# Recent Trends in Certified Organic Tree Fruit in Washington State: 2021 

Document date: June 2022



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Abbreviations used:
CSANR WSU Center for Sustaining Agriculture \& Natural Resources
CSA Community Supported Agriculture operation
AMS USDA Agricultural Marketing Service
ERS USDA Economic Research Service
NOP USDA National Organic Program
NASS USDA National Agricultural Statistics Service
WSDA Washington State Dept. of Agriculture

The following set of slides presents the current data on organic tree fruit area and production for Washington State, with some associated global and national data. Data come from various sources including certifiers [e.g., Washington St. Dept. of Agriculture (WSDA) Organic Program; Oregon Tilth Certified Organic (OTCO), California Certified Organic Farmers (CCOF)], The World of Organic Agriculture annual publication http://www.organic-world.net/index.html, USDA, Calif. Dept. Food and Agric. (CDFA), and industry sources [Washington State Tree Fruit Association (WSTFA), Wenatchee Valley Traffic Association (WVTA), Washington Growers Clearinghouse (WGCH), Pear Bureau Northwest (PBNW)]. Data from WSDA were extracted on 2/24/2020.

Organic agriculture continues to be consumer driven. Globally, retail sales of organic food were $\$ 129$ billion in 20202, up $15 \%$. The U.S. was the largest single country market ( $\$ 56.4$ billion), followed by Germany ( $\$ 17.1$ billion), France ( $\$ 14.5$ billion), and China ( $\$ 11.6$ billion). Switzerland was the country with the highest per capita organic expenditure, at about 6\% of total food dollars. The global organic market has been divided between North America and Europe for years, but the Asian market is accounting for an increasing share (slide 4).

## Consumer Demand for Organic Food

Market Share of Sales by Region (\%)

|  | North Amer. | Europe | Other |
| :---: | :---: | :---: | :---: |
| 2003 | 46 | 52 | 2 |
| 2007 | 43 | 54 | 3 |
| 2009 | 48 | 48 | 4 |
| 2011 | 50 | 46 | 4 |
| 2013 | 49 | 43 | 8 |
| 2015 | 51 | 39 | 8 (Asia) |
| 2017 | 50 | 41 | 9 (Asia) |
| 2018 | 48 | 43 | 9 (Asia) |
| 2019 | 45 | 43 | 12 (Asia) |
| 2020 | 44 | 43 | 13 (Asia) |

Note: \% has changed in part due to US\$ vs euro currency fluctuations.

The next slide (6) shows the growth in retail sales of organic food in the U.S. since 2002. Growth dipped during the recession but did not stop. The percent annual growth is declining as total sales increase, but the annual increase in sales dollars is fairly steady. Growth of the fruit and vegetable category was more stable (slide 7), confirming that these products are very core to organic consumers. These consumer data come from the Organic Trade Association (OTA) annual industry survey.

More data on the organic food sector are becoming available. Organic fruit sales grew faster than organic vegetables since 2011. Both volume and sales $\$$ of organic fruit in the U.S. increased faster than overall organic food in 2020. Berries, apples, and bananas have been the top 3 selling organic fruits (slide $\underline{8}$ ). In 2016, the top 3 organic fruits accounted for $70 \%$ of all organic fruit sales, compared with $43 \%$ for the top 3 conventional fruits. Retail organic produce sales (volume) rose 16\% in 2020 due to the pandemic while organic apple volume rose 14\% (slide 9). Organic apple sales grew the most in 2020, the first year of the pandemic. Organic apples likely represent about 10\% of all US apple consumption. Bananas, carrots, and apples were the top 3 organic produce items by volume in 2021, according to the State of Organic Produce which does not cover all the volume sold (slide 10).

## Consumer Demand Growth of US Organic Food Sales



Retail organic food sales increased 2\% in 2021. Organic fruits and vegetable sales increased $4 \%$ and were $36 \%$ of all organic food sales (and $15 \%$ of all US produce sales); over $90 \%$ were sales of fresh produce.

## Consumer Demand for Organic Food

Annual growth rates for organic foods


Based on supermarket retail sales; does not include direct market, specialty stores

## Fresh Fruit Sales

| Conventional Fruit |  | Share of Dollars (\%) | Organic Fruit |  | Share of Dollars (\%) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Berries | 17.5 | 1 | Berries | 36.9 |
| 2 | Citrus - $43 \%$ | 13.8 | 2 | Apples - $70 \%$ | 18.7 |
| 3 | Apples | 12.1 | 3 | Bananas | 14.4 |
| 4 | Grapes | 11.5 | 4 | Citrus | 8.5 |
| 5 | Value-Added Fruit | 10.9 | 5 | Grapes | 7.5 |
| 6 | Bananas | 10.4 | 6 | Avocados | 5.4 |
| 7 | Avocados | 6.7 | 7 | Stone Fruits | 2.1 |
| 8 | Melons | 5.0 | 8 | Pears | 1.8 |
| 9 | Stone Fruits | 3.7 | 9 | Cherries | 1.5 |
| 10 | Cherries | 3.3 | 10 | Specialty Fruits | 1.5 |
| 11 | Specialty Fruits | 2.6 | 11 | Value-Added Fruit | 1.0 |
| 12 | Pears | 1.4 | 12 | Melons | 0.4 |
| 13 | Pineapples | 1.2 | 13 | Pineapples | 0.3 |
| 14 | Other Fresh Fruits | 0.1 | Copy | ight ©2017, The Nielsen Co.; | idential and proprietay |

