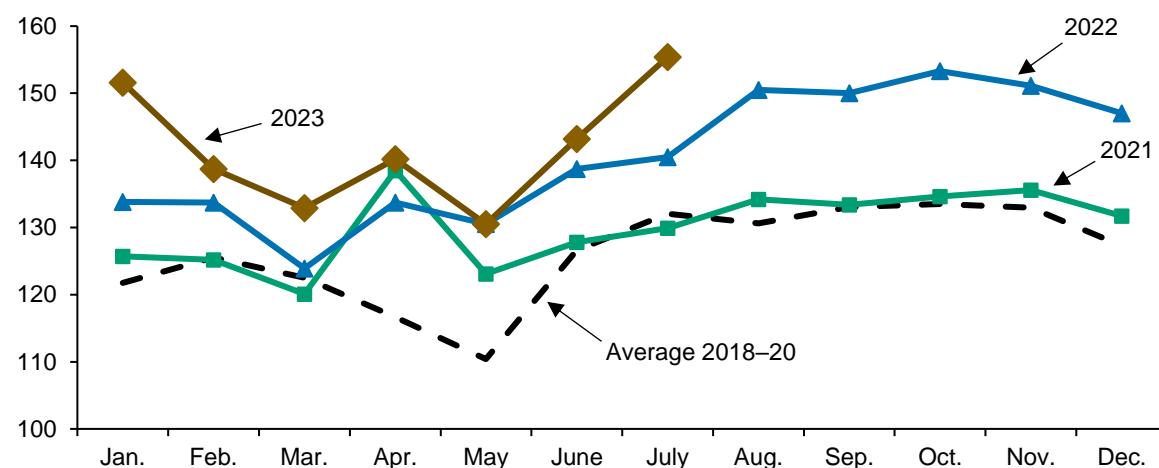
## Fruit and Nut Grower Price Index Stays High in 2023

The USDA, NASS grower prices received index for fruit and tree nuts was 155.4 (2011 = 100) for July 2023, up 9 percent from June 2023 and 11 percent from July 2022 (figure 1). Price increases during July for apples, grapes, peaches, pears, and strawberries more than offset price decreases for fresh and processed oranges compared to a year ago. The aggregate prices received index in 2023 has remained at-or-above a year ago.

Figure 1

### Index of prices received by growers for fruit and tree nuts

2011=100



Source: USDA, Economic Research Service based on data from USDA, National Agricultural Statistics Service, *Agricultural Prices*.

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

- All lemon prices (fresh and processing combined) are up in 2023 due to an exceptionally high (132 percent) jump in the grower box price in July 2023 compared to July 2022 (table 1). However, it is worth noting that this grower box prices of \$21.07, is much closer to the July prices of the previous seasons, 2019, 2020 and 2021, thus represents a return to normalcy from the 20-year low observed last July (2022). In the coming months USDA, Agricultural Marketing Service (AMS) shipment data for the period covering July–September 2023, may reveal if and how this end of season grower box price corresponds to domestic availability of lemons. Grower box prices for lemons tend to be higher during periods of decreased domestic availability, thus this higher July 2023 price may indicate lower movement levels than the same month last year.

**Table 1—Monthly fruit prices received by growers, United States**

Commodity	June		July		Year-to-year change	
	2022	2023	2022	2023	June	July
	----- Dollars per box -----				Percent	
Citrus fruit: <sup>1</sup>						
Grapefruit, all	19.24	14.04	13.17	11.96	-27.0	-9.2
Grapefruit, fresh	--	--	--	--	--	--
Lemons, all	11.60	13.23	9.06	21.07	14.1	132.6
Lemons, fresh	22.54	27.23	22.74	28.53	20.8	25.5
Oranges, all	21.66	14.61	19.36	14.03	-32.5	-27.5
Oranges, fresh	30.46	20.82	28.31	17.69	-31.6	-37.5
	----- Dollars per pound -----					
Noncitrus fruit: <sup>2</sup>						
Apples, fresh	0.720	0.838	0.690	0.864	16.4	25.2
Grapes, fresh	1.555	1.515	1.235	1.365	-2.6	10.5
Peaches, fresh	0.900	1.280	0.940	1.210	42.2	28.7
Pears, fresh	0.605	0.690	0.725	0.735	14.0	1.4
Strawberries, fresh	0.906	1.200	1.240	1.480	32.5	19.4

-- Insufficient number of reports to establish an estimate.

<sup>1</sup>Equivalent on-tree price.

<sup>2</sup>All monthly grower price estimates for the noncitrus fruits are derived exclusively from data provided by the USDA, Agricultural Marketing Service (AMS) and reflect free-on-board shipping point basis.

Source: USDA, Economic Research Service based on data from USDA, National Agricultural Statistics Service, *Agricultural Prices*.

- Orange prices were down in 2023 for both the fresh and all (combined processing and fresh) markets. This reduction in prices may appear counterintuitive given further attrition of Florida's orange groves over last season, however, production of fresh market oranges increased in 2023. Grower prices for fresh market oranges were consistently below last season's levels from November through July.
- Grower box prices for oranges for the processing market as reported by USDA, NASS were down for the months reported December 2022–May 2023. However, the per gallon average sale price for orange juice according to Nielsen retail sales data as reported by the Florida Department of Citrus, was up by 11 percent for the period spanning October 2022–August 2023. As more grower price data becomes available in the coming months, this discrepancy between grower prices and retail sales prices may narrow.

- Apple grower prices were higher in June and July 2023 than last year. The U.S. Apple Association reported that fresh apple holdings were down 9 percent in June compared to last season.
- A drop in peach production in top growing States contributed to higher grower prices in June and July 2023 compared to last season.
- Rains and flooding in California during strawberry harvest this spring put upward pressure on grower prices. Data from the California Strawberry Commission indicates that year-to-date shipments at the end of July 2023 were down 13 percent from a year ago.

## Consumer Price Index for Fresh Fruit

The Bureau of Labor Statistics (BLS) Consumer Price Index (CPI) for fresh fruit was reported at 405.319 (1982–84 = 100) in August 2023, up 0.6 percent from August 2022 (table 2). Retail prices for frozen orange juice concentrate, strawberries, and lemons are higher compared with August 2022. However, a decrease in the prices of bananas and fresh navel oranges partially offset price increases in other fruit.

**Table 2—U.S. monthly retail prices for selected fruit, 2022–23**

Commodity	Unit	2022		2023		2022–23 change	
		July	August	July	August	July	August
		-----1982–84 = 100 -----				--- Percent ---	
Fresh fruit		405.537	402.947	407.104	405.319	0.4	0.6
Apples		367.947	365.559	395.575	396.512	7.5	8.5
		-----1997 = 100 -----					
Processed fruits and vegetables		188.156	190.647	203.478	202.389	8.1	6.2
Canned fruit		188.497	194.213	203.091	200.388	7.7	3.2
		--- Dollars ---		--- Dollars ---		--- Percent ---	
Average price:							
Navel oranges	Pound	--	1.703	1.591	1.623	--	-4.7
Grapefruit	Pound	--	--	1.587	1.570	--	--
Orange juice, frozen concentrate <sup>1</sup>	16 oz.	2.889	2.751	3.336	3.415	15.5	24.1
Lemons	Pound	2.138	2.032	2.161	2.076	1.1	2.2
Bananas	Pound	0.640	0.643	0.631	0.631	-1.4	-1.9
Strawberries <sup>2</sup>	12-oz. pint	2.208	2.558	2.421	2.609	9.6	2.0
Wine, red and white table	1 liter	13.337	13.422	13.423	13.629	0.6	1.5

-- Insufficient marketing to establish a price.

<sup>1</sup>Data converted from 12-fluid-ounce containers.

<sup>2</sup>Dry pint.

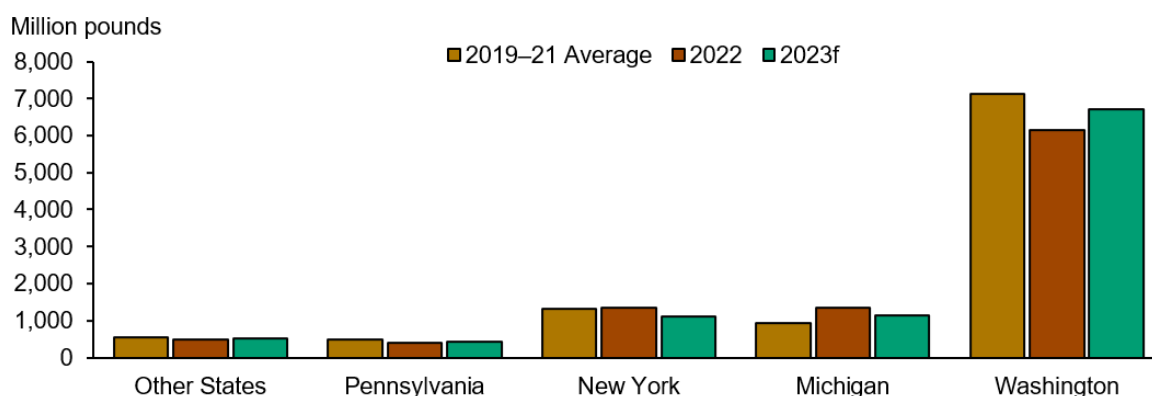
Source: USDA, Economic Research Service based on data from U.S. Department of Labor, Bureau of Labor Statistics.

# Noncitrus Fruit Outlook

## U.S. Apple Production Picks Up

For the 2023/24 season (August–July) U.S. total apple production is forecast at 9.9 billion pounds, up 1.5 percent from a year ago. In Washington, the largest producing State, the crop is forecast to be 6.7 billion pounds, up 9 percent from last year (figure 2). While Washington’s 2023/24 apple crop was not affected by spring freeze events like last season, the current forecast is still lower than volumes recorded in 2019–21. The Washington State Tree Fruit Association described fruit quality as excellent and estimates organic apples will account for 15.7 percent of the State’s production this season. In Michigan, the USDA, NASS production forecast is down 15 percent following last year’s largest crop on record but 24 percent higher than the 2019–21 annual average. In New York, a mild winter that weakened the cold hardiness and a mid-May freeze event during bloom contributed to a 19 percent decline in forecast production compared to last year. If the USDA, NASS production forecast is realized, 2023 would be the smallest apple crop in New York since 2012. While the impact of the freeze event was uneven across the State, Cornell University reported that some apple growers lost as much as 95 percent of their crop. Crop quality may also be a concern with USDA, NASS reporting 30 percent of apples in New York in very poor or poor condition in September.

Figure 2  
**Washington apple production forecast up in 2023**



f = forecast.

Note: Apple production estimates are published only for commercial orchards. Commercial orchards are defined as orchards of 100 or more bearing trees. Other States include California, Virginia, and Oregon.

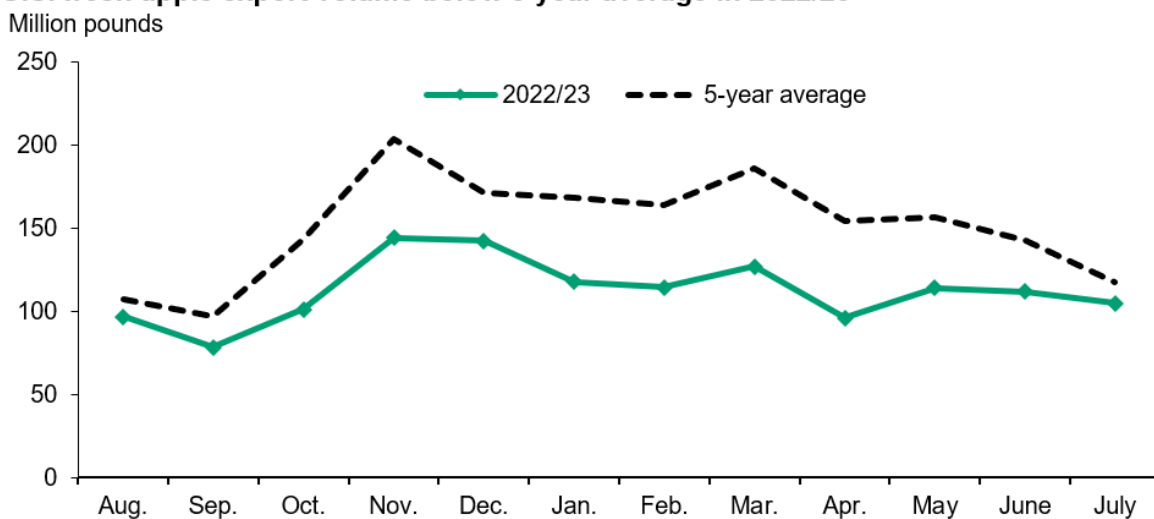
Source: USDA, Economic Research Service based on data from USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts Summary*, 2022 and *Crop Production (August 2023)*.

For the 2023/24 season, USDA, ERS estimates apple supply for the fresh market to increase about 2.5 percent from 6.4 billion pounds last year. Processing supply is expected to be about the same as last year as gains in Washington offset declines in New York and Michigan. Last

season, Washington accounted for 42 percent of processed apples, while New York and Michigan combined made up 43 percent.

**Fresh apple exports fell short in 2022/23:** On average since 2012/13, approximately 25 percent of fresh market apples in the United States were exported. In 2022/23, U.S. exports were down 15 percent from the prior marketing year and 26 percent below the 5-year average (figure 3). During 2022/23, organic apples represented 14 percent of the 1.35 billion pounds of fresh apple export volume. Mexico remained the top destination for fresh organic apples, accounting for 79 percent of U.S. organic export volume.

Figure 3  
**U.S. fresh apple export volume below 5-year average in 2022/23**



In June 2023, the Office of the United States Trade Representative announced that India would remove retaliatory tariffs it imposed on U.S. apples in June 2018. India accounted for 16 percent of U.S. fresh apple export value, ranking second behind Mexico in 2017/18. By 2022/23, India ranked 30<sup>th</sup> in U.S. fresh apple market share with export value totaling less than \$1.4 million. While industry reports note that the welcomed tariff removal comes ahead of the fall apple harvest in the United States, U.S. fresh apple exports will need to compete with India’s current top suppliers, which include Turkey, Italy, and Iran.

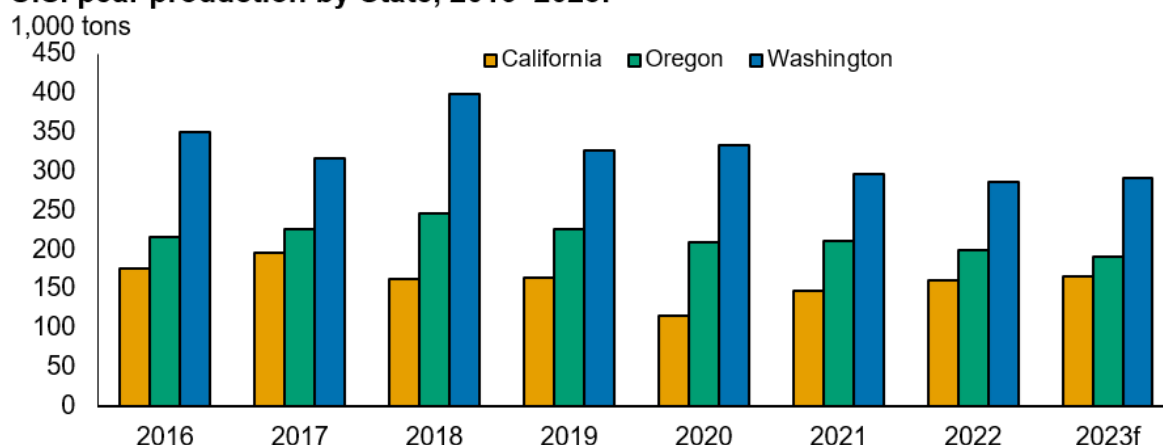
## U.S. Pear Crop Similar to Last Year

USDA, NASS predicted the 2023/24 (July–June) pear harvest at 645,000 tons, up 0.2 percent from last year (figure 4). In Washington and Oregon, the two largest pear producing States, growers are expecting an average crop despite cold weather delaying bloom season. In

California, pear production is expected to be up 3 percent from last season. If realized, California pear production would be the largest since 2017.

Figure 4

**U.S. pear production by State, 2016–2023f**



f = forecast.

Source: USDA, Economic Research Service based on data from USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts Summary (various issues)* and *Crop Production (August 2023)*.

