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Recent Trends in Certified Organic Tree Fruit

Washington State 2014

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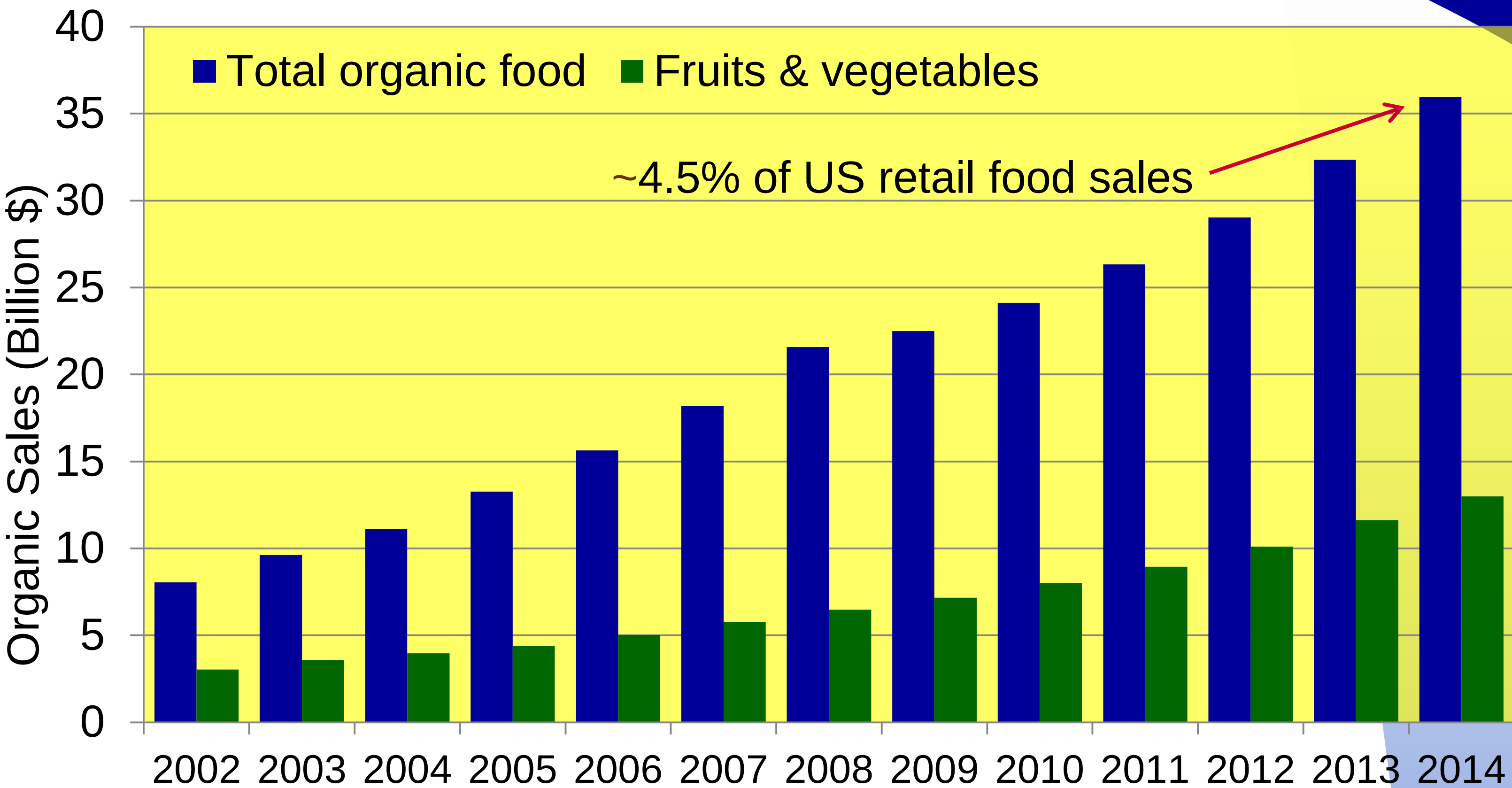
In cooperation with
Washington State Department of Agriculture Organic Food Program
and Oregon Tilth Certified Organic

Center for Sustaining Agriculture & Natural Resources

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 food program; OTCO], The World of Organic Agriculture reports, USDA, and industry sources. Data from WSDA were extracted on Nov. 13, 2014.