Source: Nielsen Fresh (FCA universe) - Latest 52 weeks ending 10/28/17

## Organic Produce Network

## State of Organic Produce 2021

All Organic Produce Org. Apples
Total organic Organic share Change YOY 2021 Change YOY 2020 Change YOY 2019

| Sales \$ | Volume* | Sales \$ | Volume* |
| :---: | :---: | :---: | :---: |
| 9.22 bil | 3.09 bil | 664 mil | 270 mil |
| 12\% | 7\% | -- | -- |
| +6\% | +2\% | +7\% | -3\% |
| 14\% | +16\% | +11\% | +14\% |
| +5\% | +5\% | +4\% | +7\% |

* Volume in million Ib
- Focus on fresh produce
- Organic increases outpaced conventional
- Apples consistently \#3 in sales \$, volume
- 6.75 mil box shown vs 15.57 mil box shipped
- No data for pears, cherries


Estimates of global area of organic horticultural crops, including tree fruits, have been made several times in the past by the authors to help track trends. The most recent data (2020) from The World of Organic Agriculture were used in the following slides. Not all major producing countries, including the US, provide complete data each year. Organic tree fruit represented about $0.9 \%$ of all organic agricultural land globally, with temperate tree fruits having $37 \%$ of all organic tree fruit area (slide 12). Tropical/subtropical tree fruits were the largest category of organic tree fruit in 20209. All temperate tree fruits except pear and peach/nectarine expanded their area in 2019 (slide 13). Apple had the largest area for a specific fruit, followed by banana and dates. Europe and Asia have the largest areas of organic temperate tree fruit by far. Globally, about $25 \%$ of the area is in transition to organic.

Area trends over time (slides 14 and 16) show a general growth trend. The downturn in apple was driven largely by Poland (slide 15). Missing data from year to year also contribute to variability. Europe accounted for about 48\% of 2019 organic temperate tree fruit area (Italy 26,499 ha; France 23,450 ha; Poland 13,326 ha; Turkey 20,244 ha). China had the largest area for one country ( 116,000 ha). The U.S. had 18,130 ha. Europe and China accounted for $58 \%$ and $26 \%$ of the organic apple area, respectively (slide 17).

## Global Organic Tree Fruit Area

Organic tree fruit crops 689,689 ha $\sim 0.9 \%$ of organic agriculture land

|  | Hectares* <br> 2020 | \% of organic <br> tree fruit | \% change <br> from 2019 | \% of all <br> global |
| :--- | :---: | :---: | :---: | :---: |
| Temperate | 256,317 | 48 | -17 | 2.2 |
| Citrus | 140,837 | 15 | +37 | 1.4 |
| Tropical/ <br> Subtropical | 292,535 | 37 | +23 | 1.0 |
| *certified + transition <br> 1 hectare $($ ha $)=2.47$ <br> acres |  |  |  |  |

## Global Organic Tree Fruit Area

|  | Hectares* <br> 2020 | \% change <br> from 2019 | \% of organic <br> category | \% of all <br> global |
| :--- | :---: | :---: | :---: | :---: |
| Apple | 107,673 | -6.1 | 42 | 2.3 |
| Apricot | 35,156 | -7.9 | 13 | 6.2 |
| Cherry | 20,154 | -5.0 | 8 | 3.0 |
| Peach/Nect. | 14,170 | +0.9 | 5 | 0.9 |
| Pear | 21,910 | +22.1 | 8 | 1.7 |
| Plum | 19,891 | +1.7 | 8 | 0.7 |
| Other, no details | 3,291 |  | 1 |  |
| Banana | 78,894 | +25.9 | 26 | 1.5 |
| Orange | 25,666 | +27.7 | 20 | 0.7 |

*certified + transition; \# using 2020 FAO global data

## Organic Apple Trends Expansion of Global Area



No 2019 data for
*Certified + Transition area
1 hectare $=2.47$ acres
Adjusted for est. 2019 US values; Data courtesy of H. Willer, FiBL

## Organic Apple Area in Poland



Decline of organic apple area in Poland explains much of the EU decline.

## Organic Tree Fruit Trends Expansion of Global Area



## World Organic Apple Area

|  | 2020 Ha <br> $(\mathrm{C}+\mathrm{T})$ | \% change <br> from 2019 |
| :--- | :---: | :---: |
| World | $111,244^{*}$ | -5 |
| US | 14,628 | 0 |
| Europe | 70,756 | +6 |
| Poland | 8,739 | 0 |
| Germany | 7,400 | +10 |
| Italy | 8,235 | 0 |
| France | 14,638 | +3 |
| Turkey | 9,370 | +76 |
| China | 20,700 | -31 |
| Argentina | 2,032 | -17 |
| Chile | 2,767 | -3 |
| New Zealand | -- | $?$ |

Europe is the leading region for producing organic tree fruits.

- 63\% of world organic apple area

WA organic apples, 2020

- 12,317 ha cert.
- ~90\% of US area
- $15 \%$ of world certified area, but higher \% of production

Data on the area of organic tree fruit production in the U.S. are not collected regularly. The 2019 NASS organic survey data are available, but none for 2017 or 2018. The results in the following tables through 2019 (slides 19 to 21) come from USDA ERS reports, certifier data, CDFA, and USDA NASS surveys. In general, $>90 \%$ of certified organic apple area has been located in the semi-arid regions of the western U.S. where there is little summer rainfall which minimizes many key diseases.