**Organic pear exports on the rise:** On average over the last 3 years, fresh market pears accounted for approximately 76 percent of utilized production with one-quarter of that production destined for the export market. During the 2022/23 pear marketing year (July–June), export volume fell to its lowest level since the 1989/90 season. USDA, FAS, noted that high prices and inflation dampened demand for U.S. pears in top market Mexico. While export volumes for fresh, conventionally produced pears were down 20 percent in 2022/23 compared to last season, organic fresh pear volume was up 42 percent. The share of organic export volume for fresh pears has increased in recent years, accounting for 26 percent in 2022/23 up from 11 percent a decade ago.

## U.S. Grape Crop Expected To Increase in 2023

In mid-August, the U.S. grape crop was forecast to be 12.57 billion pounds in 2023, an increase of 6 percent from the 11.85 billion pounds produced in 2022 (USDA, NASS 2023). However, the August forecast was released prior to Hurricane Hilary making landfall in California. Given reports of extensive damage caused by the storm, realized production is expected to be below the USDA, NASS August forecast.

California is by far the leading grape-producing State, accounting for about 94 percent of the total U.S. crop. Wine-type grapes make up over 60 percent of California’s total grape crop (7.6 billion pounds), with about 20 percent in table grapes (2.3 billion pounds) and the remaining in



raisin-type grapes (1.94 billion pounds). In mid-August, the 2023 grape production in California was forecast to be 11.84 billion pounds, up 7.4 percent from 11.02 billion pounds in 2022. Gains in 2023 production can be attributed to increases in wine-type grapes, where production is expected to increase 12.4 percent over the year before, more than offsetting decreased production in raisin-type grapes.

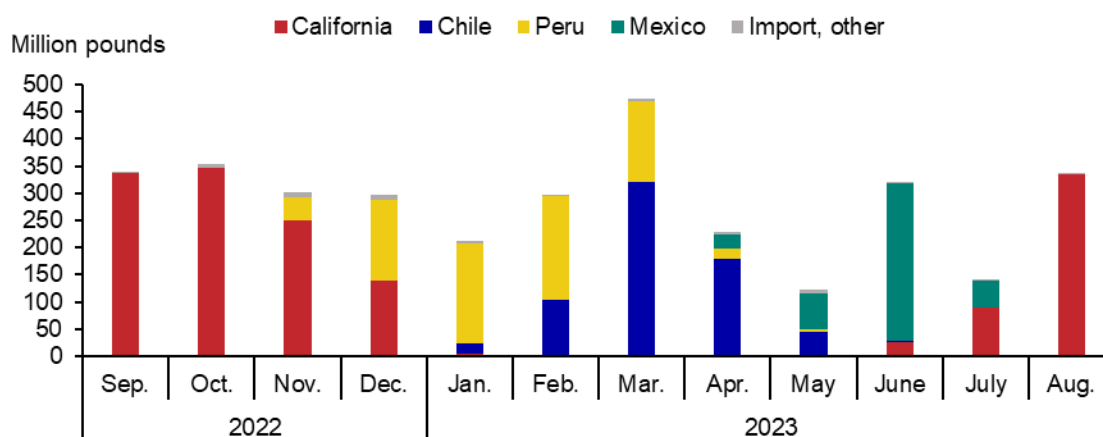
Washington State is second to California in grape production. The 2023 grape crop in Washington is forecast to be 730 million pounds, down 11.5 percent from 825 million pounds in 2022. Wine-type grapes make up 58 percent of Washington’s total grape crop, and the remaining 42 percent goes to juice production. Washington State has seen grape bearing acreage decline in recent years, down from 76,000 acres in 2020 to 72,000 acres in 2022.

**Hurricane Hilary dampens industry expectations for table grape harvest:** The USDA, NASS August 2023 grape forecast was released prior to Hurricane Hilary making landfall in California in late August 2023. Hurricane Hilary affected table grape vineyards during peak harvest season. Growers report that wind and rain from the storm caused some grapes to crack, drop from the vine, or develop mildew from excess moisture. The California Table Grape Commission reported only 30 percent of table grapes had been harvested when the hurricane made landfall in California. Following the hurricane, the California Table Grape Commission estimated that 35 percent of the unharvested table grapes would be lost, which could lead to the lowest California table grape production in nearly 30 years.

From August to November, California is the primary table grape supplier for domestic consumption (figure 5). Losses due to damage inflicted by Hurricane Hilary may put upward pressure on prices until import volumes increase from Peru and Chile in the winter months.

Figure 5

**Table grape shipments shift seasonally from California to imports**



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

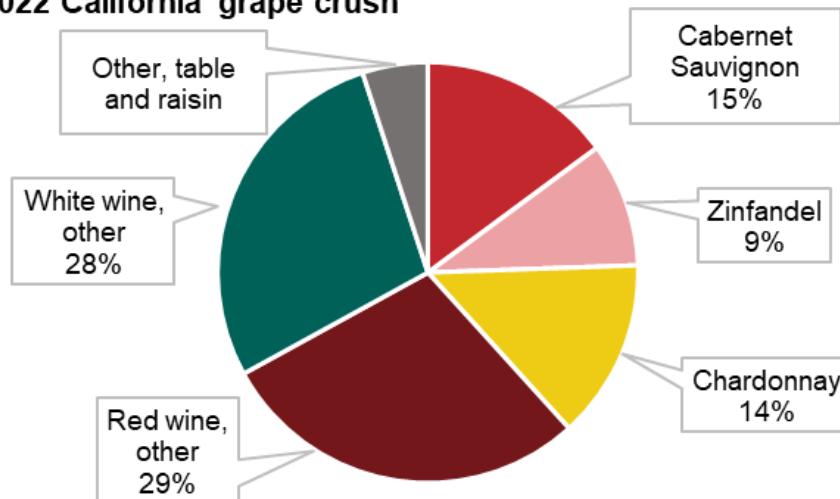


**Fresh table grape imports reach new high in 2022/23:** On average during the last three seasons, fresh grape imports accounted for 55 percent of domestic supply, up from 46 percent two decades ago. In the 2022/23 season, imported fresh grapes reached a record high of 1.64 billion pounds. Peru overtook Chile as the top foreign source of fresh grapes for the United States. Grapes from Peru now make up 36.5 percent of imports, slightly over Chile's 34.7 percent. Peru has experienced favorable weather conditions in the major table grape producing region of Ica, and higher production is expected for the 2023/24 season. For both Peru and Chile, the U.S. market is the largest export market for fresh table grapes.

Over 60 percent of California grape acreage is dedicated to wine-type grapes. Wine-type grape production in California is forecast to be 7.6 billion pounds in 2023, up 12 percent over last year's drought-stricken crop. Wine grapes are harvested later in the year (August to October) and are not anticipated to be as adversely affected by Hurricane Hilary.

In 2022, Cabernet Sauvignon surpassed Chardonnay as the wine variety with the highest tonnage of grapes crushed (figure 6). While volumes are lower than 2021 for both varieties, Cabernet Sauvignon made up 15.4 percent of volume of all varieties crushed at nearly 567,000 tons. Red wine varieties accounted for the largest share of all grapes crushed in 2022 with an average price of \$1,185 per ton compared to \$689 per ton for white wine grape varieties.

Figure 6  
**Cabernet Sauvignon overtakes Chardonnay as the top variety in the 2022 California grape crush**



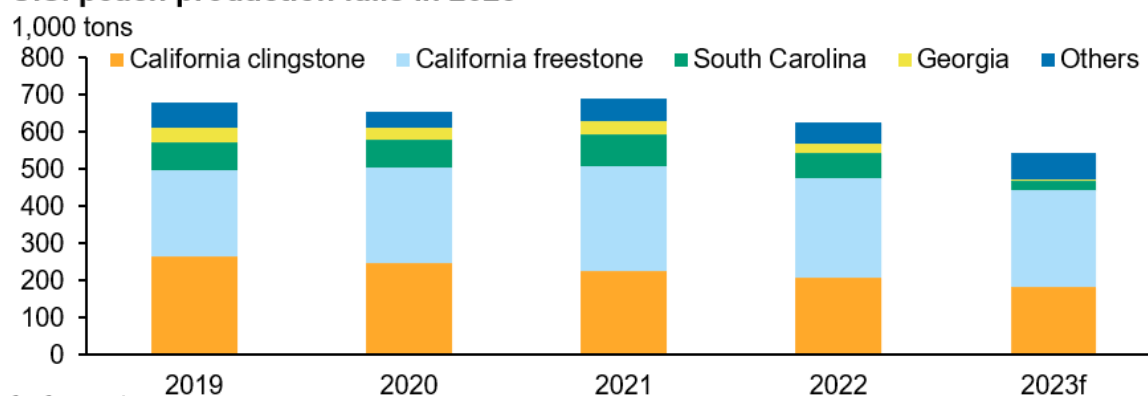
Source: USDA, National Agricultural Statistics Service, Pacific Regional Office  
*Grape Crush Report Crop Year 2022.*

## Not So Peachy, U.S. Peach Crop Forecast Down in 2023

Peach production in 2023 is expected to be 543,500 tons, a 13 percent decrease from the previous year. In California, the top peach producing State, freestone peach production is forecast at 260,000 tons, down 2 percent from the previous year (figure 7). On average about 70 percent of freestone peaches enter the fresh market, while clingstone peaches are grown almost exclusively for the processing market.

Figure 7

### U.S. peach production falls in 2023



f = forecast.

Note: Other States include Colorado, Michigan, New Jersey, Pennsylvania, and Washington.

Source: USDA, Economic Research Service based on data from USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts Summary (various issues)* and *Crop Production (August 2023)*.

In California, a wet cool spring delayed bloom, leading to the highest number of chilling hours in the last 10 years. For the second year in a row, spring freeze events negatively affected yields in South Carolina, the second largest peach State, and Georgia, leading to production declines (down 66 percent and 78 percent, respectively) compared with the previous season. While not able to offset production declines in California and the Southeast, peach production is expected to increase in four of the USDA, NASS surveyed States: Colorado (up 17 percent), New Jersey (up 78 percent), Pennsylvania (up 11 percent), and Washington (up 3 percent).

Lower domestic production and higher prices dampened U.S. fresh peach exports. Year-to-date export volume (fresh peaches and nectarines) through July 2023 declined 39 percent compared with the same time last year. Year-to-date import volume for peaches and nectarines, primarily from Chile, was down 0.3 percent. USDA, FAS reported declines in peach acreage in Chile are being offset by supplies from new nectarine plantings entering production.

The USDA, NASS forecast for California clingstone peaches, mainly for processing, is 185,000 tons, down 11 percent from 2022. The California League of Food Producers is expecting higher clingstone yields in 2023, but a decline in bearing acreage compared to last season. In June

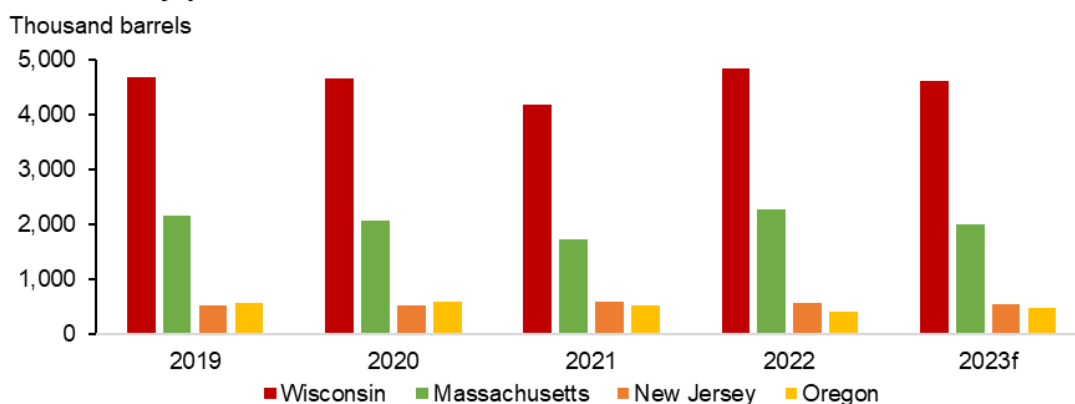
2023, the Canning Cling Peach Association, the cooperative bargaining association in the cling peach industry, reported its ratified 2023 base price agreement with processors at \$635 per ton, a \$32 per ton increase from 2022.

## Production Is Expected To Decline in the Top Three Cranberry States

The U.S. cranberry crop is forecast at 7.62 million barrels in 2023, down 5.4 percent from the 8.06 million barrels produced in 2022 (figure 8). While cranberry production is expected to decline in three States, total production is 9 percent higher this year compared to the 2021 crop.

Figure 8

### U.S. cranberry production to decrease in 2023



f = forecast.

Source: USDA, Economic Research Service using data from the USDA, National Agricultural Statistics Service *Noncitrus Fruits and Tree Nuts Summary (various issues)*.

Cranberries are harvested in autumn, and fresh cranberries are readily available during the holiday season, from October to December. Cranberry vines blossom in early summer (late June or early July), and berries develop in August. Cranberries require adequate moisture and lots of sun but can be sensitive to extreme heat. Hotter summers and drought can cause heat stress and injury to cranberry vines and flowers, ultimately leading to decreased yields and poor fruit quality.

Wisconsin is the leading cranberry producing State, accounting for 60 percent of the total crop on average over the last 3 years. The 2023 cranberry crop in Wisconsin is forecast to be 4.6 million barrels, down 5 percent from 4.84 million barrels in 2022. Though production is down from last year, it is expected to be 1.2 percent above the 3-year average of 4.5 million barrels. Cranberry growers in Wisconsin experienced challenging weather throughout the growing season that lowered yield. Some growers reported frost damage as warm and wet conditions in

the first quarter were soon followed by record snowfall in late April. May through July brought warmer weather and dry conditions, with some level of drought encompassing the entire State.

Massachusetts and New Jersey, the second- and third- largest cranberry producing States, are forecast to have lower production in 2023. Massachusetts accounts for 26 percent of the total U.S. crop and is expected to produce 2 million barrels, down 12 percent from 2.26 million barrels in 2022. Massachusetts had a cold, frosty spring, and above average precipitation during bloom in July, and cranberry yields are expected to be lower than the 2022 high of 195 barrels per acre. New Jersey accounts for only 7 percent of the U.S. crop and is expected to produce 550,000 barrels, down 2 percent from 563,000 barrels in 2022. While New Jersey experienced a cool June, there were more than 2 weeks of 90-degree days in July as cranberries bloomed.

Cranberry production is forecast to be up in Oregon, the fourth-largest cranberry producing State, accounting for 6.2 percent of U.S. production this season. Despite hot temperatures during summer bloom, the 2023 cranberry crop in Oregon is forecast to be 470,000 barrels, up 17.5 percent from 2022. While cranberry acreage has declined slightly in recent years, increased yields have kept Oregon production steady.

The Cranberry Marketing Committee (CMC) estimates for the 2023 U.S. cranberry crop are down 2 percent from last season in the top four producing States. The CMC estimate is slightly larger than the USDA forecast due to higher projections in Wisconsin at 4.97 million barrels. The CMC was established in 1962 by a Federal marketing order to promote research and marketing and to ensure a stable supply of high-quality cranberry products. The marketing order requires a referendum to be held every 4 years to allow members to vote whether to continue the program. In August 2023, USDA, AMS announced that producers voting in the referendum did not show enough support to continue the Federal marketing order program.

On average, approximately 95 percent of U.S. utilized cranberry production is processed. In 2022, the United States exported more than \$281 million of preserved cranberry products and \$45.5 million of cranberry juice. China, the Netherlands, Mexico, and Canada are the top processed cranberry destinations by value, accounting for 54 percent of U.S. exports in recent years.

Canada continues to be the largest source of fresh and processed cranberry imports to the U.S. market. Increases in Canadian production, especially in the province of Quebec, have boosted competition and global cranberry supply. This increase in supply has contributed to lower domestic prices. In 2023, late season frosts in Canada led to bud quality issues and decreased

production. With production expected to decrease in Canada and the United States this year, cranberry growers are likely to receive higher prices year-over-year.

In September 2023, the Office of the U.S. Trade Representative announced that India will reduce tariffs on fresh, frozen, processed, and dried cranberry products originating from the United States. These tariff reductions are expected to further expand economic opportunities in India’s market for U.S. cranberry producers. Since the CMC began promotional efforts for cranberries in India in 2017, export markets have expanded substantially. In 2017, U.S. cranberry exports to India were valued at \$1.5 million; 5 years later, exports were valued at \$7.8 million.