Organic agriculture continues to be consumer driven. The next slide (3) shows the growth in retail sales of organic food in the U.S. since 2002. Growth dipped during the recession but did not stop, and has rebounded to 11-12% per year. Growth of the fruit and vegetable category was much more stable (Slide 4), confirming that these products are very core to organic consumers. These consumer data come from the Organic Trade Association annual industry survey.

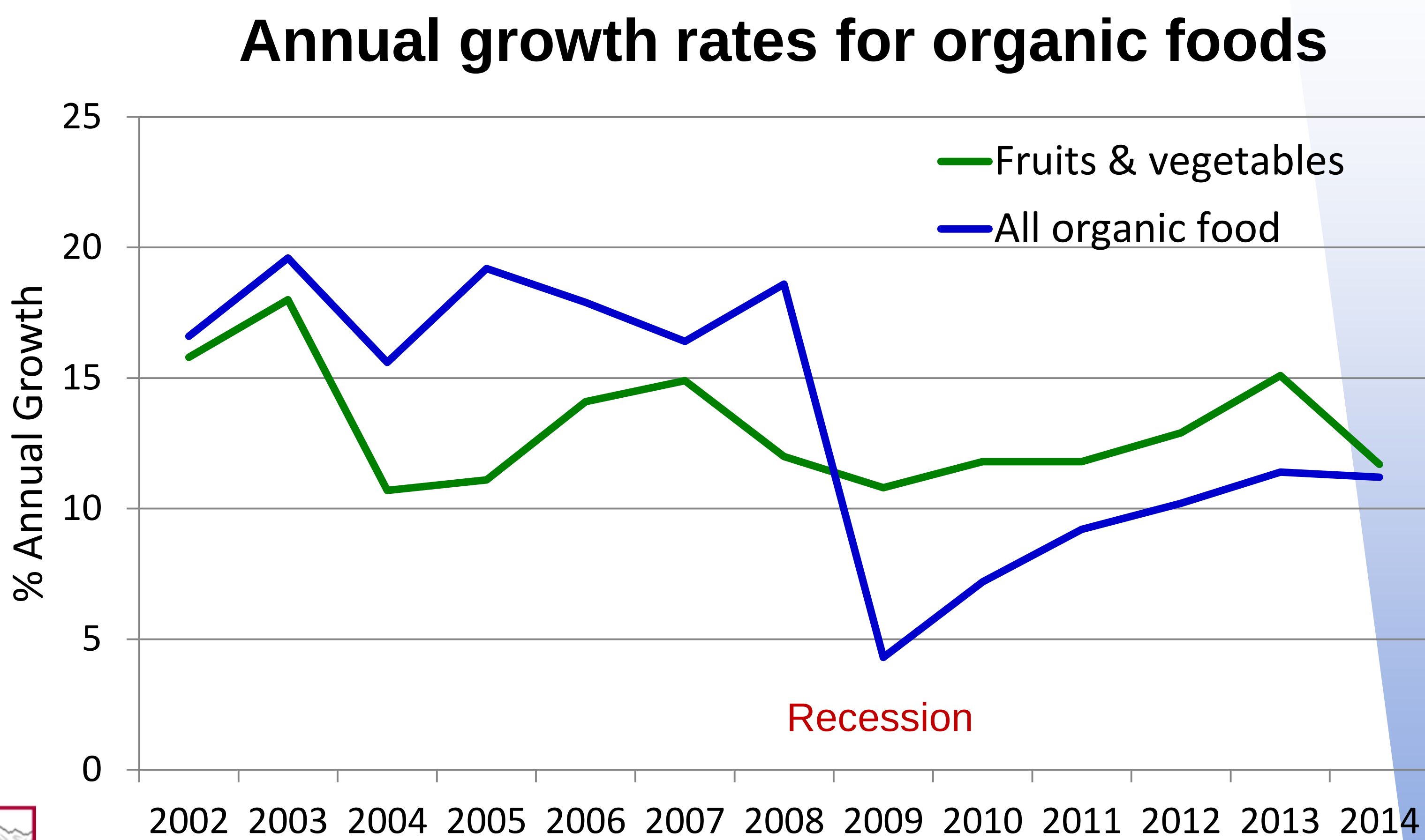
Consumer Demand
Growth of US Organic Food Sales