This pattern holds true for other temperate tree fruit as well, such as pears, sweet cherries, peaches/nectarines, plums, and apricots. For example, based on data from the NASS 2019 Organic Production Survey, Washington State is the major producer of organic apples, pears, and cherries. It has $90 \%$ of the reported organic apple acres, producing $97 \%$ of the reported fresh fruit volume in the country. It also has 78\% of the organic pear acres and $80 \%$ of the fresh volume, and $76 \%$ of the sweet cherry acreage and $92 \%$ of the volume. A similar situation exists for peaches/nectarines and plums/prunes in California.

## U.S. Organic Temperate Tree Fruit Area (ac)

|  | 2016 (acres) |  |  | 2019 (acres) |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
|  | WA | $\underline{\text { CA }}$ | $\underline{\text { US }}$ | WA | $\underline{\text { CA }}$ | $\underline{\text { US }}$ |
| Apple | 16,191 | 3,186 | 20,855 | 32,537 | 2,191 | 36,148 |
| Pear | 2,243 | 682 | 2,986 | 4,201 | 1,076 | 5,409 |
| Apricot | 251 | 442 | 675 | 360 | 547 | 922 |
| Cherry | 2,546 | 433 | 3,284 | 3,352 | 225 | 4,424 |
| Nectarine | 379 | 1,047 | 1,437 | 472 | 1,055 | 1,535 |
| Peach | 553 | 1,761 | 3,188 | 602 | 1,547 | 3,485 |

## US Organic Apple Area <br> (acres, estimated)

| State | 2000 | 2001 | 2005 | 2008 | 2011 | 2014 | 2015 | 2016 | 2019 |
| :--- | :---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| WA* $^{*}$ | 4,228 | 6,540 | 6,721 | 12,936 | 14,296 | 14,052 | 14,283 | 16,191 | 32,537 |
| CA $^{*}$ | 4,423 | 4,853 | 3,402 | 3,393 | 2,322 | 3,392 | 3,460 | 3,186 | 2,191 |
| AZ | 1,795 | 1,715 | 865 | 816 | 354 | $?$ | $?$ | $?$ | $?$ |
| CO | 431 | 635 | 202 | 164 | 509 | 194 | 176 | 219 | 150 |
| OR | 350 | 350 | 123 | 136 | 234 | 262 | 143 | 322 | 179 |
| Other West | 281 | 677 | 83 | 139 | 96 | 17 | 59 | 93 | 52 |
| West total | 11,508 | 14,770 | 11,396 | 17,584 | 17,934 | 17,917 | 18,121 | 20,061 | 35,109 |
| Midwest | 419 | 567 | 708 | 655 | 1,207 | 319 | 563 | 476 | 818 |
| NY \& NE | 83 | 52 | 392 | 193 | 361 | 645 | 555 | 277 | 218 |
| S \& SE | 28 | 15 | 8 | 33 | 40 | 11 | 10 | 24 | 3 |
| US Total | 12,038 | 15,404 | 12,504 | 18,465 | 19,542 | 19,370 | 20,156 | 20,855 | 36,148 |

*WA and CA values are from WSDA, OTCO, CCOF, and CDFA
$>90 \%$ in arid west
Combined data sets from WSU-CSANR, USDA-ERS, USDA-NASS; Other West states include ID, MT, NM, NV, UT; updated 2011 to ERS values.

## U.S Certified Organic Apple Area



Data are mostly from USDA-ERS and USDA-NASS; except WA is from certifiers and CA is from CDFA and NASS.

The acreages of different organic tree fruits in Washington over time are shown in slide $\underline{23}$. While accounting for about $29 \%$ of all certified organic acres in the state, organic tree fruit generates over half of the farmgate value of all organic products grown in the state (slide 24). Storage, packing, and marketing add another $\$ 150$ million or more of value each year. Estimates for the value of organic tree fruit that is processed could not be determined, but demand for these products is growing (e.g., juice, puree, sliced apples). Organic apples dominate the organic tree fruit sector for area, production, and value, and sales value has been rapidly increasing (slide $\underline{25}$ ). The value of the 2020 organic apple crop increased over the previous year as prices improved somewhat for most varieties.

## Organic Tree Fruit Acres Washington State

|  | --- Certified acres --- |  |  |  |  |  |  |  | Trans acres $\dagger$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 2010 | 2014 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2021 |
| Apple | 14,790 | 14,052 | 16,191 | 22,116 | 28,473 | 32,537 | 30,424 | 28,750 | 1,836 |
| Pear | 2,033 | 1,843 | 2,243 | 2,763 | 3,263 | 4,201 | 4,256 | 4,205 | 83 |
| Cherry | 2,147 | 1,939 | 2,078 | 2,546 | 3,014 | 3,352 | 3,180 | 3,053 | 61 |
| Apricot* | 299 | 299 | 251 | 216 | 271 | 360 | 268 | 274 | 20 |
| Nectarine | 550 | 440 | 379 | 357 | 470 | 472 | 318 | 371 | 29 |
| Peach | 701 | 580 | 553 | 580 | 580 | 602 | 469 | 416 | 8 |
| Plum/Prune* | 125 | 58 | 76 | 45 | 49 | 53 | 106 | 46 | 1 |
| Mixed, other | 13 | 17 | -- | 1 | 4 | 2 | 0 | 18 |  |
| Total* | 20,658 | 19,228 | 21,771 | 28,624 | 36,122 | 41,580 | 39,021 | 37,135 | 2,037 |

*apricot includes aprium; plum includes prune, pluot and plumcot; totals do not include mixed tree fruit; tonly those acres registered with a certifier

Organic tree fruit accounted for about $14 \%$ of all tree fruit acres in Washington State in 2018.