## West Coast Rebound, Sweet Cherry Forecast Up In 2023

The 2023 USDA, NASS June forecast for the U.S. sweet cherry crop was 371,000 tons (742 million pounds), up 60 percent from a year ago. If realized, the 2023 U.S. sweet cherry crop would be the largest since 2017 and the largest year-over-year increase since 2009 (figure 9). Production was estimated to have increased in all three surveyed States: Washington (66 percent), California (45 percent), and Oregon (59 percent). Washington and Oregon experienced near ideal growing conditions during the season. While production was up in California, a cool wet spring slowed crop growth and led to a delay in harvest. On average, about 80 percent of sweet cherry shipments from California occur in April and May, which puts California sweet cherries in the market before Washington and Oregon shipments pick up in June. According to USDA, AMS shipment data, only 35 percent of Central California sweet cherries shipped in April and May during the 2023 season, leading to a higher-than-normal portion of California shipments overlapping Northwest sweet cherry shipments in June.

Figure 9  
**U.S sweet cherries: production in top 3 States<sup>1</sup> rebounds in 2023**



f = forecast.

<sup>1</sup>States included in production total are California, Oregon, Washington.

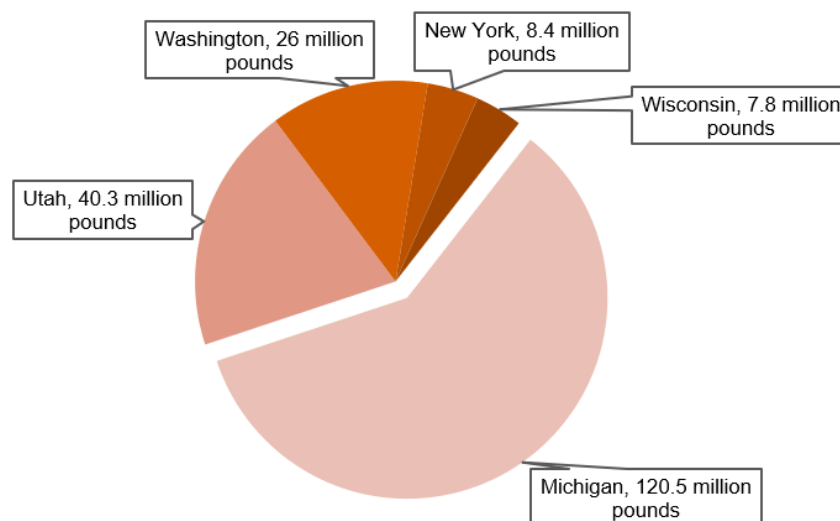
Source: USDA, Economic Research Service based on data from USDA, National Agricultural Statistics Service, *Noncitrus Fruit and Nuts Summary*, various issues and *Crop Production* (June 2023 issue).

**2023 sweet cherry exports ahead of last season:** Between January and July 2023, the United States imported 29.1 million pounds of fresh sweet cherries, a 28 percent increase from the same period last year. On average over the past 5 years, the United States exported about 92 percent of its annual fresh sweet cherry volume between May and July. Boosted by increased production in the 2023 season, U.S. fresh sweet cherry export volumes between May and July totaled 165.7 million pounds, more than double compared to the same period last year. Due in part to last season’s low production, fresh sweet cherry exports in 2022 fell to their lowest volume since 2002 for the May–July period, totaling 77.2 million pounds.

## U.S. Tart Cherry Production Expected Lower in 2023

The USDA, NASS forecast for the 2023 tart cherry crop is 203 million pounds, down 17 percent from the previous year. Michigan, the largest tart cherry producing State, experienced a mild winter followed by a period of cold spring weather that resulted in some freeze damage (figure 10). The 2023 production forecast is down in Michigan (-33 percent) and Wisconsin (-40 percent), but up in Utah (78 percent) and other USDA, NASS-surveyed States (Washington and New York combined, up 22 percent). Most of tart cherry production is destined for processing. USDA, NASS frozen tart cherry stocks as of August 31, 2023 were up 30 percent compared with the same month last year.

Figure 10  
**Michigan leads tart cherry production in 2023**



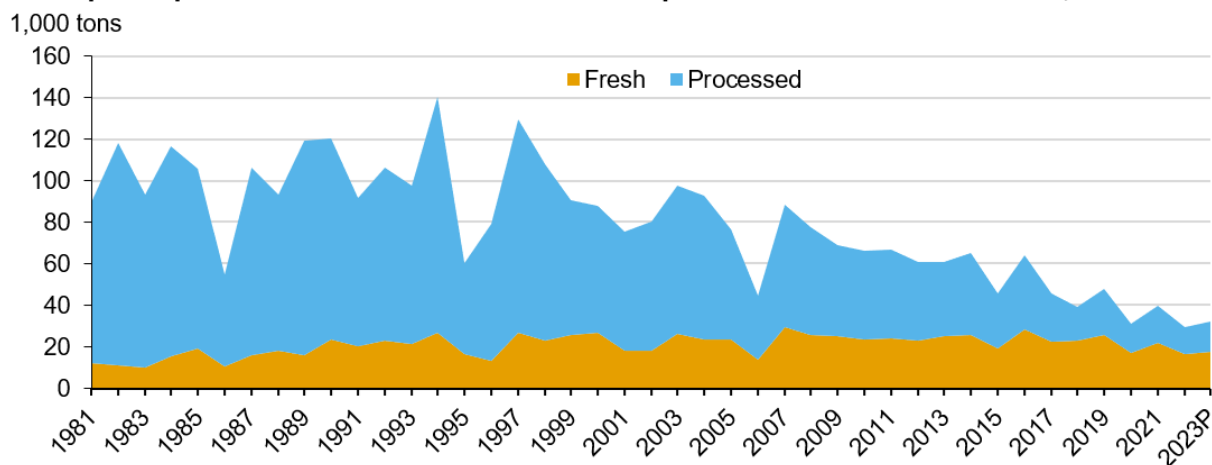
Source: USDA, Economic Research Service using data from the USDA, National Agricultural Statistics Service *Crop Production* (June 2023).

# Apricot Production Forecast Up This Year Despite Long-Term Declining Trend

The USDA, NASS forecast 2023 U.S. apricot production at 32,400 tons, up 9.3 percent from last year. California apricot production is expected to increase by 10 percent this year. California apricot growers experienced some of the heaviest blooms in years, benefiting from adequate chill hours and rain. Washington apricot production is also expected to increase (up 5 percent) in 2023 compared to last year. At 3,400 tons, Washington represents 10 percent of this year’s crop with California accounting for the remainder.

The U.S. apricot industry has experienced a long-term downward trend in bearing acreage (down 62 percent over the past 20 years). The downward trend in production has coincided with a decrease in the share of apricots utilized for the processed market (figure 11). During the first three seasons of this decade (2020–22), processed utilization has averaged 45 percent—down from 63 percent during the early 2010s and 89 percent in the early 1980s. This reflected both small gains in fresh market utilization and a marked downward trend in processing uses (particularly canned and frozen). Until the 2020s, the volume utilized as fresh apricots had been trending higher each decade—roughly pacing population growth.

Figure 11  
**U.S. apricot production trends lower as share of processed utilization declines, 1981–2023P**



P = Preliminary.  
 Source: USDA, Economic Research Service using data from the USDA, National Agricultural Statistics Service.



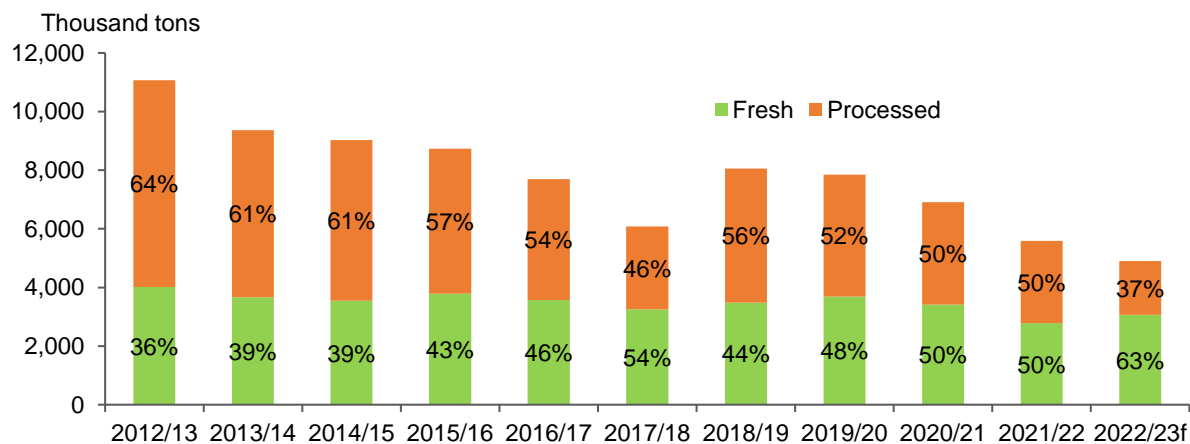
# Citrus Fruit Outlook

## Combined U.S. Citrus Production Drops to a New Low

The USDA National Agricultural Statistics Service's (NASS) final estimates for the 2022/23 citrus season show U.S. citrus production reaching 4.9 million tons, down 12 percent from 2021/22 (figure 12). This marks the lowest combined production levels of U.S. citrus in at least 50 years. This historically small crop is mostly due to declining Florida production of oranges. Florida has experienced long term declines in its citrus acreage and yields since the 2004/05 season. These production declines in Florida orange, grapefruit, and tangerine crops are frequently attributed to the effects of Huanglongbing (HLB) or citrus greening, a bacterial disease that impedes citrus trees' ability to process nutrients, disrupts the maturation of fruit, and shortens tree life. Severe weather shocks such as Hurricane Irma (September 2017) and more recently Hurricane Ian (September 2022), can also play a major role in year-over-year declines.

Figure 12

**Total citrus production is down in 2022/23 with a record share going to the fresh market**



f = forecast.

Source: USDA, Economic Research Service based on data from USDA, National Agricultural Statistics Service, *Citrus Fruits Summary*, various issues.

Total production is about 8 percent below the combined levels forecasted by USDA, NASS at the outset of the season (October 2022). A lower than anticipated Valencia orange crop in Florida, and smaller navel orange and tangerine crops in California account for most of this difference. However, a handful of commodities did exceed expectations: grapefruit and Valencia oranges in Texas and lemons in California and Arizona. While gains in Texas production of oranges and grapefruit over last season are encouraging for citrus in that State, Texas

grapefruit production has yet to return to its pre-Winter storm Uri (2019/20) season levels. California remained the Nation's top citrus producing State, accounting for approximately 92 percent of fresh market production in the United States. There were notable increases in both the quantity and share of U.S. grown citrus for the fresh market for the 2022/23 season. This is primarily due to larger navel orange, tangerine, and lemon crops in California over last season (table 3). By contrast, citrus for processing reached an historic low of 1.8 million tons (34 percent below last season's level).

**Table 3—Citrus: Utilized production, 2020/21 to 2022/23<sup>1</sup>**

Crop and State	Utilized			Utilized		
	2020/21	2021/22	2022/23 <sup>f</sup>	2020/21	2021/22	2022/23 <sup>f</sup>
Oranges:	---- 1,000 boxes <sup>2</sup> ----			----1,000 tons ----		
Early/midseason and navel:						
California	41,300	31,500	36,500	1,652	1,260	1,460
Florida <sup>3</sup>	22,700	18,250	6,150	1,022	821	277
Texas	1,000	170	570	43	7	24
<b>Total<sup>4</sup></b>	<b>65,000</b>	<b>49,920</b>	<b>43,220</b>	<b>2,717</b>	<b>2,088</b>	<b>1,761</b>
Valencia:						
California	7,700	7,600	6,700	308	304	268
Florida	30,250	22,950	9,650	1,361	1,033	434
Texas	50	30	560	2	1	24
<b>Total</b>	<b>38,000</b>	<b>30,580</b>	<b>16,910</b>	<b>1,671</b>	<b>1,338</b>	<b>726</b>
<b>All oranges</b>	<b>103,000</b>	<b>80,500</b>	<b>60,130</b>	<b>4,388</b>	<b>3,426</b>	<b>2,487</b>
Grapefruit:						
California	4,200	4,100	4,000	168	164	160
Florida	4,100	3,330	1,810	174	142	77
Texas	2,400	1,700	2,250	96	68	90
<b>All grapefruit</b>	<b>10,700</b>	<b>9,130</b>	<b>8,060</b>	<b>438</b>	<b>374</b>	<b>327</b>
Tangerines and mandarins:						
California	28,800	17,500	23,700	1,152	700	948
Florida <sup>4</sup>	890	750	480	42	36	23
<b>All tangerines and mandarins</b>	<b>29,690</b>	<b>18,250</b>	<b>24,180</b>	<b>1,194</b>	<b>736</b>	<b>971</b>
Lemons:						
Arizona	750	1,250	1,400	30	50	56
California	21,400	25,200	26,500	856	1,008	1,060
<b>All lemons</b>	<b>22,150</b>	<b>26,450</b>	<b>27,900</b>	<b>886</b>	<b>1,058</b>	<b>1,116</b>
<b>All citrus<sup>5</sup></b>	<b>165,540</b>	<b>134,330</b>	<b>120,270</b>	<b>6,906</b>	<b>5,593</b>	<b>4,901</b>

f = forecast.

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

<sup>2</sup> 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.

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

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

<sup>5</sup> Totals may not be equivalent to the sum of the categories due to rounding.

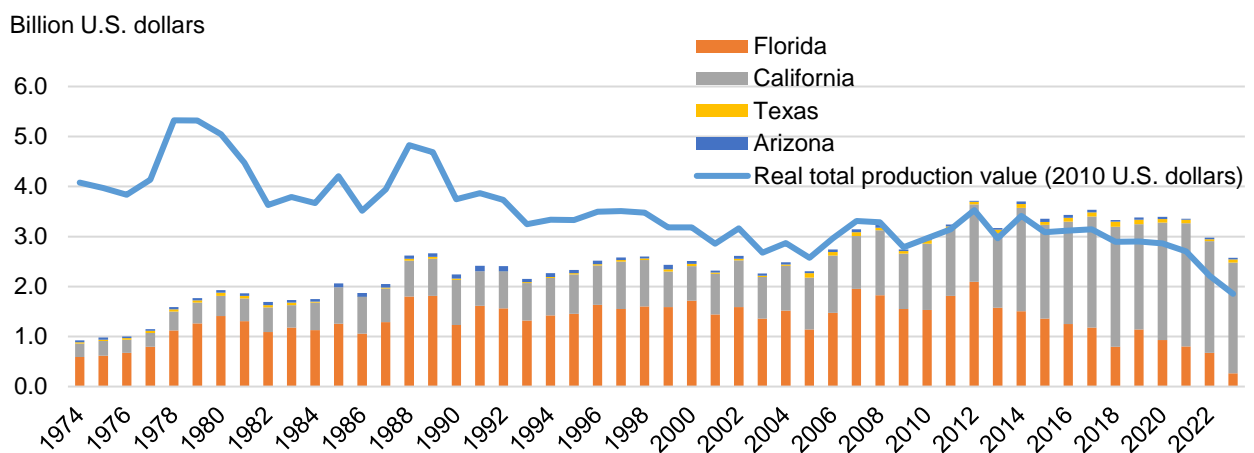
Source: USDA, Economic Research Service based on data from USDA, National Agricultural Statistics Service, *Citrus Fruits 2023 Summary* (August 2023).

Hurricane Ian touched down in Southwest Florida in late September 2022, and followed a Northeast trajectory passing through much of the State’s prime citrus growing region. Hurricanes have long been a challenge for Florida agriculture. Gale force winds can injure citrus trees, and damage blossoms and young and mature fruit. This damage to blossoms and fruit leads to reduced yields. Furthermore, flood waters from hurricane induced precipitation can drown trees and disrupt harvesters. Total citrus production in Florida was 811,000 tons in 2022/23, down 60 percent from the previous season. Although it is unclear how much of the year-over-year decline is directly attributable to damages from Hurricane Ian, realized production is below the level predicted at the outset of the season. The initial October 2022 forecast, which did not yet account for losses from Hurricane Ian, estimated Florida production at nearly 1.4 million tons. Therefore, losses attributable to Hurricane Ian in 2022/23 over last season may be as high as 42 percent of production in the State. Texas had an uncharacteristically large Valencia orange crop this season as more acreage has matured into bearing status. At the same time, Texas’s early and mid-season orange crop came in at 24,000 tons, the second smallest in a decade. Arizona experienced a 12 percent increase in lemon production over last season despite bearing acreage trending downward.