Retail organic food sales increased 11.2% in 2014. Organic fruits and vegetable sales increased 11.7% and were 36% of all organic food sales; ~7% of all fruits and vegetables sales ($) in U.S. in 2014 were organic.

Source: OTA, Nutrition Business Journal

Consumer Demand for Organic Food



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

Source: OTA, Nutrition Business Journal

Estimates of world 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 (2013) were used in the following slides. Organic tree fruit represented about 5% of all organic agricultural land globally, with temperate tree fruits having 43% of all organic tree fruit area, followed closely by tropical/subtropical tree fruits (slide 6). Apple had the largest area for a specific fruit, followed by banana (slide 7) and avocado (data not shown). Area of organic temperate fruit expanded rapidly since 2008 (+109%) due to more land being converted as well as better reporting of area under organic management. Organic apple, apricot, and pear all experienced area growth over 100%. Europe is the main driver for this expansion (slide 8), especially from large areas added in Poland (slide 9) due to EU subsidies for conversion of land to organic. Similar upward trends are evident for organic cherry, pear, peach/nectarine, and plum (slide 10).

Reliable data from China were received for 2013 (slide 11) and account for much of the global increase in apple area from the previous year.

Global Organic Tree Fruit Area

Organic tree fruit crops 500,000 ha
~5% of organic agriculture land

	Hectares* 2013	% of organic tree fruit	% change from 2008	% of all global
Temperate	213,023	43	109	1.8
Citrus	81,577	16	42	0.9
Tropical/ Subtropical	205,464	41	53	0.9

*certified + transition

1 hectare (ha) = 2.47 acres

Organic temperate fruit area was 43% of all global organic tree fruit area in 2012. It increased 109% from 2008. It accounted for about 1.8% of all global temperate tree fruit area (conventional and organic).