## Value of WA Fresh Organic Tree Fruits

|  | Sales Year <br> Farmgate Value |  |  | Crop Year <br> Packed Value |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 2009 | 2010 | 2011 | 2011 | 2014 | 2016 | 2018 | 2019 | 2020 |  |
|  |  |  |  |  |  |  |  |  |  |  |
| Apple | 77.85 | 96.28 | 121.04 | 198.55 | 391.9 | 471.6 | 547.4 | 543.8 | 606.0 |  |
| Pear | 8.87 | 8.66 | 11.87 | 22.71 | 37.6 | 44.1 | 51.3 | 46.7 | 55.7 |  |
| Cherry | 9.92 | 10.05 | 17.09 | 15.31 | 25.4 | 25.4 | 43.0 | 34.3 | 31.4 |  |
| Other | 5.05 | 7.49 | 10.95 | $>11.0$ | $?$ | $?$ | $?$ | $?$ | $?$ |  |
| Total | 101.69 | 122.48 | 160.95 | $>248$ | $>455$ | $>541$ | $>642$ | $>624$ | $>693$ |  |

Sales year = Jan.- Dec., regardless of when the crop was harvested. Crop year = value of the crop harvested in the given year, that may be sold over multiple years; uses Packed Value based on FOB price.

## Value of Fresh WA Organic Tree Fruit



Based on shipped volume for the crop (e.g., 2008 harvest was shipped in both 2008 and 2009) and estimated weighted average price per packed box during the same period. Dashed line is polynomial trend line estimate. Does not included processed fruit.

The expansion of organic apple area in the state has proceeded in a stepwise fashion as shown in slide 27. Partly this is due to the 3-year transition requirement that creates a lag between a market signal to growers and their ability to enter the market. There is also a lag in exiting, for example when prices fall, since growers have invested in the transition period and in various production practices. Increases in area have been spurred by crisis situations, such as Alar in 1989, and the crash in conventional 'Red Delicious' prices in the late 1990s, as well as steadily increasing demand and periods of high price premiums.
'Gala' and 'Fuji' have dominated organic apple plantings, with 'Honeycrisp' increasing rapidly in area and now surpassing 'Fuji' (slide 28 ). The change in area of cultivars over time can be seen in slides $\underline{29}$ and $\underline{30}$. In addition, many new and specialty cultivars are being grown organically, including some for hard cider production (slide 31). So far, only a few acres of Cosmic Crisp® are registered with a certifier to be under organic management.

## Organic Apple Acreage Washington State



Cert. organic apples $=16 \%$ of WA apple acreage
(based on 2017 NASS value of 179,146 acres)
*Transition acres from WSDA and OTCO

## Organic Apple Variety Acres Washington 2021



- Gala, Fuji, Honeycrisp $=64 \%$ of certified apple acres
- Honeycrisp replaced Fuji as \#2


## Organic Apple Varieties

 Washington State Acres Trend
## Photo: B. Barritt




## Organic Apple Varieties Washington State Acres Trend



## Organic Specialty Apples Washington State 2020

Over 100 varieties of organic apples grown
in WA, from small to larger quantities

- 100-1000 ac: Ambrosia®, Autumn Glory, Braeburn, Envy ${ }^{\text {w, }}$, Jazz, Lady Alice ${ }^{\circledR}$, Opal ${ }^{\circledR}$
- 50-100 ac: Braeburn, Jazz, Jonagold, Minneiska (SweeTango ${ }^{\circledR}$ ), Piñata ${ }^{\circledR}$
- 11-50 ac: Cameo, Cosmic Crisp ${ }^{\circledR}$, cider, Jubilee, Rojo, RosaLynn
- 1-10 ac: Arkansas Black, Ashmead's Kernel, Crimson Crisp ${ }^{\text {™ }}$, Earligold ${ }^{\text {™ }}$, Kanzi ${ }^{\circledR}$, Winter Banana, Zestar! ${ }^{\text {Tw }}$ and more


## Varieties listed in WSDA producer directory:

https://agr.wa.gov/departments/organic/about-organic\#lists

A large number of apple acres transitioned to organic in 2017 and 2018. Estimates made in advance of this tended to be low (slide 33). In 2018, there were 3,541 ac of apple registered for transition with certifiers. No breakdown was available for acres in first year versus second year transition. However, a slowing of organic apple expansion was expected in 2019 and for the next several years as the market 'digests' all the recently added production. This has occurred.

Along with expanded acres, organic apple yields were increasing (until 2018), with the transition of many acres of modern, high-density plantings (slide 34). These data were calculated by dividing the actual number of packed boxes shipped each year (by variety), by the actual number of certified acres for that variety, both values that are very accurate. Yields went from around 400 packed boxes per acre in 2008 to 600 in 2015. Apples diverted to processing and other uses are not included and would raise the yield estimates if they were. For example, some growers are harvesting Goldens directly for processing to reduce costs.

There are fewer transition acres for pears and cherries, and these increases are not expected to result in a large new pulse of fruit.