**U.S. citrus production value lower in 2022/23:** The U.S. citrus crop was valued at \$2.6 billion in 2022/23. This production value is 13.5 percent below last year’s value (2021/22), or a decrease in real value of 16 percent, after adjusting for inflation. This is only a slightly smaller rate of decrease in real value compared to last year (-17 percent) (figure 13).

Figure 13

**Production value of U.S. citrus industry further declines in 2022/23**



f = forecast.

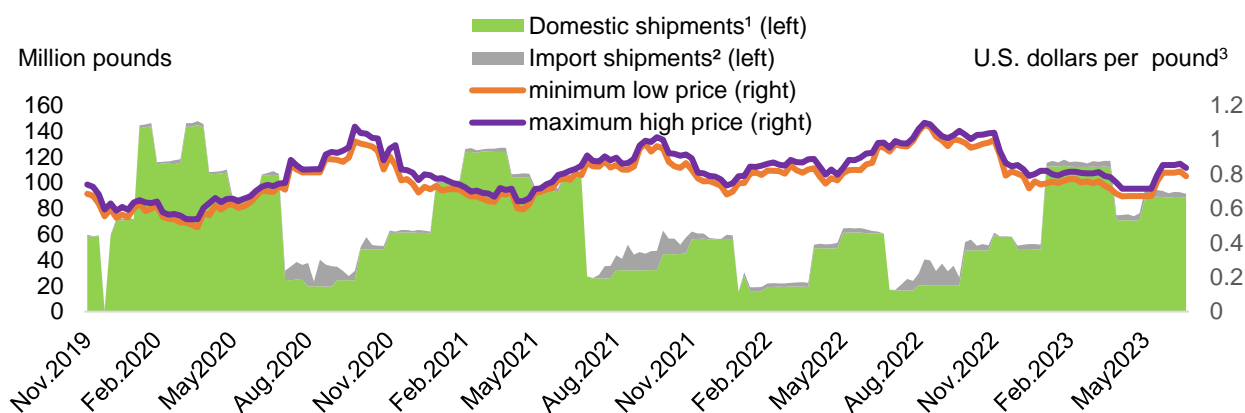
Source: Economic Research Service, U.S. Dept. of Agriculture National Agricultural Statistics Service, *Citrus Fruits Summary*

**U.S. citrus fresh-market production is up in 2022/23:** U.S. citrus production for the fresh market reached 3 million tons in 2022/23, up 10 percent from the previous season, with larger fresh-market crops of oranges (up 2 percent), grapefruit (up 5 percent), lemons (up 8 percent), and tangerines (up 29 percent). The marketing year for oranges in the United States begins in November of the preceding year and lasts through October of the current year. The harvest of navel and other early/mid-season varieties begins in the late fall and typically lasts through the early spring, while the Valencia orange harvest begins in the spring and lasts into the fall months. Representing just under half of all U.S. citrus production for the fresh market, the fresh-market orange crop in 2022/23 increased from the previous season to 1.44 million tons due to larger navel orange and early/midseason crops in California and Texas.

With increased supply, grower prices for fresh oranges were lower than last season. The average equivalent-on-tree price for a box of fresh oranges over the period spanning November to July decreased approximately 21 percent, from \$25.91 in 2021/22 to \$20.52 in 2022/23. Terminal market price data from USDA, AMS suggest wholesale prices are also down this season with an average maximum high of \$0.81 per pound for the period spanning November through June. By contrast, the average maximum high price was \$0.85 per pound over the same period last season. Orange shipments reached their peak from January–March until the end of the mid-season harvest (figure 14).

Figure 14

**Orange shipments are up in 2022/23 and wholesale prices are down**



<sup>1</sup>Shipment of product sourced from the U.S. States of Florida, California, and Texas.

<sup>2</sup>Shipments of product sourced from foreign locations.

<sup>3</sup>Average minimum low and maximum high prices per pound were calculated from the disclosed price per package divided by the corresponding weight in pounds. Prices are from wholesale markets in New York City. The weekly wholesale pound price is the unweighted average of all varieties and package types reported for the commodity (oranges). Package weights range from 20–600 pounds.

Note: USDA, AMS movement data for California citrus truck shipments represents average weekly shipments within a 3-month period and do not reflect actual weekly shipment variations.

Source: USDA, Economic Research Service based on data from USDA, Agricultural Marketing Service shipments and terminal market prices.

U.S. imports of fresh oranges in 2022/23 (November through July) were down 9 percent, from the same period last year. Last season (2021/22) was a record year for fresh orange imports, given an historically small domestic crop and increased production in Mexico (the main supplier of foreign grown oranges to the U.S. fresh market). Currently, 2022/23 imports are closer to the levels observed during the preceding three years, at 475 million pounds. Mexico has been the top foreign supplier of fresh market oranges this season, accounting for 52 percent, followed by Chile (24 percent) and South Africa (12 percent). South Africa had a larger crop this season which helps explain its return to third place among orange suppliers to the U.S. market.

Orange exports for the 2022/23 season are down by 1 percent to date and are expected to reach their lowest level since 2010. Exports to Canada, the top export market for U.S. grown oranges this season, were up by 13 percent, while exports to South Korea were down 15 percent and exports to both Hong Kong and Japan were down 2 percent. These four nations together account for two-thirds of all U.S. fresh market orange exports.

**California remains the top U.S. producer of grapefruit in 2022/23:** The marketing year for U.S. grapefruit begins in September of the previous year and ends in August of the current year. The top grapefruit producing State has alternated between Florida, California, and Texas over the last decade. However, California has led the nation in grapefruit production over the last three seasons, in part because the Florida citrus industry continues to decline, and because Texas producers experienced a major setback in February 2021 with Winter Storm Uri. California produced 4 million boxes or 160,000 tons this 2022/23 season. Texas produced 90,000 tons and Florida produced 77,000. Both California and Florida experienced decreased production over last year, while Texas experienced an increase of 32 percent or (22,000 tons), suggesting the Texas industry is recovering from damages inflicted by the storm in 2021.

Grapefruit production in Florida has generally trended downward over the last decade, due to attrition of the State's commercial acreage and falling yields. At the outset of the 2022/2023 season (October 2022) USDA, NASS forecast Florida's grapefruit production at 85,000 tons, an historic low for that State. However, this forecast did not yet take Hurricane Ian into consideration, which passed near the Indian River growing region (along the Atlantic Coast of the State) where most of Florida's grapefruit production is concentrated. In subsequent months, Florida's production forecast was revised downward as impacts from the storm became more evident. Although California led the country in grapefruit production this season, output levels were still 4,000 tons (2 percent) below those of last year. This decrease in California's

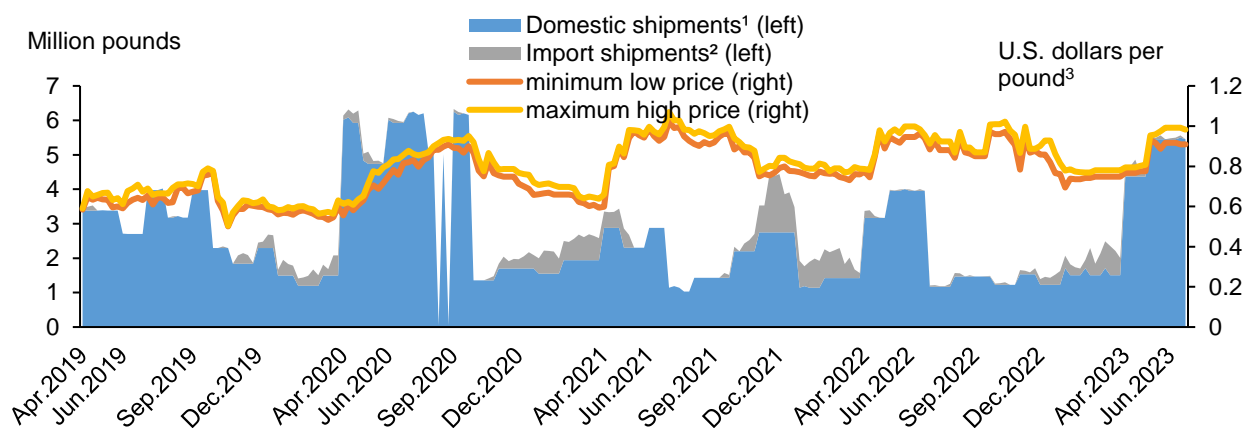
production is due both to lower per acre yields, and a decline in the State’s grapefruit acreage over last season.

Grapefruit production for the U.S. fresh market was 208 thousand tons in 2022/23—the second lowest level observed in at least 50 years. Nonetheless, this season’s crop (2022/23) is up by 5 percent over last season (2021/22). Imports of fresh grapefruit from September through July 2022/23 were down by 12 percent from the same period last year (2021/22) but are still the second highest observed in 16 years. Exports were down by 37 percent over the same period, to 47.1 million pounds the lowest level observed in at least 50 years.

A larger U.S. grapefruit crop this season (2022/23) compared to last year (2021/22) and record low exports have contributed to a slight bump in per capita availability over last season at 1.25 pounds per person. Despite increased domestic availability over last season, the average price received by growers for fresh grapefruit between November and March this season increased \$1.87 to \$30.39 per box. The wholesale prices as reported by USDA, AMS were up slightly this season with an average maximum high price of \$0.86 per pound during the period spanning November (2022) – June (2023), compared to \$0.85 per pound during the same period last season (2021/22). Domestic shipments of grapefruit as reported by USDA, AMS from September through December 2022 were down 36 percent from same period the previous year (figure 15).

Figure 15

**Grapefruit wholesale prices are down slightly in 2022/23**



<sup>1</sup>Shipment of product sourced from the U.S. States of Florida, California, and Texas.

<sup>2</sup>Shipments of product sourced from foreign locations.

<sup>3</sup>Average minimum low and maximum high prices per pound were calculated from the disclosed price per package divided by the corresponding weight in pounds. Prices are from wholesale markets in New York City. The weekly wholesale pound price is the unweighted average of all varieties and package types reported for the commodity (grapefruit). Package weights range from 26–48 pounds.

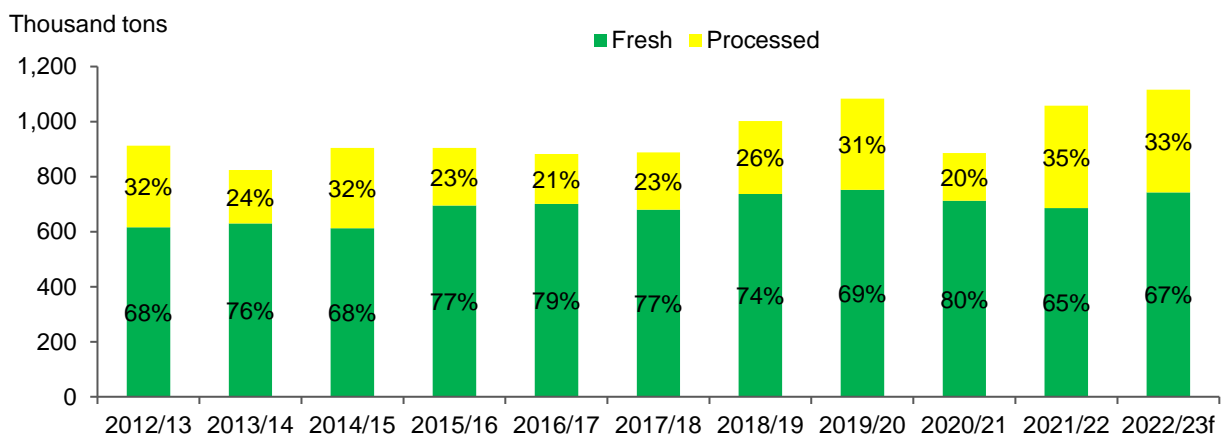
Note: USDA, AMS movement data for California citrus truck shipments represents average weekly shipments within a 3-month period and do not reflect actual weekly shipment variations.

Source: USDA, Economic Research Service based on data from USDA, Agricultural Marketing Service shipments and terminal market prices.

**U.S. lemon production is up in 2022/23:** U.S. growers produced 1.12 million tons of lemons in 2022/23, an increase of 5.5 percent (or 58,000 tons) from last year. One third of these lemons (33 percent) went to processing with the remainder going to the fresh market (figure 16). California lemon production experienced rising acreage and yields this season with lemon growers in that State producing 1.06 million tons in 2022/23—marking a 50-year record. Arizona supplied 5 percent of the U.S. lemon crop this season (56,000 tons). This marks the second year there has been an increase in the Arizona lemon crop since the uncharacteristically low yield of the 2020/2021 season. This increase in the Arizona lemon crop over last season (2021/22) is due to favorable weather and increased yields (219 boxes an acre). Yields were high enough this season to offset losses from further attrition of Arizona’s lemon acreage. Current lemon acreage in Arizona is 6,400 acres—300 fewer than the 2021/22 season. The volume of lemons going to processing exceeded that of a year ago and is the largest quantity since the 2009/10 season. U.S. grown lemons accounted for an estimated 78 percent of all lemons consumed domestically in 2022/23.

Figure 16

**A third of U.S. lemons went to processing in 2022/23**



f = forecast.

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

The U.S. lemon industry has experienced moderate growth over the last several decades as have lemon imports. Fresh lemon imports totaled 363 million pounds—down slightly from the previous two seasons (2020/21 and 2021/22). However, imports are still higher than observed prior to the 2020/21 season. Given this increase in domestic availability, fresh lemon prices were down during most of this season, with the average on tree equivalent grower price of \$24.83 per box, down by \$2.06 from last season (2021/22) (table 4). The marketing season for lemons in the United States lasts from August of the preceding year until July of the current



year. While lemon trees can produce throughout the season, harvests are highest in January through March. This season all lemon prices in July 2023 jumped considerably (132 percent) over last year (July 2022). While the reasons for this increase are not clear once USDA, AMS shipment data for California for the months of July through September 2023 are available for analysis it may become apparent how this jump in July grower box prices coincides with fluctuations in domestic availability.

**Table 4 – Fresh lemon grower prices on tree equivalent**

Month	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
	----- Dollars per box -----					
Aug.	--	60.82	32.09	29.44	34.84	22.03
Sep.	32.97	62.34	33.68	28.36	33.44	23.33
Oct.	31.76	44.09	34.46	29.25	30.63	28.64
Nov.	34.95	36.08	32.01	30.11	27.98	27.72
Dec.	37.74	31.78	28.6	29.33	28.67	24.43
Jan.	38.61	27.99	25.68	27.79	26.52	24.05
Feb.	37.11	24.25	23.05	27.55	26.76	22.26
Mar.	31.85	23.22	20.98	27.34	25.53	21.33
Apr.	30.05	23.62	21.29	26.64	21.14	23.83
May	29.95	24.02	23.59	28.84	21.84	24.63
June	32.55	26.52	27.49	36.04	22.54	27.23
July	44.15	29.32	30.29	37.74	22.74	28.53
Average	\$34.70	\$34.50	\$27.77	\$29.87	\$26.89	\$24.83

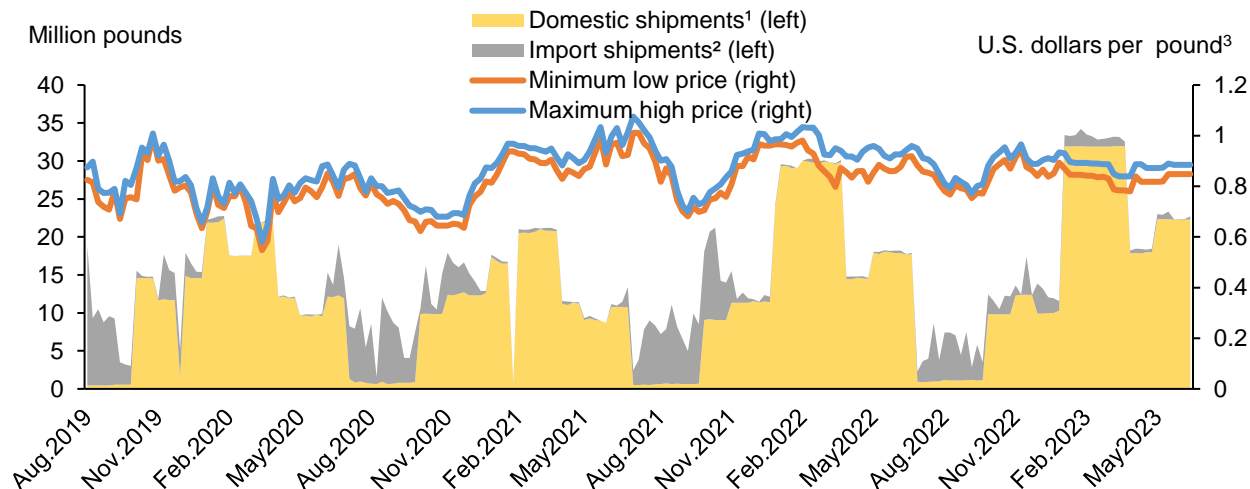
-- Insufficient marketing to establish a price.