Source: World of Organic Agriculture; FAO

Global Organic Tree Fruit Area

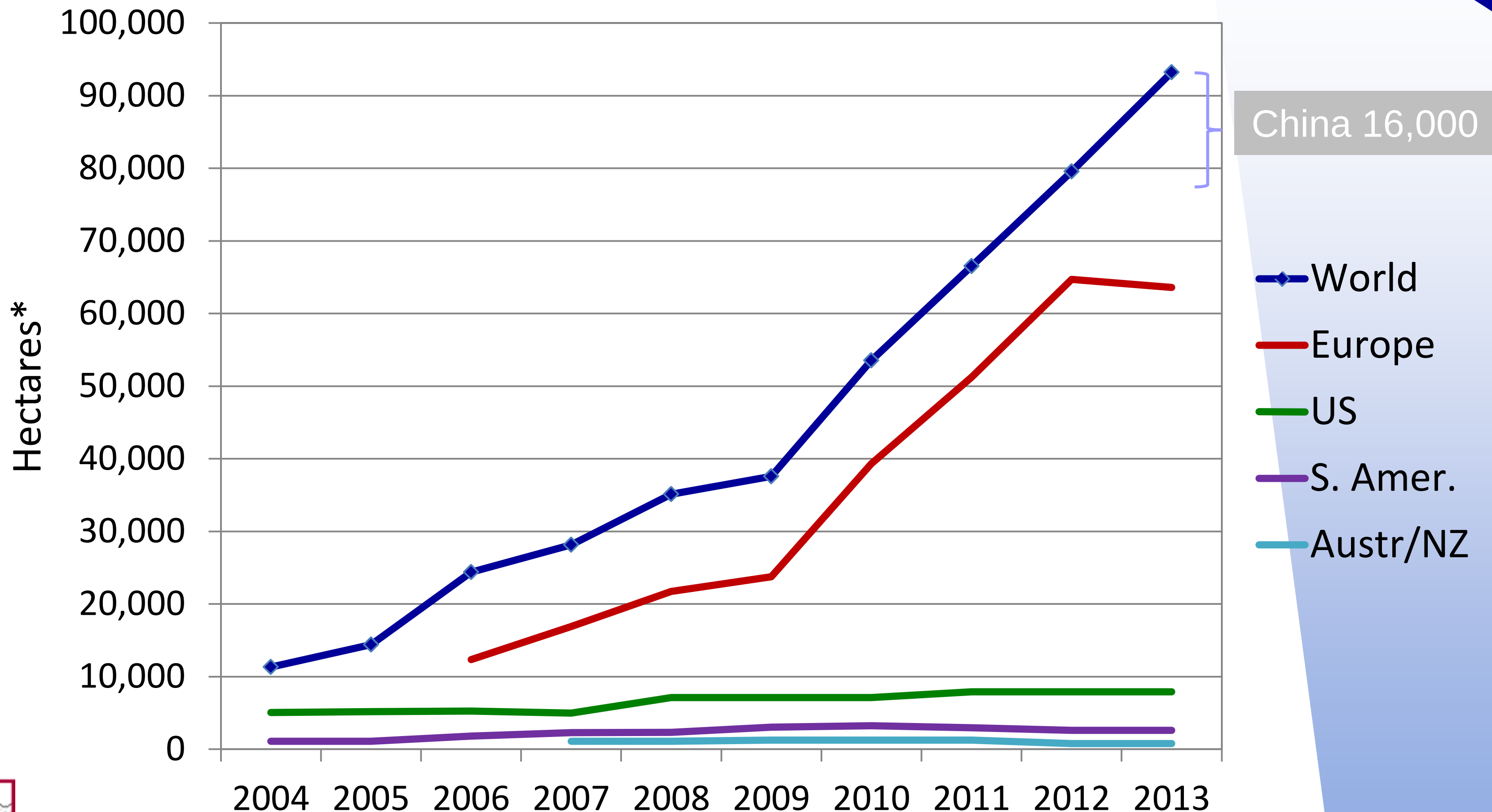
	Hectares* 2013	% change from 2008		% of organic category	% of all global
		Org	All		
Apple	93,219	165	13	44	1.8
Apricot	22,282	108	4	10	4.4
Pear	16,925	145	12	8	1.0
Plum	10,420	29	7	5	0.4
Cherry	9,299	28	9	4	1.5
Banana	79,927	43	6	39	1.6
Orange	42,420	48	1	52	1.0

*certified + transition

Organic apple area increased by 165% since 2008, while all apple area only grew 13%. Organic apple area was 44% of global organic temperate fruit, and 1.8% of global apple area (all).

Source: World of Organic Agriculture; FAO

Organic Apple Trends
Expansion of Global Area



*Certified + Transition acres

Data courtesy of H. Willer, FiBL

World Organic Apple Area

	2013 Ha (C+T*)	% change from 2012	1000 MT Production
World	93,219	+17	
US	~7,900	?	200?
Europe	63,609	-1%	180
Poland	>50,000	++	?
Germany	>4,700	?	50
Italy	3,586	-10	80
France	5,770	+6	10
Turkey	3,804	+19	
China	16,432	?	130
Argentina	1,509	+3	
Chile	1,118	+1	
New Zealand	450	?	