## Estimated WA Organic Apple Transition Acres



Based on registered transition acres (January) and data from WA fruit companies (Jan. 2017)

## Organic Apple Yield Trend Washington



## 800 box $=44$ binlac at 20\%p/o

——Red Del
——Gold Del
-Granny
—Fuji
Gala
—CrippsPink
——Honeycrisp
----- Poly. (Fuji)
----- Poly. (Gala)
----- Power (Honeycrisp)

- Total shipped organic boxes / total certified acres
- Includes young and non-bearing acres
- Does not account for processor or other diverted fruit

In 2021, certified organic apples represented about $16 \%$ of all apple acres in the state. This has translated to about $13 \%$ of the state crop (slides 36 and 37 ). An unknown amount of organic fruit goes to the processor market or is sold as conventional for various reasons.

A strong trend of increasing shipments has occurred since a big jump in 2008 (slide 38), but is leveling off. The effect of alternate bearing can be seen in The increase has been driven by dramatic rises in 'Gala', 'Fuji', and especially 'Honeycrisp' shipments which reached a new high with the 2020 crop (slides 39, 40). Despite the rapid rise in supply, prices generally rose during this period until 2016, then dropped and appear to be levelling out (slide 38).

## Washington Apple Volume Conventional and Organic



* From Dec. 1 storage report


## Organic Share of Apple Shipments Washington State



## Organic Apple Sales Volume and Price Trends - WA



## Total Shipped Organic Volume

 by year and variety, Washington State

## Total Shipped Organic Volume by year and variety, Washington State



The 2021 crop appears smaller than 2020 (comparing
December storage report volumes), largely due to the intense heat wave during June 2021 (slide 42). The 2020 crop shipped a record number of boxes ( 15.57 million), a slight increase from the previous year. The difference between the Dec. 1 storage report indicated crop (red bars) and the final amount shipped (blue bars) is due to a combination of normal shrink, diversion to organic processing, and diversion to conventional markets (e.g., 'Red Delicious'). This difference was lower for the 2020 crop than in recent years.

Storing organic apples longer will be critical for marketing the larger crop in coming years (see Storage slides 81 to 85). New post-harvest technology is continually be tried, some of which is proving quite successful. The opportunity to sell more WA organic apples is illustrated by the sources of organic apples in groceries identified by USDA-AMS in August 2016 (slide 43).

## Washington Organic Apple Crop Size



Comparison of recent organic apple crop size estimates (December 1) with actual season-end volume shipped.

## Organic Apples in U.S. Market August 2016

|  | Red D | Gala | Fuji | Brae | Pink | Zestar!@ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Baltimore | WA |  |  |  |  |  |
| Boston | ARG | WA | ARG | NZ | ARG |  |
| Chicago | ARG | NZ | NZ | ARG | ARG |  |
| San Fran. | CA, WA |  |  |  |  | CL, NZ |
| WA=Washington; CA=California; OR=Oregon; ARG=Argentina; CL=Chile; <br> NZ=New Zealand |  |  |  |  |  |  |

USDA-AMS national specialty crops organic summary, Aug. 11, 2016 https://www.ams.usda.gov/mnreports/fvdorganic.pdf

Prices for organic tree fruit have been collected by the industry starting in the mid-1990s, and now include most of the crop (reporting is voluntary). Organic prices are almost always higher than conventional, but the magnitude of the difference varies from year to year. However, the direction of price change from year to year was generally the same between the two, until after the 2012 crop, indicating that market forces then became less similar. The pattern has become similar again since 2019. Both organic and conventional experience some alternate bearing which affects supply and price. The prices on the following slides (45 to 49) are for fresh packed apples (40 lb box) for all sizes and grades, domestic and export. The trends for the past few years are shown in slide 50, with a downward trend for 'Gala' price. Organic price premiums are plotted in slide $\underline{51}$ as both the absolute dollar amount as well as the percent difference. The dollar premium per box was at record levels for several years but has declined with the substantially larger harvests.

## Price Trends Washington Apples




SEB=standard equivalent box of 40 lb . Data: WSTFA, WGCH; FOB averages, all storage, grades, sizes. Annual data points represent season averages: season approx. Sept 1 to end of Aug.

## Price Trends Washington Apples

Red Delicious


Golden Delicious



Data: WSTFA, WGCH; FOB averages, all storage, grades, sizes. Annual data points represent season averages: season approx. Sept 1 to end of Aug.

## Price Trends Washington Apples

Granny Smith
to $12 / 14 / 21$


9597990103050709111315171921

## Cripps Pink



Data: WSTFA, WGCH; FOB averages, all storage, grades, sizes. Annual data points represent season averages: season runs approx. Sept 1 to end of Aug.

## Price Trends Washington Apples



Data: WSTFA, WGCH; FOB averages, all storage, grades, sizes. Annual data points represent season averages: season runs approx. Sept 1 to end of Aug.

## Price Trends Washington Apples



Data: WSTFA; FOB averages, all storage, grades, sizes. Annual data points represent season averages: season runs approx. Sept 1 to end of Aug.

## Price Trends Washington Organic Apples

Season to Date, as of mid-December


Organic WA Apple Premiums


Premiums are expressed as the price difference between organic and conventional, as $\$$ per box, or as a percent.

Data: WSTFA, WGCH. Annual data points —Gala —Red Del —Fuji —Honeycrisp represent season averages: season runs approx. Sept 1 to end of Aug.