Source: USDA, Economic Research Service using data from the USDA, National Agricultural Statistics Service, *Citrus Fruits Summary* (various issues).

Wholesale prices for lemons as reported by USDA, AMS were also down compared to last season. USDA, AMS reports minimum low and maximum high prices per package for lemons shipped to wholesalers each week. Package sizes vary from 26 to 46 pounds depending on the type of package and variety of lemon being shipped. The average minimum low price for lemons was \$0.83 per pound over the months spanning August 2022–June 2023, compared to \$0.86 per pound for the same period during the previous season. USDA, AMS shipment data for lemons further indicates that U.S. producers are most active between October and June, with peak production occurring between January and March (figure 17).

Figure 17

**With increased domestic availability lemon prices begin to fall in January**



<sup>1</sup>Shipment of product sourced from the U.S. States of Florida, California, and Texas.

<sup>2</sup>Shipments of product sourced from foreign locations.

<sup>3</sup>Average minimum low and maximum high prices per pound were calculated from the disclosed price per package divided by the corresponding weight in pounds. Prices are from wholesale markets in New York City. The weekly wholesale pound price is the unweighted average of all varieties and package types reported for the commodity (lemons). Package weights range from 26–46 pounds.

Note: USDA, AMS movement data for California citrus truck shipments represents average weekly shipments within a 3-month period and do not reflect actual weekly shipment variations.

Source: USDA, Economic Research Service based on data from USDA, Agricultural Marketing Service shipments and terminal market prices.

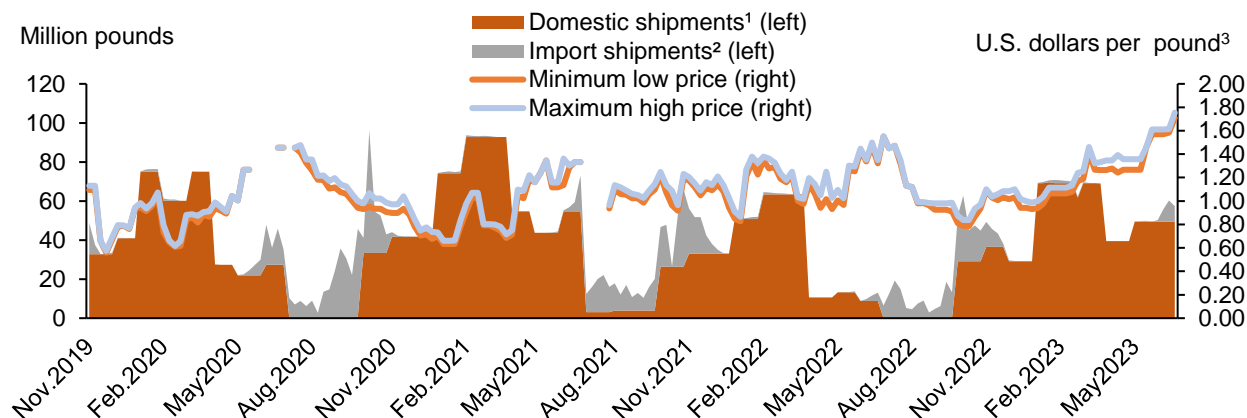
Imports started off slower this season during the months of August–October. After which (November–June) imports outpaced last season. Figure 17 illustrates that the domestic market for lemons is counter seasonal. Domestic producers appear to be selling the most lemons in November through May, when imports are lowest. Domestic producers are selling relatively little from June to October, when the volume imported is highest. Argentina, Mexico, and Chile remained the top suppliers of lemons to the U.S. market, together accounting for 94 percent of all fresh market lemons shipped to the United States. U.S. fresh lemon exports were down this season by 8 percent, with Canada, Japan, and South Korea remaining the three largest markets for U.S. grown lemons.

**U.S. tangerine crop recovers in 2022/23:** Production of U.S. tangerines, mandarins, clementines, and tangelos (which collectively make up the tangerine group) for the fresh market reached 971,000 tons in 2022/23, up 32 percent from last season. Ninety-five percent of the U.S. tangerine crop is grown in California with production concentrated in the San Joaquin Valley. U.S. production usually peaks during the late winter and early spring (from January to March). Shipment data from USDA, AMS indicates that 823 million pounds of tangerines were shipped during peak harvest, an increase of 8 percent from the same period last year (figure

18). This increase in tangerine shipments is notable given the harvest delays caused by intense flooding in California’s Central Valley in the 2022/23 season.

Figure 18

**Tangerines shipments are up by weight during peak season in 2022/23**



<sup>1</sup>Shipment of product sourced from the U.S. States of Florida, California, and Texas.

<sup>2</sup>Shipments of product sourced from foreign locations.

<sup>3</sup>Average minimum low and maximum high prices per pound were calculated from the disclosed price per package divided by the corresponding weight in pounds. Prices are from wholesale markets in New York City. The weekly wholesale pound price is the unweighted average of all varieties and package types reported for the commodity (tangerines). Package weights range from 5–100 pounds.

Note: USDA, AMS movement data for California citrus truck shipments represents average weekly shipments within a 3-month period and do not reflect actual weekly shipment variations.

Source: USDA, Economic Research Service based on data from USDA, Agricultural Marketing Service shipments and terminal market prices.

Despite greater volume during the peak months of 2022/23, USDA, AMS *Market News* reports suggest that wholesale prices were up this year, with an average maximum high price of \$126 per pound over the weeks spanning November 2022–June 2023 compared to \$1.20 for the same period spanning 2021–2022. However, when the peak harvest period is considered separately (January– March), wholesale prices were down at \$1.13 per pound for a minimum low price compared to \$1.15 for the preceding year. This period of reduced prices during the 2022/23 season compared to 2021/22 is consistent with basic economic theory which suggests that an increase in the quantity supplied of a product corresponds to a lower market equilibrium price.

Tangerines are a popular variety of citrus that can be purchased year-round at many grocery outlets. Domestic production only accounts for around 60 percent of the tangerines consumed in the United States, and imports are especially important during the months July–October when domestic production drops off. Nonetheless, tangerines are imported year-round with smaller quantities imported even during the peak of the U.S. tangerine season (January–March). In part due to increases in domestic production, fresh tangerine imports in 2022/23 were down by 25 percent from last year’s record high. U.S. tangerine imports are expected to reach 800 million

pounds by the end of this season (October 2023). Chile, the top supplier of foreign-grown tangerines for the U.S market, accounted for 32 percent of imports. Morocco is the United States' second largest foreign supplier, accounting for 29 percent of imports, while Peru is third with 18 percent.

Exports of fresh tangerines in 2022/23 are up by 72 percent over last season (2021/22) and will reach an estimated 113 million pounds by the season's end in October. The 3 largest export markets for U.S. grown tangerines (Canada, Mexico, and Japan) accounted for 82 percent of U.S. exports. These relatively high export levels may be in response to reduced production in the European Union and Morocco, which are otherwise the top suppliers of tangerines to Canada. Despite the 32 percent jump in U.S. tangerine production this season (2022/23) over last year (2021/22), there was only an 18 percent gain in per capita availability because of higher exports. Per capita availability for fresh tangerines in 2022/23 is estimated to be 6.24 pounds.

**Orange juice production reaches new low in 2022/23:** In USDA, NASS's initial forecast for the 2022/23 season, Florida Valencia orange production was already estimated at an historic low of 17 million boxes or 765,000 tons. Once losses from Hurricane Ian were taken into account, production was revised downward and the final harvest was 9.6 million boxes (434,000 tons), 43 percent lower than the original forecast. Because 96 percent of the Valencia oranges grown in Florida go to the processing market, domestically produced orange juice reached its lowest levels in at least 50 years (111.8 million gallons), down 50 percent from last season.

Historically, Florida's production accounted for about 85 percent of the oranges going to processing in the United States. However, Florida's share of oranges for processing declined to 60 percent this season, with the remaining 40 percent coming from California and Texas. U.S. orange juice imports were up by 30 percent this season at 574 million gallons single-strength equivalent (sse), a level roughly equivalent to the spike observed in 2017/18 when domestic production was affected by Hurricane Irma. Brazil, and Mexico remain the top suppliers of orange juice to the U.S. market, accounting for 73 and 19 percent of imports respectively. Imports have continued to make up an increasing share of domestic availability, accounting for an estimated 82 percent of the orange juice available to U.S. consumers in 2022/23.

Orange juice generally falls into one of two categories: frozen concentrated orange juice (FCOJ), and not from frozen concentrate (NFC). Historically, most of the oranges processed in Florida were made into FCOJ. However, that began to change around the turn of the century. By the 2004/05 season, most of the orange juice made in Florida was NFC varieties. Imports,

on the other hand, have been more evenly split between NFC and FCOJ varieties, although both have fallen since the late 1990s.

Exports of U.S. orange juice reached a record low this season (2022/23) at 31.6 million gallons, about 25 percent below the levels in 2021/22. Canada, the Dominican Republic, and Mexico were the primary importers of U.S. orange juice in 2022/23. Despite a 50-percent drop in production levels this season, domestic per capita availability of orange juice only declined by about 6 percent from last season to 2.09 gallons. This relatively small decline is due to high imports and the sale of frozen inventory. Ending stocks are expected to finish at 172.7 million gallons or 20 percent below last year's historically low ending stocks.

**U.S. grapefruit for processing is down in 2022/23:** 2022/23 is expected to be another record low year for U.S. grapefruit juice production (13 million single strength equivalent gallons, sse). An estimated 36 percent of U.S. grown grapefruit went to processing this season, which is down from last year's share. This decline in grapefruit juice production can be attributed to decreases in Florida's production. Only 31,600 tons were produced for the juice market this season, less than half of last season's amount.

U.S. import levels of grapefruit juice are more than double what they were last season at 9.9 million gallons sse. This bump in imports will help offset declines in production, contributing to a per capita availability on level with last year (0.06 gallons sse). The primary suppliers of grapefruit juice to the United States this season were Mexico, South Africa, and Spain. Grapefruit juice exports this season are about level with last year (5.1 million gallons sse). The three top destination markets for U.S. grapefruit juice for the 2022/23 season were Canada, Japan, and the United Kingdom.

**U.S. citrus production in 2023/24 likely above 2022/23 levels:** USDA, NASS will release initial 2023/24 forecasts for all-citrus production in the United States in October (2023). However, an early forecast pegs navel orange production in California at 74 million 40-lb cartons, up 1 percent from this most recent year, according to the *2023-24 California Navel Orange Objective Measurement Report* released September 12th by the California Department of Food and Agriculture in cooperation with USDA, NASS's Pacific Regional Office. This forecast increase is mostly due to larger fruit size from last year. However, fruit set per tree is forecast down for 2024 to 335 per tree, compared to 351 fruit per tree in 2023.

The results of the first orange and grapefruit maturity tests for Florida's 2023/24 season were published by USDA, NASS on September 12th. Sampled fruit included early oranges including navels, mid-season oranges (mostly Valencia), and red and white seedless grapefruit. The

survey shows that all oranges have higher unfinished juice per box and solids for 2023/24, compared with the same time last season. Unfinished juice refers to preprocessed juice content before pulp and other solids are removed. Red grapefruit have unfinished juice and solids slightly above 2022/23, while white grapefruit are down from last year.

Citrus greening disease, also known as Huanglongbing (HLB), continues to be a major challenge for growers in Florida, by driving up production costs, reducing yields and contributing to attrition of bearing acreage. In Florida, total bearing acreage decreased by another 12 percent this season to 298,400 acres. In the other citrus-producing States, greening is less prevalent yet can lead to higher production costs, as growers increase pesticide applications as a preventative measure, and employ stricter transport protocols. In 2022/23, there was a slight increase over last season in total bearing acreage of California citrus (900 acres about a one-third of one percent), as increased bearing acreage of tangerines and lemons offset continued losses of orange acreage. Texas experienced a 9 percent drop in total bearing acreage, with attrition of both its grapefruit and orange acreage, while lemon acreage in Arizona (that State's primary citrus crop) decreased by 4 percent. Despite continued challenges from greening and long-term trends toward attrition of Florida and Texas citrus acreage, total production for the 2023/24 season is likely to exceed 2022/23 levels, precluding another severe weather event like Hurricane Ian.

# Tree Nuts Outlook

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## Nuts! Almond and Walnut Production Increase in 2023

Early in 2023, record-level precipitation saturated soils and disrupted bee behavior in California. This stormy weather, and late freezes in February 2023, contributed to the lowest almond yields observed since 2006. Although yields were lower, almond acreage increased for the 28<sup>th</sup> consecutive year. Forecasted production is the third highest on record.

In part because hazelnut trees bloom and pollinate in the winter, and because walnut trees pollinate in the late spring, neither hazelnut nor walnut production were drastically affected by the intemperate late winter/early spring conditions. In fact, increases in spring soil moisture helped increase walnut yields and contributed to historically good walnut production.

The *Crop Progress and Condition Reports* released in early September indicate that over 90 percent of California is drought-free. This is a huge improvement from a year ago when all of California was affected by drought, with approximately 95 percent categorized as severe, extreme, or exceptional by the U.S. Drought Monitor scale. By contrast, there is currently less subsoil moisture in Oregon than there was a year ago.

**Almond production predicted to increase in 2023:** The almond crop year starts in August, when harvest begins, and ends in July. Virtually all domestic almond production occurs in California.

Changes in almond production depend on changes in yields and bearing acreage. Changes in bearing acreage stem from a complex series of crop selection decisions growers make over long periods. Yields are affected by growers' input use and production decisions, but they are often driven by weather conditions. If winters are too warm, chilling requirements will not be met, causing yields and quality to plummet. If winters are too cold (particularly in the late winter/early spring), flower buds freeze, and yield losses will be severe. Early spring, when almond trees bloom (February and March), is a particularly important time for domestic almond producers. During these months, managed honeybee colonies are brought into almond orchards to pollinate flowers.

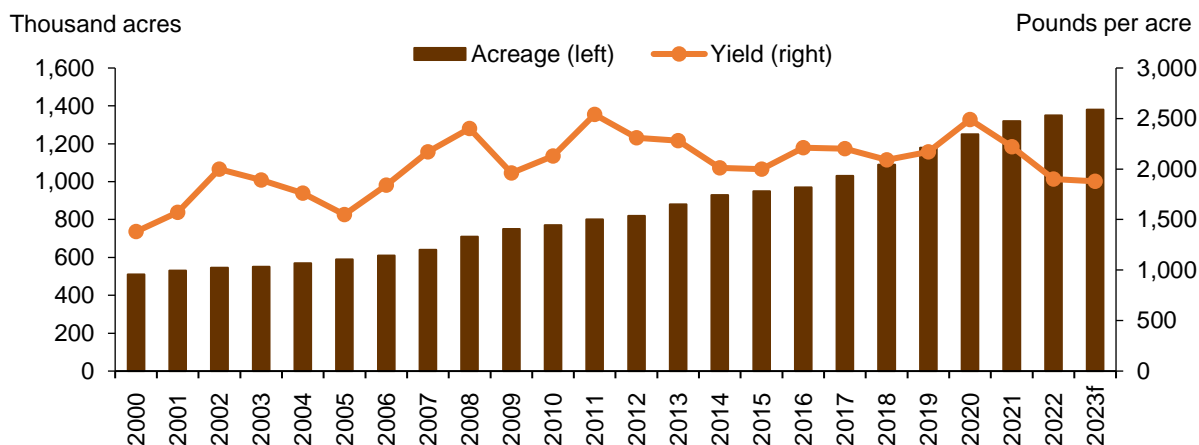
The *2023 California Almond Objective Measurement Report*, released by USDA, NASS in July 2023 indicated that neither bearing acreage nor yields had changed substantially from last year. This could stress almond producers, given that yields in 2022 were the lowest since 2009.



From 2022 to 2023, bearing acreage increased by approximately 2 percent (from 1.35 million bearing acres in 2021/22 to 1.38 million bearing acres in 2022/23), while yields dropped by approximately 1 percent (from 1,900 pounds per acre in 2021/22 to 1,880 pounds in 2022/23). These combined changes led to a 1.5 percent increase in almond production, from approximately 2.57 billion pounds in 2022 to 2.6 billion pounds in 2023. Steady increases in domestic acreage, and the number of trees per acre, have contributed to historically high levels of almond production (figure 19).