*C+T = certified + transition

WA organic <u>apples, 2014</u>

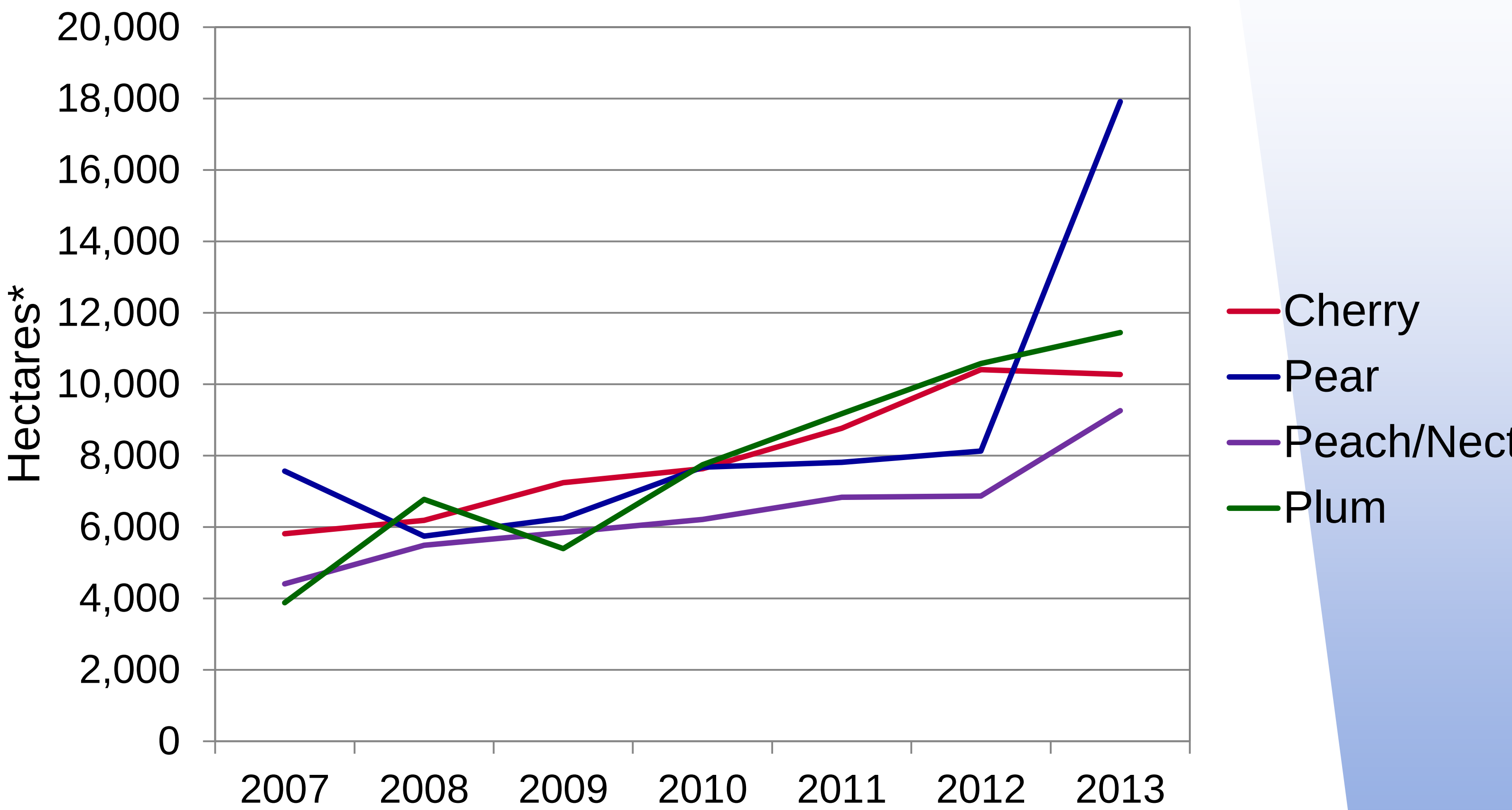
- 5,688 ha cert.
- ~70% of US
- ~45% of world certified area (2012)

Europe is the leading region for organic tree fruits.