The USDA Agricultural Marketing Service (AMS) tracks data reported to them for various commodity prices at the point of shipment (FOB) and the retail price (based on grocery store advertisements). In slide 53, monthly price trends over 5 marketing seasons are plotted for 'Gala' apple, for both conventional and organic. A dotted trend line is also included to make the general trend more obvious. Organic shipping point prices trended up, while conventional prices were flat. In contrast, retail prices trended up for both types. Organic prices have dropped in subsequent years. Given that the cost of production is generally trending upwards, especially for labor, the implication for growers is that prices will no longer cover costs at some point, which has occurred for some varieties (see Economics slides 86 to 94 ). Gaps in the shipping point data point out where the WA supply of organic apples has been sold out.

## Organic Gala Apples

## Shipping point, Washington



Retail, National



Similar data as for apple are presented for organic pear in Washington in the next slides (55 to 64). Organic pear area has tended to be more stable over time than apple or cherry. Only a few pear varieties are currently in demand by the market, and pear consumption in general in the U.S. is much lower than apple. Pear orchards tend to be kept in production for many years (50+ years is not uncommon) and renewal to the hottest new variety or planting system is still limited. While fire blight is a serious threat to all pear producers in Washington, it is relatively less so than in most other parts of the country, leading to a large percent of all organic pears being produced here or in California. Washington is the leading producer of conventional and organic pears in the U.S. Organic pear prices and volume have risen since 2009 in a pattern similar to apple. Record volume was shipped in 2020, and there will likely be a significant increase in 2021 as well.

## Organic Pear Acreage

 Washington State

$\begin{array}{llllllllllll}98 & 00 & 02 & 04 & 06 & 08 & 10 & 12 & 14 & 16 & 18 & 20\end{array}$

2021 organic $=20 \%$ of total WA pear acreage (based on WA-NASS 2017 value of 20,965 pear acres)

## 2021 Organic Pear Acres by Variety Washington



## Organic Pear Variety Trend Washington State



## Organic Specialty Pears Washington State 2020

- Over 10 varieties of organic pears and Asian pears grown in WA, from small to larger quantities.
- >25 ac: Concorde, Starkrimson, Asian
- Small areas: Comice, Forelle, Perry, Red Clapp, Seckel, Taylors Gold
- Varieties are listed on the WSDA producer list:
http://agr.wa.gov/FoodAnimal/Organic/docs/wsda_cert_org_producers.pdf


## Organic Pear Sales Volume and Price Trends



SEB $=$ Standard Equivalent Box of 44 lb . Data Sources: WSTFA, WGCHA \& WVTA

## Shipped Organic Pear Volume by year and variety, WA and OR



Organic volume $\sim 10 \%$ of total NW pear volume; OR organic volume $\sim 15 \%$ of total organic

## Price Trends Washington Pears






Bosc photo: US Pear

SEB = Standard Equivalent Box; Data: WSTFA, WGCH.
Annual data points represent FOB season price averages.

## Price Trends Washington Pears



## Price Trends Washington Organic Pears



Data: WSTFA, WGCH; FOB averages, all storage, grades, sizes.

## Organic Premiums Washington Pears



Washington leads the nation in sweet cherry production, both for conventional and organic. A key quarantine pest, the western Cherry Fruit Fly, was a major barrier to organic cherry production for many years. The development of the GF-120 control protocol (a biologically based insecticide) by Tim Smith, WSU Extension, led to major increases in organic cherry area in the mid2000s. In 2008, the new pest, Spotted Wing Drosophila, was found in the state for the first time and has expanded statewide. This pest was not controlled by GF-120 and thus organic pest management was seriously disrupted. Growers rely on Entrust ${ }^{\circledR}$ insecticide and reliance on this sole product poses risk of resistance. Currently, Little Cherry Virus is threatening both organic and conventional cherry orchards.

Similar data as for apple and pear are presented for organic cherry in Washington in slides ( 66 to $\underline{70}$ ). The data include over 500 acres of organic tart cherries as well. Slide 71 shows the area trend for other organic soft fruit (peaches, etc.); no other data were available. Washington is second to California in the production of most of these other organic soft fruits. Less than $1 \%$ of the crop was exported, primarily to Canada, and then Taiwan.

Organic Cherry Acreage Washington State (sweet + tart)


> 2021 organic $=6.8 \%$ of total WA cherry area (based on 2017 WA-NASS estimate of 44,707 acres)

## 2021 Organic Cherry Variety Acres

## Washington State



10\% of cherries not reported by variety in 2021 compared to $57 \%$ in 2008

## WA Organic Sweet Cherry Prices



## WA Organic Sweet Cherries



## WA Organic Cherries

|  | 2018 |  | 2019 |  | 2020 |  | 2021 |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
|  | ORG | CONV | ORG | CONV | ORG | CONV | ORG | CONV |
| Dark Sweet |  |  |  |  |  |  |  |  |
| Volume (1000 box*) | 665 | 20,954 | 511 | 18,739 | 471 | 16,579 | 512 | 16,935 |
| \% of crop | 87 | 91 | 88 | 91 | 91 | 93 | 92 | 91 |
| Light Sweet |  |  |  |  |  |  |  |  |
| Volume (1000 box*) | 97 | 2,201 | 68 | 1,970 | 59 | 1,612 | 59 | 1,586 |
| \% of crop | 13 | 9 | 12 | 9 | 9 | 7 | 8 | 9 |
| Organic Share of <br> all, \% | 3.2 |  | 2.8 |  | 2.8 |  | 3.1 |  |
| Calculated Yield <br> (packed tons/ac) | 2.95 |  | 1.97 |  | 1.48 |  | 2.24 |  |

[^0]
## Other Stone Fruit Trends Washington State




600
500

300

200
800
700

## Certified acres

## Exports

Exports of organic tree fruit from Washington have occurred for years and reached an all-time high for apples in 2019 (slide 73), which included some shipments to the UK after several years with none (slide 74). Canada is by far the largest export destination (slide 75). 'Gala' apple and 'Bartlett' pear were leading organic tree fruit exports by volume for the 2020 crop (slides 76, 77), but several other organic apple varieties have seen increased export volumes. With the much larger organic apple crop, there is more interest in exports with opportunities in Asia and the Middle East.