Figure 19

**Almond acreage has increased steadily since the turn of the century, yields have fluctuated**



f = forecast.

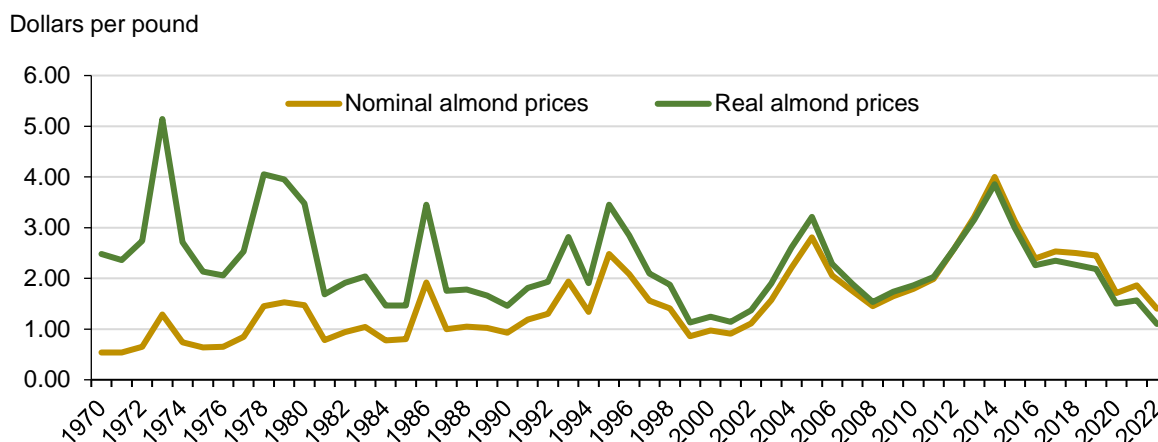
Source: USDA, Economic Research Service using data from the USDA's National Agricultural Statistics Service.

In the 2020/2021 marketing year, exports reached a historic peak of 2.09 billion pounds. Since then, exports have fallen. In the 2021/2022 marketing year, 1.94 billion pounds of almonds were exported (a 7 percent decrease from the prior year). In 2022/2023, exports are expected to drop by approximately 3 to 4 percent. Although exports have increased by approximately 52 percent since 2010, production has risen by close to 60 percent.

In 2022, almond prices (\$1.40 per pound) were approximately 65 percent lower than the \$4 per pound received by almond growers in 2014, and 25 percent lower than the \$1.86 per pound received in 2021. Because there have been high levels of inflation since 2014 (causing a dollar to be worth less in 2023 than it was a decade ago), these changes in nominal prices understate decreases in almond prices. Adjusting for inflation (using the Bureau of Economic Analysis's Gross Domestic Product Chain-Type Price Index) suggests that the average real almond price received by growers in 2022 was lower than the average price received in 1999, which had been the lowest on record (figure 20).

Figure 20

**Nominal almond prices cracked in 2014, causing inflation adjusted prices to reach historic lows**



Real dollars = 2012.

Source: USDA, Economic Research Service using data from the USDA's National Agricultural Statistics Service and the Bureau of Economic Analysis.

Beginning stocks for almonds were the highest on record at the start of the 2022/23 season (839 million pounds) and expected to be only 5 percent lower (792 million pounds) in 2023/24. Given that this year's production is expected to be higher than in 2022, prices are likely to remain low relative to 5- and 10-year averages.

Hurricane Hilary affected all almond growing regions in California this season, but particularly in the southern San Joaquin Valley (Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare counties), where the majority of almonds are grown. A silver lining for producers is that high humidity levels, which tend to reduce almond quality, can prop up prices for higher quality nuts. Increases in almond exports could also drive prices up. Early this summer, following a visit by India's Prime Minister, retailatory tariffs on U.S. almonds and walnuts were removed. Shipments of almonds to India have increased over the past decade, and India is currently the top export market for California almond producers. In 2022, more than 7 out of every 10 almonds were exported.

**Walnut production predicted to increase in 2022/23:** The walnut crop year starts in September, a month later than almonds, and ends in August. Walnut production is concentrated in California, but commercial walnut orchards are also located in Oregon, Washington, and a variety of other States. Midwestern and eastern cultivation of walnut trees is generally for lumber, not nut production.

Walnut pollination tends to be delayed by warm temperatures in the late fall/early winter, and advanced by warm conditions during the late winter and early spring. Unlike almond trees,

walnut trees can be wind pollinated, and honeybees are not essential to the production process. Like almonds, walnuts are alternate bearing; small crops generally follow large ones.

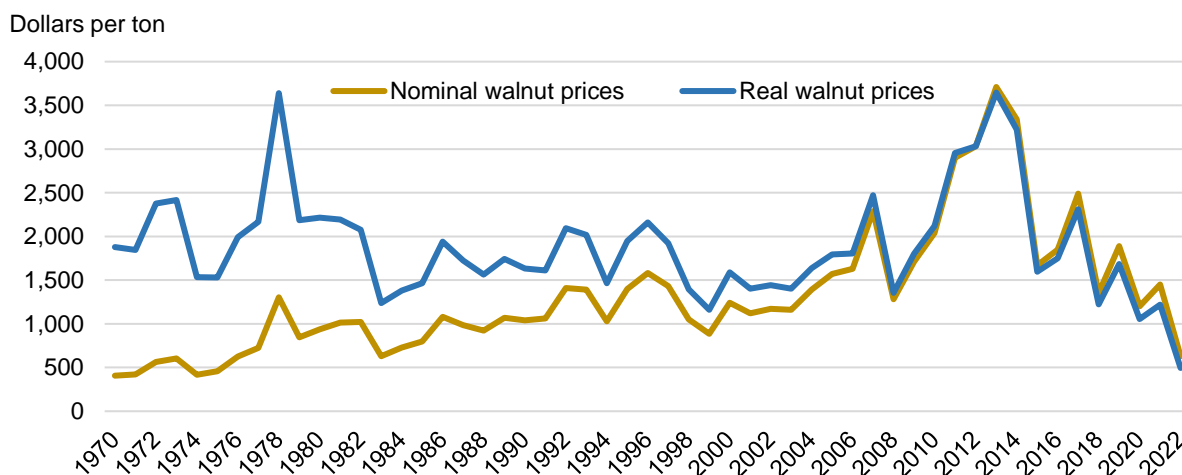
The *2023 California Walnut Objective Measurement Report*, released by USDA, NASS on September 1, forecasts that 2023 will be the first year since 1999 that walnut bearing acreage decreases, dropping from 400,000 acres in 2022 to 385,000 acres in 2023.

Despite the forecast reduction in acreage, walnut production is expected to increase by 5 percent, tying the record-breaking 790,000 tons produced in 2020. High levels of production can be attributed to increases in the average number of trees per bearing acre (which has increased steadily over time and is up another 1.5 percent from 2022) and favorable weather. Cool winter temperatures and a wet spring contributed to a 9 percent increase in yields, from 1.88 tons/acre in 2022 to 2.05 tons per acre in 2023.

Over the past few decades, the export market has become increasingly important to domestic walnut producers. On average, approximately seventy percent of the walnuts produced domestically are exported. A historically high volume of walnuts was exported in 2021/22, approximately 487 million pounds (shelled basis). That volume is expected to decrease during the 2022/2023 marketing year, but to increase in 2023/2024.

The forecast reduction in walnut acreage may be in response to high input costs and low output prices. Figure 21 illustrates recent declines in walnut prices. Average inflation-adjusted prices in 2022 were more than 50 percent lower than the second and third lowest years on record, 2020 (\$1,054 per ton) and 1999 (\$1,161 per ton).

Figure 21  
**Inflation-adjusted walnut prices peaked in 2013, before falling in recent years**



Real dollars = 2012.

Source: USDA, Economic Research Service using data from the USDA's National Agricultural Statistics Service and the Bureau of Economic Analysis.

Two offsetting factors are currently driving changes in walnut prices: a record-breaking crop, which could depress prices; and increases in walnut exports, which could prop prices up.

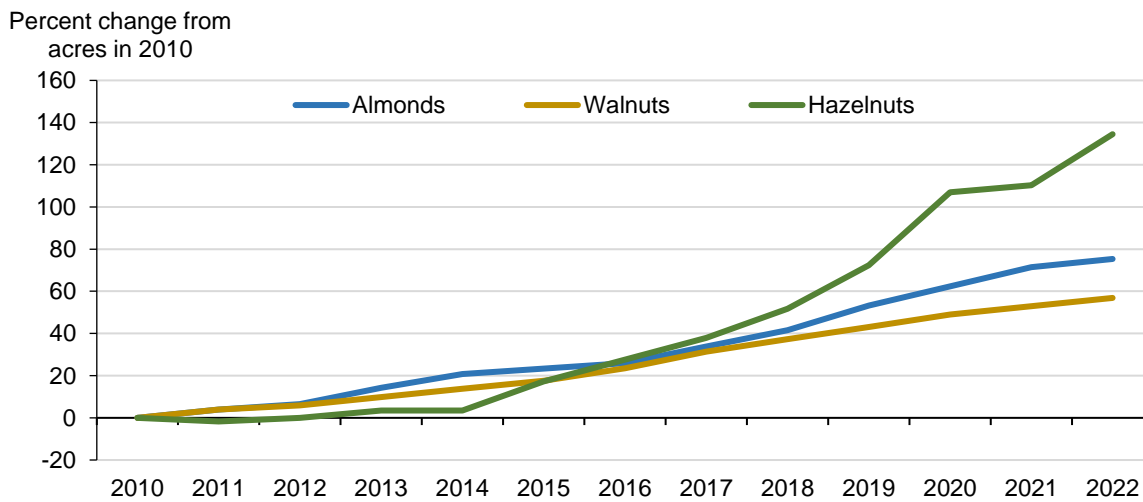
**USDA, NASS hazelnut forecast unavailable in 2022/23:** The hazelnut crop year starts in July, when harvest begins, and ends in June. Hazelnut production is concentrated in Oregon, but hazelnuts are also grown in Washington and a few other states.

Unlike almonds or walnuts, the hazelnut pollination season starts in January when long, droopy flowers called catkins spread pollen to female flowers on nearby trees. This pollen remains dormant while female flowers develop, and fertilization occurs in May and/or June. Approximately 6 weeks later hazelnuts are ready for harvest.

This year, the USDA, NASS *Objective Yield Survey* for hazelnuts is not available. However, it is possible to discuss broader trends and to use industry estimates to forecast market changes. As in the almond and walnut markets, hazelnut bearing acreage has increased over the last 40 years. However, increases in hazelnut acreage have been particularly pronounced since 2010. From 2010 to 2022, hazelnut acreage increased by approximately 134 percent, almond acreage increased by 75 percent, and walnut acreage increased by 57 percent (figure 22).

Figure 22

**Hazelnut acreage has increased even more quickly than walnut or almond acreage over the last decade**



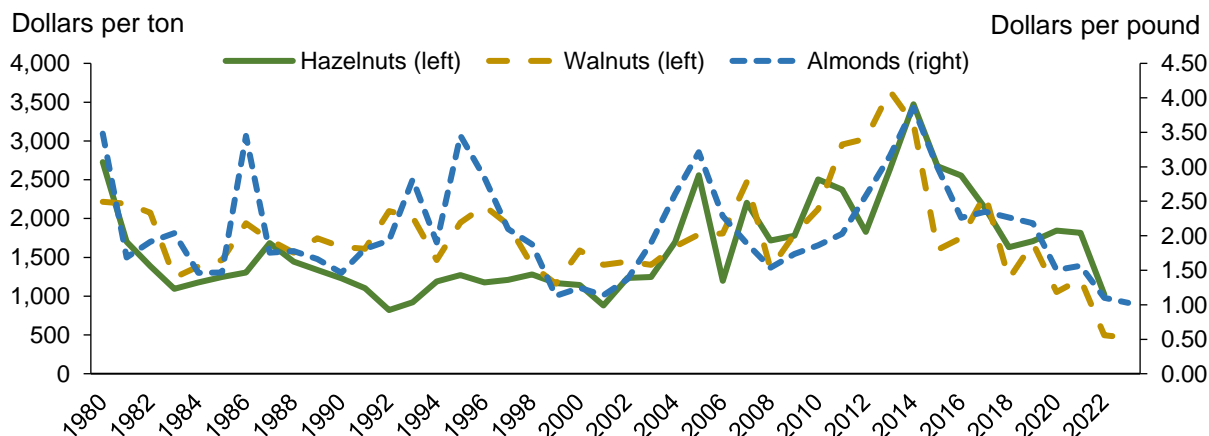
Source: USDA, Economic Research Service using data from the USDA's National Agricultural Statistics Service.

Increases in hazelnut acreage have contributed to increases in hazelnut production, which has put downward pressure on hazelnut prices. As illustrated in figure 23, almond, walnut, and hazelnut prices have fallen over the last decade. Unlike prices for almonds or walnuts, real

hazelnut prices are not at historic lows. Nonetheless, average annual hazelnut prices in 2022 were still the fourth lowest since 1970.

Figure 23

**Real nut prices reached historic heights in 2013 and 2014, before being shaken from the tree**



Real dollars = 2012.

Source: USDA, Economic Research Service using data from the USDA's National Agricultural Statistics Service and the Bureau of Economic Analysis.

Preliminary reports suggest that this year's hazelnut crop could be record-breaking, perhaps even larger than the 85,000 tons industry insiders were anticipating (a total which already would have exceeded last year's record-tying production by 10 percent). Record breaking domestic production and high inflation in Turkey (a major global hazelnut producer) could continue to put downward pressure on hazelnut prices in 2023/24.

## Special Article

# Taste for Tropical Fruit: Rising Imports Support Growing Per Capita Availability for Bananas, Mangoes, and Pineapples

Helen Wakefield and Seth Wechsler

Tropical fruits such as bananas, mangoes, and pineapples are increasingly popular fresh fruit choices in the United States. One way to analyze trends in food popularity is to examine changes in per capita availability. Per capita availability is a proxy for consumption that provides a rough estimate of the amount of food sold by producers and marketed by retailers and food service providers. Annual per capita availability is defined as the sum of domestic production, imports, and changes in storage, minus exports, divided by the U.S. population.

From 1970 to 2022<sup>1</sup>, the combined per capita availability of bananas, mangoes, and pineapples more than doubled from 18.2 pounds per person to 38.6 pounds (USDA, Economic Research Service, 2023). On average from 2020 to 2022, bananas were the most popular fresh-market fruit in the United States with the highest per capita availability at 26.9 pounds per person (table SA1). Over the same period, pineapple availability was 7.8 pounds per person—higher than strawberries (7.3 pounds) and lower than oranges (8.4 pounds). At 3.7 pounds per person, mangoes were more popular than blueberries (2.5 pounds), peaches and nectarines (2.3 pounds), and pears (2.9 pounds).

Although U.S. consumers favor tropical fruits such as bananas, mangoes, and pineapples, the climate in most of the United States is not well suited to their production. Tropical fruits are typically grown in hot, humid regions close to the equator. While some domestic tropical fruit production is located in Hawaii, Florida, California, and Texas, most of the tropical fruit consumed in the United States is imported from Mexico and countries throughout Central and South America. This article reports trends in domestic bearing acreage, annual imports, and per capita availability for bananas, mangoes, and pineapples.

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<sup>1</sup> 2022 per capita availability numbers in this special article are preliminary.

**Table SA1--U.S. tropical fruit imports and per capita availability**

	Unit	Average				Percent Change, 2010–12 to 2020–22
		1990–92	2000–02	2010–12	2020–22	
Banana imports	Million pounds	7,241.7	8,655.4	9,234.7	10,219.1	10.7
Banana availability	Pounds per person	25.5	27.3	26.0	26.9	3.5
Pineapple imports	Million pounds	259.2	768.5	1,874.6	2,596.4	38.5
Pineapple availability	Pounds per person	2.0	3.4	5.9	7.8	31.5
Mango imports <sup>1</sup>	Million pounds	167.0	541.1	773.8	1,236.2	59.8
Mango availability	Pounds per person	0.7	1.9	2.4	3.7	54.2

<sup>1</sup> From 1990 to 1992, mango imports figures included guava and mangosteen imports.

Source: USDA, Economic Research Service *Fruit and Tree Nut Yearbook 2022*; USDA, Economic Research Service using data from the U.S. Department of Commerce, Bureau of the Census.