- ~70% of world organic apple area

Data courtesy of H. Willer, FiBL

Organic Tree Fruit Trends
Expansion of Global Area



*Certified + Transition acres

Data courtesy of H. Willer, FiBL

China Organic Tree Fruit

China is the world's largest producer of many tree fruits, including apples and pears. Data on organic tree fruit were presented in the "Organic Industry Development Report of China", compiled by the Certification and Accreditation Administration of China (CNCA), and translated to English and published in January 2015. The data combine both land certified to the China standards as well as to foreign standards such as the NOP and EU. The data suggest a substantial area of production and an interest by the government and private sector to invest in organic agriculture.

	Organic Area (ha)		**Production** (1000 MT)	
	Total	Cert	Total	Cert
Apple	16,432	5,500	289	130
Apricot	11,753	8,200	50	16
Pear	4,632	2,300	88	70
Peach/nectarine	2,158	1,100	20	5
Cherry	??			
Plum	??			

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Source: CNCA, 2015

U.S. Data

Data on the area of organic temperate tree fruit production in the U.S. are not collected regularly and are not segregated by the fruit type, except for apple. The results in the following table (slide 13) come from USDA ERS reports, certifier data, 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 to no summer rainfall which minimizes many key diseases. This pattern holds true for other temperate fruit as well, such as pears, sweet cherries, peaches/nectarines, and apricots. For example, based on data from the NASS 2008 Organic Production Survey, Washington State is the major producer of both organic apples and pears. It has 65% of the organic apple acres, producing 87% of the fruit volume and farm gate sales value. It also has 61% of the organic pear acres, producing 78% of the fruit volume and farm gate sales value.

US Organic Apple Area
(acres, estimated)

State	2000	2001	2003	2005	2007	2008	2009	2011	2014
WA*	4,228	6,540	7,003	6,721	8,018	12,936	15,735	14,296	14,052
CA*	4,423	4,853	4,045	3,402	3,900	3,393	3,450	2,322	--
AZ	1,795	1,715	835	865	816	816	--	354	--
CO	431	635	235	202	209	164	--	509	--
OR	350	350	265	123	106	136	201	234	--
Other West	281	677	171	83	147	139	--	96	--
Hawaii	--	--	--	--	--	--	--	123	--
West total	11,508	14,770	12,554	11,396	13,196	17,584	>20,000	17,934	--
Midwest	419	567	650	708	612	655	--	1,207	--
NY & NE	83	52	5	392	212	193	--	361	--
S & SE	28	15	1	8	47	33	--	40	--
US Total	12,038	15,404	13,210	12,504	14,067	18,465	>21,000	19,542	--

*WA and CA values are from WSDA 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.

Washington Organic Tree Fruit

While accounting for about 22% of all certified organic acres in the state, organic tree fruit in 2014 generated approximately 65% of the farmgate value of all organic products sold in the state (slide 15). Storage, packing, and marketing add another $80-90 million 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 (slide 16), and sales value has been rapidly increasing (slide 17).

Organic Tree Fruit Acres
Washington State

	--- Certified acres ---						% Change	Transition acres	
	2009	2010	2011	2012	2013	2014	13-14	2008	2014
Apple	15,735	14,790	14,296	13,657	14,030	14,052	0.2	4,256	783
Pear	1,964	2,033	1,917	1,900	1,820	1,843	1.3	444	84
Cherry	2,437	2,147	1,826	1,792	1,837	1,939	5.6	797	57
Apricot*	265	299	296	266	285	298	4.6	179	--
Peach&Nectarine	1,238	1,251	1,146	1,106	1,058	1,021	-3.5	832	--
Plum&Prune*	130	125	92	89	64	58	-9.4	49	--
Mixed stone	30	13	17	45	7	16	--	164	--
Total*	21,799	20,658	19,590	18,855	18,941	19,228	0.6	6,721	924

**apricot includes aprium; plum includes pluot and plumcot; totals do not include mixed tree fruit*

Tree fruit has a 22% share of all organic acreage in Washington State; accounted for ~65% of farmgate sales in 2011 (apple >50%)