## Organic Apple and Pear Exports

 Washington State

## Exports 2019

- 'Gala’ apple and 'Bartlett' pear were leading export varieties
- 2017: renewed apple shipments to UK; started $1 \mathrm{cntr} / \mathrm{wk}$, then 10-12 ctnr/wk; totaled 142,000 boxes for season, or $14 \%$ of export volume; heavy on small size, <113
- Short crop in EU for 2017 due to frost
- For comparison, in 2007, 360 ctnr to EU; in 2008 zero; in 2019, 48 ctnr (UK)
- Increasing exports of Other varieties Ambrosia, Cripps Pink, Honeycrisp


## Washington Organic Apple Top Export Destinations



## WA Organic Apple Exports by Variety



Top 2020 varieties for export: Gala 52\%, Other 22\%, Granny Smith 11\%

## WA Organic Pear Exports by Variety



## Exports

Apples have been the leading U.S. organic produce export by value for several years. In 2021, apples, leaf lettuce, and strawberries were the top 3 organic produce exports by value (slide 79). While the value of organic apple exports continues to exceed the value of imports, the import value has been increasing (slide 80). This parallels the overall trend for organic imports which far outpace the value of U.S. organic exports, leading to a trade deficit for organic foods. Much of the deficit is due to the import of tropical crops not grown here, but corn and soybean imports have also been substantial in the past.

## U.S. Organic Exports

Fresh fruits are an important U.S. organic export. Apple is the leading fresh fruit product, and strawberry and blueberry are increasing.


## U.S. Organic Trade

Organic Apples (fresh)


All Organic Products


## 2021

- Apples were $18 \%$ of export \$, 2\% of import \$
- Apples, largest export value of any organic produce (and product)
- Leaf lettuce \#2, Strawberry \#3, Grape \#4

| Annual Change |  |
| :--- | :--- |
| Org Apple exp | $+44 \%$ |
| Org Apple imp | $+11 \%$ |
| All Org exp | $+8 \%$ |
| All Org imp | $+12 \%$ |

## Storage

As the size of the organic apple harvest has increased, fruit companies have relied on extending the marketing season as a key strategy to selling the larger crop. This has required advances in storage technology and practice. The increase in shipped volume in mid-July from 2012-2021 for several organic apples is illustrated in slide 82. The FOB price for organic apples tends to steadily rise from March to August (slides $\underline{83}$ to 85). But storage losses need to be controlled in order to make this economic. In some years, there has been enough of a particular variety to ship for a full 12 months until the new crop is harvested.

## Mid-July Shipped Volume of Organic Apples, WA



## Late Season Organic Apple Prices - Gala



## Late Season Organic Apple Prices - Granny



## Late Season Organic Apple Prices - HoneyC



## Economics

There are a few studies of the economics of organic apple production in Washington State. In 2014, economists created enterprise budgets for both conventional and organic 'Gala' using the same methodology (slide 87). This allowed for a good comparison between the two systems. While organic had about $10 \%$ greater cost per bin, the net profit was $130 \%$ higher during this period of high organic prices.

No similar organic budgets have been produced since, but are planned. However, the same economists developed budgets for 5 different apple varieties in 2019 using the same method as before. For convention 'Gala', the cost per bin rose about 28\% during this time while prices dropped $9 \%$, leading to a significant loss per acre when total costs are used (slide 88). Within the ranges for price and yield modeling done, only an increase in price could lead to potential profitability. 'Honeycrisp' was profitable at the current price, while 'Gala' was unprofitable at all the prices modeled (slide 89).

## Apple Economics

| 'Gala' apple, 2014 | Organic | Conv. | $\%$ |
| :--- | ---: | ---: | ---: |
|  | \$/acre |  |  |
| Labor | 3,770 | 3,242 | +16 |
| Chemical/fertilizer | 1,751 | 1,401 | +25 |
| Maintenance, repair, fuel, oil | 412 | 382 | +8 |
| Weed control | 208 | Incl. |  |
| Crop insurance | 190 | 190 |  |
| Warehouse charges | 11,529 | 12,490 |  |
| Total variable costs | $\mathbf{2 0 , 6 6 7}$ | $\mathbf{2 0 , 4 7 0}$ |  |
| Fixed costs | $\mathbf{4 , 5 9 9}$ | $\mathbf{4 , 5 1 9}$ |  |
| Total costs | $\mathbf{2 5 , 2 6 7}$ | $\mathbf{2 4 , 9 9 0}$ |  |
| Cost per bin | $\$ 421$ | $\$ 384$ | +10 |
| Net profit | $\$ 1,133$ | $\$ 490$ | +131 |
| A |  |  |  |