## Tropical Fruit Bearing Acreage in United States Is Low

Data from the 2017 Census of Agriculture indicates that domestic bearing acreage for mangoes was 2,598 acres—larger than banana acreage (1,885 acres) and pineapple acreage (1,452 acres). Mango, banana, and pineapple bearing acreage is concentrated in Florida and Hawaii. However, bananas and mangoes are also grown in California and Texas.

Hawaii lies just south of the Tropic of Cancer and has a mild tropical climate well suited to tropical fruit production. Most of Florida is considered humid subtropical, but some tropical fruit production is found in southern Florida’s tropical areas. The southernmost tip of Texas and the Mediterranean-type and arid climates of southern California have minimal acreage dedicated to tropical fruit.

Due in part to low levels of domestic acreage, the USDA, National Agricultural Statistics Service (NASS) does not report annual production for bananas, mangoes, or pineapples. Therefore, the majority of USDA ERS historical per capita availability estimates for bananas, mangoes, and pineapples are based on annual import volumes from countries with tropical climates.

## United States Is the Top Importing Country by Volume of Bananas, Pineapples, and Mangoes

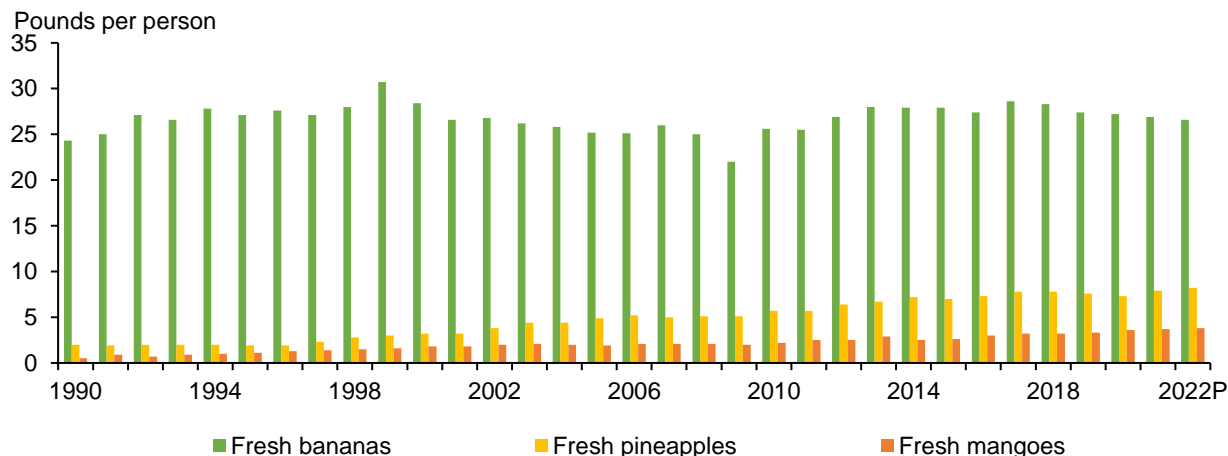
In 1961, the Food and Agriculture Organization of the United Nations started reporting import volume data for fresh bananas. Since then, the United States has been the top importer of fresh



bananas by volume annually. The United States has been the top importer by volume since 1975 for fresh mangoes<sup>2</sup> and since 1997 for fresh pineapples. U.S. imports of tropical fruit typically come from Mexico, Central America, and South America.

**Despite plateauing per capita availability, bananas reign supreme in the American fresh fruit scene:** Bananas were the leading fresh-market fruit in the United States in 2021 with 26.9 pounds of fresh bananas available per person (USDA, ERS, 2023). Preliminary estimates suggest that per capita availability dropped slightly in 2022 to 26.6 pounds per person. Per capita availability for bananas peaked in 1999 at 30.7 pounds per person, before trending downward to its lowest point since 1984 at 22 pounds per person in 2009 (during the Great Recession). Since then, banana availability has rebounded to an average of 27.3 pounds per person over the last 5 years. While the average per capita availability of bananas is high relative to other fresh fruits, it has been relatively flat for decades and has not experienced the rapid growth recently observed in pineapples and mangoes (figure SA1).

Figure SA1  
**Banana per capita availability high but relatively flat compared to mangoes and pineapples**



P = Preliminary.  
 Source: USDA, Economic Research Service *Fruit and Tree Nut Yearbook Tables*.

In 2022, the United States imported approximately 10.15 billion pounds of fresh bananas. In early 2023, banana import volume from January to July were 1.8 percent higher than the same period last year. Average import volume from 2020 to 2022 was 19.5 percent higher than the average volume from 2000 to 2009. Most bananas imported by the United States are grown in Central and South American countries such as Guatemala, Ecuador, and Costa Rica.

<sup>2</sup> Fresh mangoes, guavas, and mangosteens.

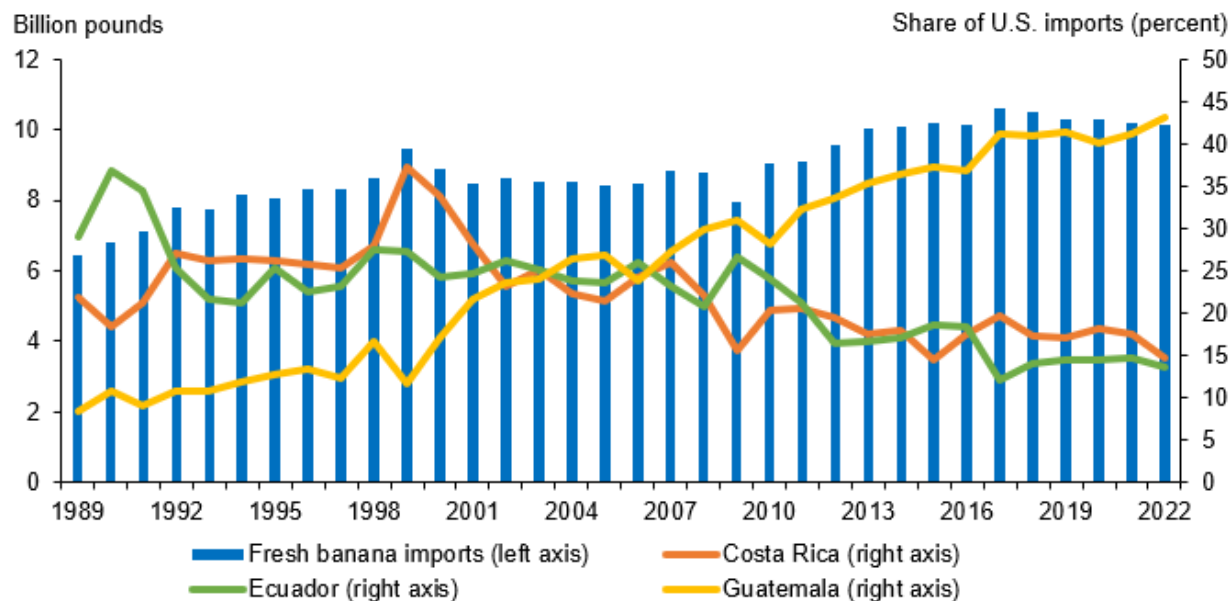
Since 2007, following the implementation of the Dominican Republic-Central America-United States Free Trade Agreement<sup>3</sup> (CAFTA-DR), most banana imports have come from Guatemala. CAFTA-DR sought to create new economic opportunities by opening markets and eliminating tariffs (Office of the United States Trade Representative, 2012). After a free trade agreement with the United States, the most efficient producers of popular import commodities to the U.S. market, such as fresh tropical fruits, often saw growth in their market share (Gerval, 2023). This is evident in the case of Guatemala’s fresh banana imports.

Imports of fresh bananas from Guatemala have steadily increased from approximately 535 million pounds in 1989 to 4,376 million pounds in 2022. Guatemala surpassed Ecuador and Costa Rica in 2007, the second and third largest exporters to the United States by volume, with 27.3 percent of the import share at 2.41 billion pounds (figure SA2). Over the last 5 years, fresh bananas from Guatemala comprised approximately 41 percent of U.S. banana imports at 4.26 billion pounds on average.

Increases in fresh banana imports from Guatemala have helped to offset slight declines in imports from Costa Rica and Ecuador. Imports from Costa Rica and Ecuador peaked in 1999 at 3.53 billion and 2.57 billion pounds, respectively. Despite the fact that Ecuador currently exports more bananas than any other country, domestic U.S. banana imports from Ecuador have declined since 1999 (Food and Agricultural Organization of the United Nations, 2023).

Figure SA2

**Guatemala takes the lead on fresh banana imports to the United States**



Source: USDA, Economic Research Service using data from the U.S. Department of Commerce, Bureau of the Census.

<sup>3</sup> For more information on free trade agreements and agricultural trade with developing countries, see USDA, Economic Research Service’s EIB-240: *Do Free Trade Agreements Benefit Developing Countries? An Examination of U.S. Agreements*.

### Mango popularity soars as imports hit record high to meet steadily increasing demand:

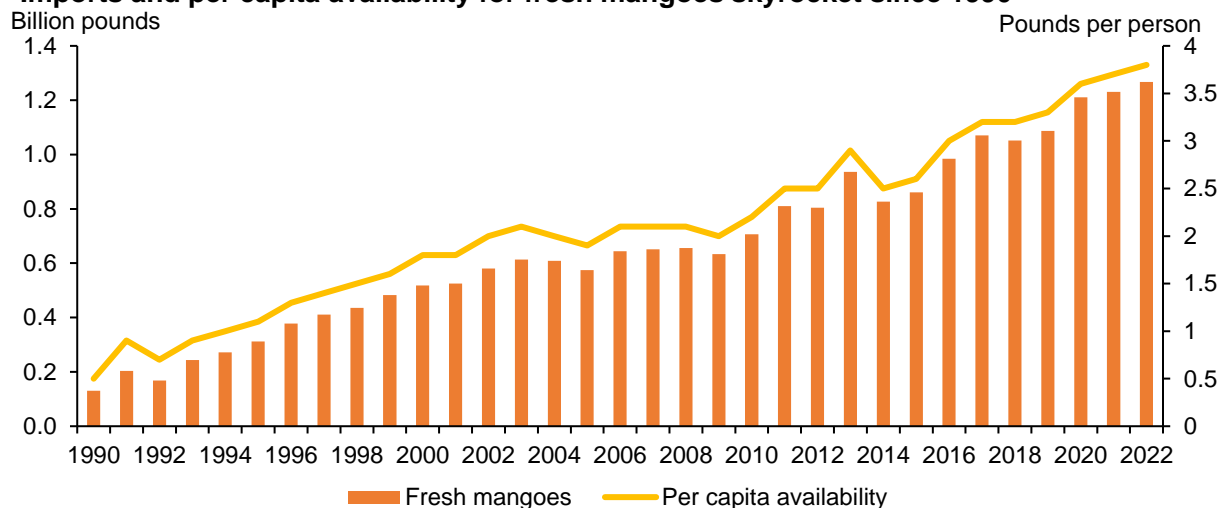
Per capita availability for fresh mangoes has more than tripled since the 1990s as import volumes have increased. In 2021, a record breaking 3.7 pounds of fresh mangoes were available per person in the United States. The 2022 estimate is expected to set a record of 3.8 pounds per person (figure SA3). On average, the per capita availability of mangoes has increased by approximately 1 pound per decade since 1990.

In 2022, the United States imported a record high 1.26 billion pounds of fresh mangoes, up 3 percent year-over-year. Preliminary estimates suggest a new record may be set in 2023. As of July 2023, year-to-date imports were up 7.1 percent. Import volume has more than doubled since the 2000s and is currently 35 percent higher than in the 2010s.

Since 1993, most U.S. mango imports have come from Mexico. Over the last 5 years, fresh mangoes from Mexico made up approximately 64 percent of U.S. mango imports at 741 million pounds on average. Though Mexico is the primary U.S. source for fresh mangoes, Mexico's share of the domestic market has declined from over 82.4 percent in the late 1990s, as Peru and Ecuador increased mango exports to the United States. Peru's market share has risen from less than 3 percent in the late 1990s to 12.3 percent over the last 5 years. Ecuador has increased its market share from 1.7 to 9.8 percent over the same period.

Figure SA3

#### Imports and per capita availability for fresh mangoes skyrocket since 1990



Source: USDA, Economic Research Service using data from U.S. Department of Commerce, Bureau of the Census.

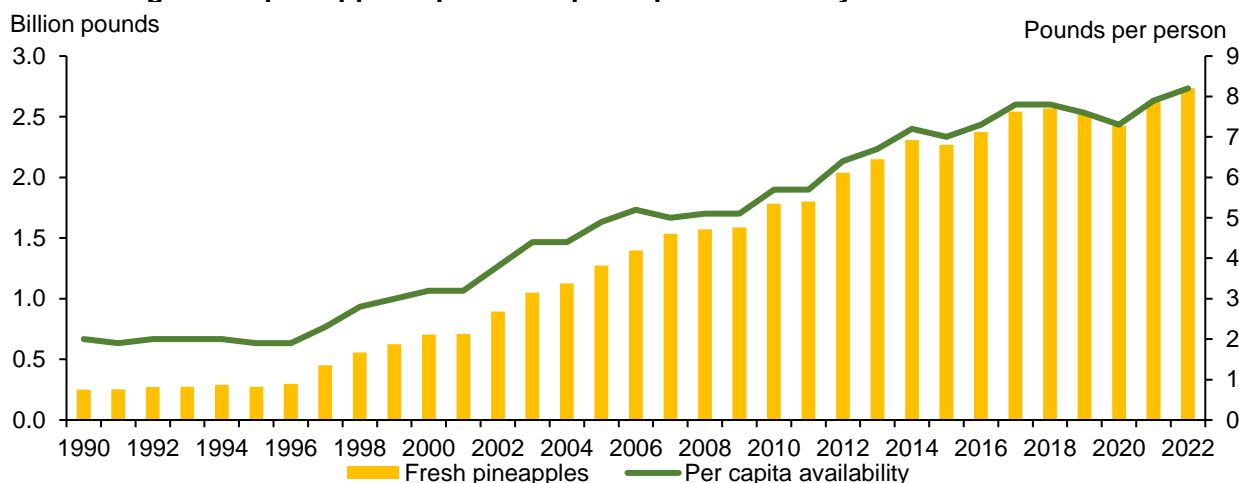
**Costa Rica dominates the U.S. pineapple market:** In 2021, fresh pineapple per capita availability increased to 7.9 pounds per person. Estimated per capita availability in 2022 is expected to set a record of 8.2 pounds per person (figure SA4). This is up about 6.5 pounds

from average availability in the 1980s. Increases in per capita availability accelerated at the turn of the century, doubling from 2.2 pounds in the 1990s to 4.4 pounds in the 2000s.

Fresh pineapple imports reached a record high 2.73 billion pounds in 2022, up 4 percent year-over-year, with 87 percent coming from Costa Rica. Average import volume of fresh pineapple from 2020 to 2022 is more than 6 times greater than in the 1990s and 16 percent higher on average than in the 2010s.

Most imported fresh pineapples come from Costa Rica. Since 2000, on average, approximately 84 percent of pineapples imported into the U.S. have originated from Costa Rica. In 2022, 2.38 billion pounds of fresh pineapple imports came from this Central American country, a 5.1 percent year-over-year increase. Honduras and Mexico hold a distant second and third places, respectively, as pineapple exporters to the U.S. market, with a combined 5-year average share of 10.6 percent of the U.S. import market.

Figure SA4  
**Record high fresh pineapple imports and per capita availability for 2022**



Source: USDA, Economic Research Service using data from U.S. Department of Commerce, Bureau of the Census.

## Conclusion

Over the past few decades, tropical fruits have gained in popularity among U.S. consumers. With limited domestic agricultural acreage in tropical climate zones, tropical fruit production in the U.S. is small relative to demand. Therefore, most of the bananas, pineapples, and mangoes consumed in the United States are imported. Bananas continue to be a staple fruit for U.S. consumers. The versatility of pineapples and mangoes and the increased availability due to rising imports has helped them become increasingly popular fresh fruit choices.

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## Special Article

# Weather and Seasonal Production Influence Organic Premiums for Fresh California Sweet Cherries

**Gregory Astill, Yanan Liu, H. Allen Klaiber, and Xiao Dong**

In the United States, sweet cherries are grown predominantly in Washington (40 percent of total acres according to the 2017 Census of Agriculture), California (35 percent), and Oregon (14 percent). California growers start shipping sweet cherries in late April or early May before Washington and Oregon cherries enter the market in June. Prices are generally highest at the beginning of the California season.

Fresh sweet cherries are a highly perishable, seasonal fruit. Unlike some fresh fruits that can be stored under controlled atmosphere and temperature for up to 6 months—like apples and lemons—under ideal conditions fresh sweet cherries can only be stored for 2 to 4 weeks. While modern refrigerated supply chains have enabled the distribution of highly perishable produce commodities across the country and around the globe, local supply conditions can still exert a significant effect on local markets. This is especially the case in the U.S. fresh sweet cherry market where imports made up only 5.5 percent of disappearance in 2017 (USDA, Economic Research Service (ERS) Fruit and Tree Nuts Yearbook, 2022).

Organic products frequently cost more than conventional products. At the San Francisco, California Terminal Market, between 2015 and 2021, selected organic fruits were sold at prices between 55 and 66 percent higher than conventional fruit (Carlson et al., 2023). The difference between the organic price and the conventional price is called the organic premium. Consumers may also be willing to pay premiums for local products (Low et al., 2015; Dong et al., 2023; Connolly & Klaiber, 2014; Darby et al., 2008).

According to data from Circana OmniMarket Core Outlets (formerly IRI InfoScan) of weekly sales in California food retail stores during the California cherry season for 2011–2013 and 2015–2017, fresh organic sweet cherries cost \$6.28 per pound on average while conventional cherries averaged \$4.62 per pound (table 1). This corresponds to an organic premium of \$1.66 per pound or a price that is 36 percent higher for fresh organic sweet cherries compared to conventional.

Additionally, the organic premium has been observed to decrease when local availability decreases. During the 2014 California fresh sweet cherry season an unusually warm winter led

to a 60 percent decline in local cherry production (National Agricultural Statistics Service (NASS) Annual Surveys, 2023). The price of fresh conventional sweet cherries rose 33 percent above average, the price of fresh organic sweet cherries rose 8 percent above average, and the organic premium decreased by 61 percent to only \$0.64 per pound (table 1).<sup>4</sup>

In other words, when local availability of fresh sweet cherries decreased, the price of conventional cherries increased more than the price of organic cherries, and the organic price premium shrank. This effect could be a result of both supply and demand side factors. For instance, changes in local growing conditions might have a different impact on the supply of conventional cherries than they do on the supply of organic cherries. It is also possible that consumers react differently to changes in the prices of conventional cherries than they do to changes in organic cherry prices.

**Table 1. Differences in organic premia of fresh sweet cherries in California grocery stores during the California season, 2011–2017**

Local production shocks	Year	Conventional	Organic	Organic premium	Organic premium
		----- Dollars per pound -----			-- Percent --
Sufficient chill hours	2011	4.99	5.33	0.33	7
	2012	4.27	4.99	0.73	17
	2013	4.73	5.94	1.21	26
	2015	4.44	7.95	3.51	79
	2016	4.72	7.09	2.36	50
	2017	4.59	6.41	1.82	40
	Average	4.62	6.28	1.66	36
Insufficient chill hours	2014	6.15	6.80	0.64	10
	2014 change from average	----- Percent -----			
		33	8	-61	-71

Note: Price premiums (U.S. dollars) are calculated by the price difference between conventional and organic sweet cherries whereas premiums in percentage terms are calculated by the price difference divided by the conventional prices, i.e. (organic price – conventional price)/conventional price\*100. Retail prices are average price for each season from 2011 to 2017 using grocery store sales data.

Source: USDA, ERS calculations using Circana OmniMarket Core Outlets (formerly IRI InfoScan), 2011–2017.

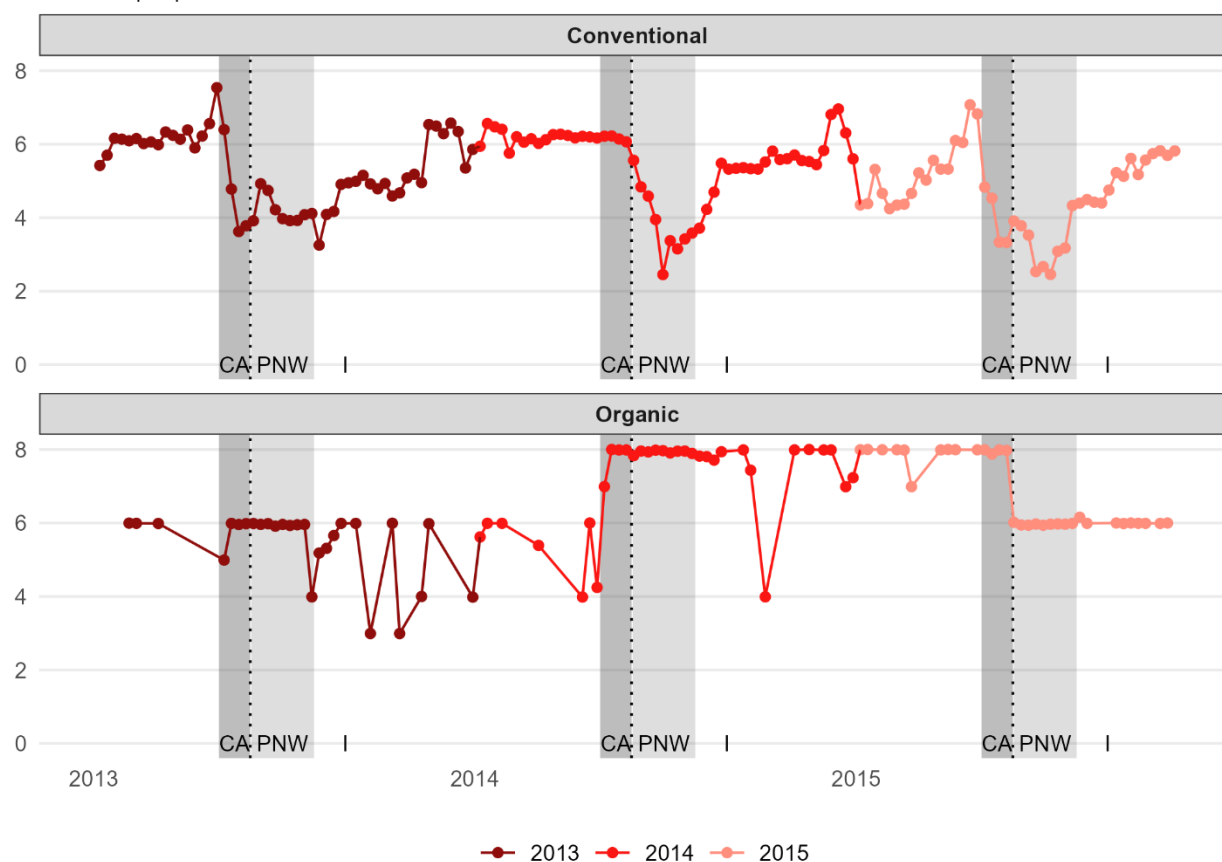
<sup>4</sup> Disclaimer: The analysis, findings, and conclusions expressed in this report should not be attributed to Circana (formerly IRI).

# Seasonality of Cherry Prices

Data from Circana suggests that prices for fresh sweet cherries averaged between \$2.25 and \$7.50 per pound in California grocery stores from 2013 to 2015 (figure 1). This wide range in prices appears to be associated with seasonal supply and demand. In most years, fresh sweet cherry prices drop during the California cherry season, typically May through June, and then rise with the Pacific Northwest season, typically June through August. In the off-season when fresh sweet cherries are imported, typically September through April, prices are 25 to 50 percent higher than the annual average.

**Figure 1. Weekly fresh sweet cherry prices at California grocery stores, 2013–2015**

U.S. dollars per pound



Note: CA represents the sweet cherry production season for California, PNW for the Pacific Northwest including Washington and Oregon, and I for the off-season when most cherries on the market are imported.  
 Source: USDA, ERS calculation using Circana OmniMarket Core Outlets (formerly IRI InfoScan) data, 2013–2015.

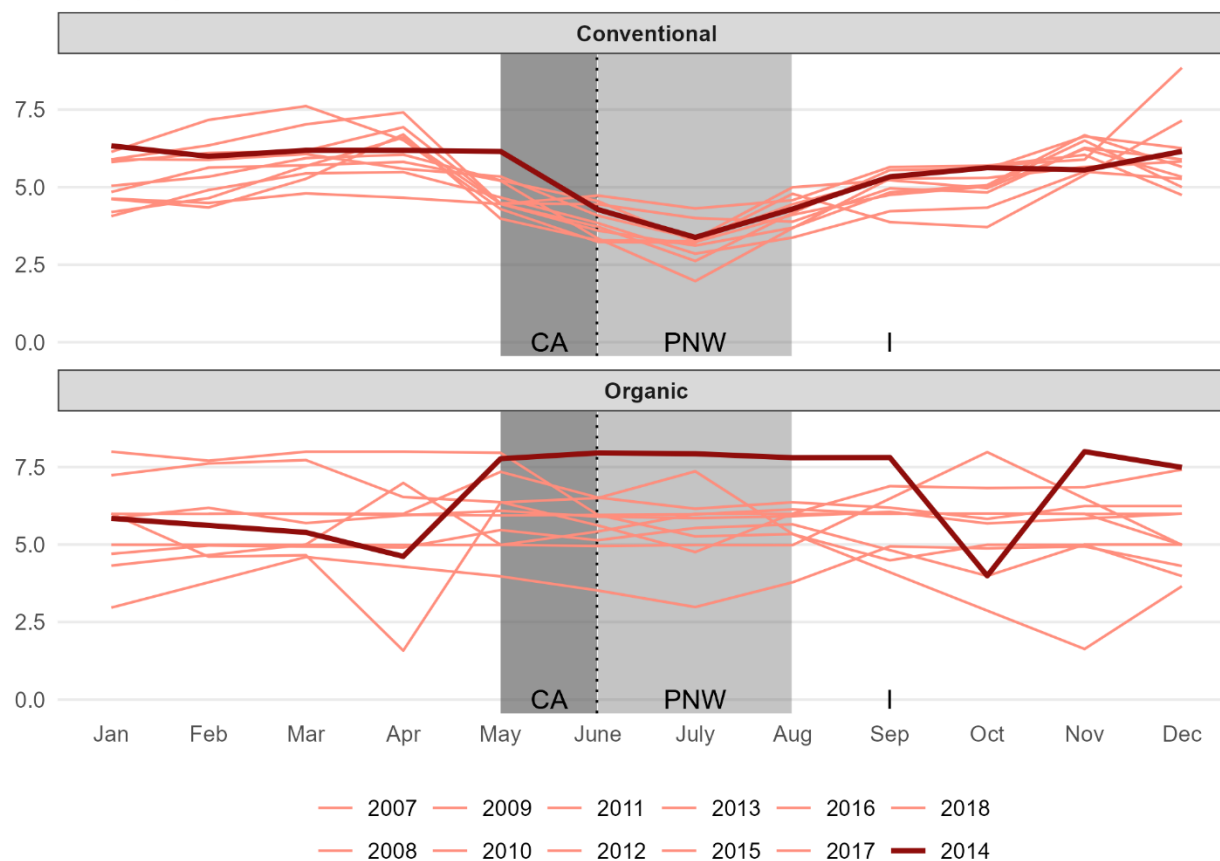
In 2014, insufficient chilling hours from a warm winter contributed to a 60 percent year-over-year decline in California sweet cherry production, resulting in the smallest crop since 1998 (USDA, NASS Annual Surveys, 2023). This reduction in supply contributed to increased prices for fresh sweet cherries in California grocery stores. Conventional fresh sweet cherry prices were 33



percent above average while organic fresh sweet cherry prices were 8 percent above average. Figure 2 demonstrates that fresh sweet cherry prices did not begin decreasing in May as usual, and only began decreasing in June at the beginning of the Pacific Northwest season.

**Figure 2. Monthly fresh sweet cherry prices at California grocery stores, 2007–2018**

U.S. dollars per pound

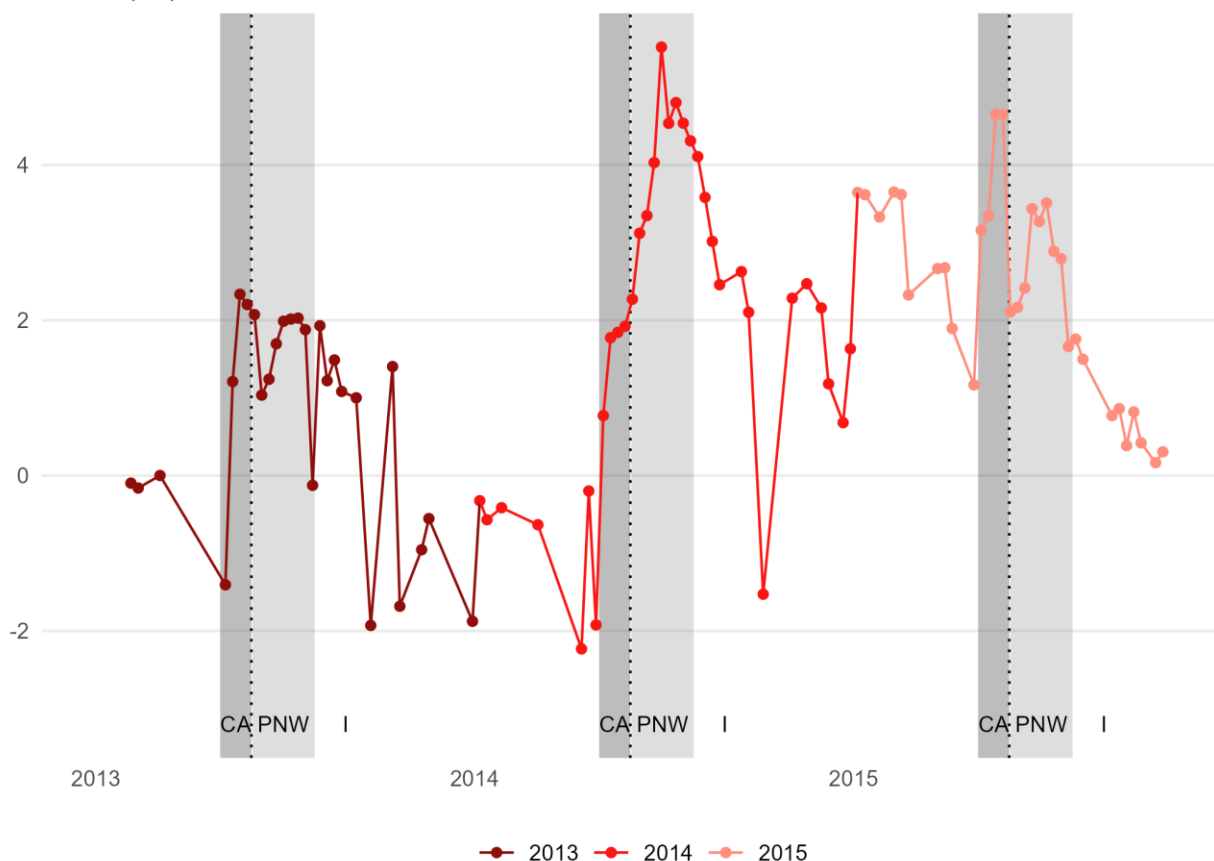


Note: CA represents the sweet cherry production season for California, PNW for the Pacific Northwest including Washington and Oregon, and I for the off-season when most cherries on the market are imported.  
 Source: USDA, ERS calculation using Circana OmniMarket Core Outlets (formerly IRI InfoScan) data, 2007–2018.

Figure 3 affirms that the organic premium for fresh sweet cherries in California grocery stores varied throughout the year, typically becoming largest during the domestic production season between May and September. The maximum organic premium for fresh sweet cherries was greater in 2014 than in 2013 or 2015.

**Figure 3. Weekly premium of fresh organic sweet cherries in California grocery stores, 2013–2015**

U.S. dollars per pound



Note: CA represents the sweet cherry production season for California, PNW for the Pacific Northwest including Washington and Oregon, and I for the off-season when most cherries on the market are imported.  
Source: USDA, ERS calculation using Circana OmniMarket Core Outlets (formerly IRI InfoScan) data, 2013–2015.

## Conclusion

Fresh sweet cherries—both conventional and organic varieties—are a highly perishable, seasonal fruit grown predominantly in Washington, California, and Oregon. Harvest times vary by State, and in 2014, a 60 percent reduction in production during the California season led to a 33 percent increase in price for fresh conventional sweet cherries and an 8 percent increase in price for fresh organic sweet cherries compared to other years. The organic premium for fresh sweet cherries in 2014, when local supply was limited, decreased by 61 percent to \$0.64 per pound compared to \$1.66 per pound on average for other years. This historical event shows that a change in growing conditions in a highly seasonal and geographically concentrated crop—like fresh sweet cherries—can have significant impacts on market outcomes.

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