Assumes organic yield 7\% less, organic price 12\% more
Data from cost of production studies by Galinato and Gallardo, 2015; WSU School of Economic
Sciences

## Apple Economics

| 'Gala' apple, conv. | 2014 | 2019 | $\%$ |
| :--- | :---: | :---: | :---: |
| Labor (\$/ac) | 1,690 | 2,273 | +35 |
| Chemical/fertilizer (\$/ac) | 955 | 3,366 | +252 |
| Maintenance, repair, fuel, oil | 383 | 640 | +67 |
| Pre-harvest (\$/ac) | 3,486 | 7,268 | +108 |
| Harvest (\$/bin) | 23.50 | 28.11 | +20 |
| Warehouse charges (\$/bin) | 240 | 287 | +20 |
| Total variable costs (\$/bin) | 394 | 506 | +28 |
| Fixed costs (\$/bin) | 87 | 153 | +76 |
| Total costs (\$/bin) | 481 | 659 | +37 |
|  |  |  |  |
| Est. FOB price (\$/bin) | 530 | 481 | -9 |
| Net profit (@64 bin/ac) (\$/ac) | 6,048 | $-11,360$ |  |
| Data from cost of production studies by Galinato and Gallardo, 2015, 2020. <br>  <br> WSU School of Economic Sciences |  |  |  |

## 2019 Apple Crop Budgets

|  | Bins/ <br> ac | Pack <br> $\%$ | Net <br> \$/ac | Increase Needed for Profit* |  |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Honeycrisp | 56 | 75 | 594 | -- | Yield |
| Cripps Pink | 66 | 78 | $-7,626$ | $+117(21 \%)$ | no |
| Fuji | 68 | 80 | $-9,493$ | $+\$ 140(28 \%)$ | no |
| Gala | 64 | 80 | $-11,360$ | no | no |
| Granny Smith | 68 | 80 | $-12,497$ | $+\$ 20(5 \%)$ | 76 |

* 'No" indicates that the highest yield at the assumed price, or the highest price at the assumed yield did not lead to profit.
Budgets by Gallardo and Galinato

Growers can sometimes weather several years of poor economics by just trying to cover cash costs and foregoing depreciation by keeping older machinery and facilities in service. While the conventional price per bin $(\$ 481)$ did not even cover cash costs (\$516), the organic price did (\$537). This is assuming that expenses and yields are similar, which may or may not be the case. But the higher organic price does illustrate that it might be profitable even in years of poor prices (slide 91).

The average annual prices for organic and conventional ‘Gala' from 2008 to 2015 are shown in slide 92. Comparison budgets were done in 2009 and 2014, and the estimated breakeven price (dotted line) is compared to the FOB price (point on the graph). FOB price was higher than breakeven for both organic and conventional in 2009, but by 2014, conventional price was just lower than the breakeven, while the organic price was much, much higher than breakeven.

2019 Apple Crop Budgets

|  | Gala | Fuji | Granny | Cripps |
| :--- | :---: | :---: | :---: | :---: |
| Total variable costs | 506 | 499 | 471 | 526 |
| Total cash costs | 516 | 509 | 481 | 538 |
| Total cash cost + <br> depreciation | 535 | 528 | 500 | 556 |
| Total cost (above + <br> interest, management) | 659 | 639 | 621 | 673 |
| Assumed price CON <br> \$/bin FOB | $\mathbf{4 8 1}$ | $\mathbf{5 0 0}$ | $\mathbf{4 3 7}$ | $\mathbf{5 5 8}$ |

## Examples:

- Gala - $\$ 481 /$ bin $F O B$ price does not even cover variable costs
- Fuji - $\$ 500 /$ bin FOB price just covers variable costs, but no others
- Granny - \$437/bin FOB price does not even cover variable cost
- Cripps - $\$ 558 /$ bin FOB price almost covers cash cost + depreciation


## Apple Economics

'Gala'



Extending the price line out to the present in slide 94, the increase of the breakeven price is evident (blue dotted lines). Production expenses have increased dramatically over 5 years while the FOB price was basically flat. The organic FOB price was substantially below the conventional cost of production, which is likely similar or lower than organic cost. Thus, it is evident that both conventional and organic growers are under serious financial pressure with escalating costs and stagnant or declining (organic) prices.

## Apple Economics <br> ‘Gala'



| Breakeven Price (\$/box) |  |  |  |
| :--- | :---: | :---: | :---: |
| Organic | $\underline{2009}$ | $\underline{2014}$ | $\frac{2019}{? 1.00}$ |
| 22.76 | $? ?$ |  |  |
| Conv. | 18.80 | 20.79 | 35.59 |

Negative conventional return even at yield 88 bin/ac and price $\$ 540 /$ bin

## More information on Washington organic tree fruit statistics is available on-line at:

http://tfrec.cahnrs.wsu.edu/organicag/organic-agriculture/organicstatistics/
http://csanr.wsu.edu/pages/Organic Statistics
http://www.nass.usda.gov/Statistics by State/Washington/Publications/ Fruit/FruitTreeInventory2011.pdf

Citation: Granatstein, D. and E. Kirby. 2021. Recent trends in certified organic tree fruit: Washington State 2019. Organic Trend Series. Washington State University, Wenatchee, WA. http://tfrec.cahnrs.wsu.edu/organicag/organicstatistics/


[^0]:    *Standard Equivalent Box: Dark Sweet = 20 lb , Light Sweet = 15 lb.