Combined certifier data

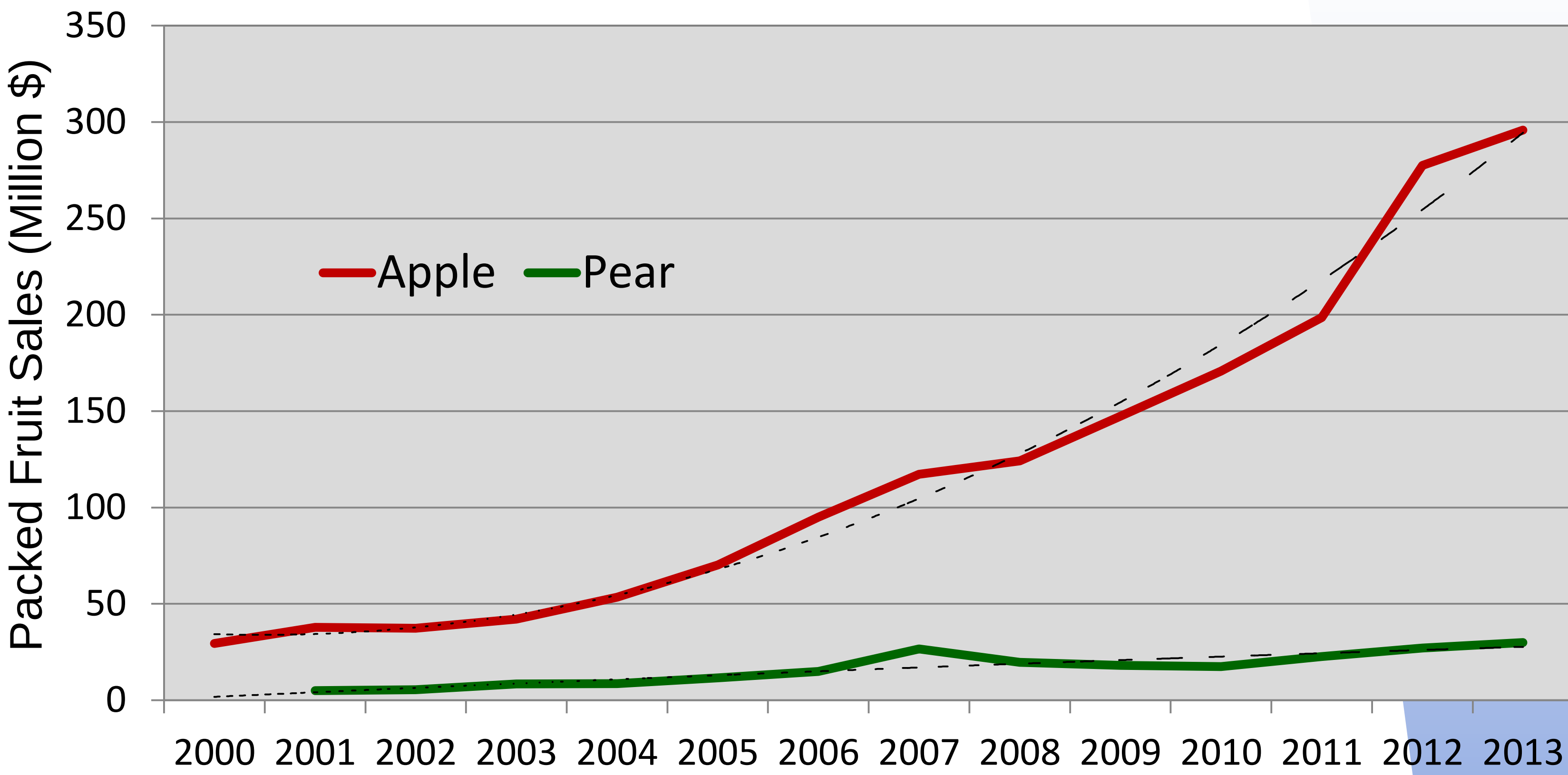
Value of WA Organic Tree Fruits

	2009	2010	2011	2011	2012	2013
(Mil $)	Sales Year Farmgate Value			Crop Year Packed Value		
Apple	77.85	96.28	121.04	198.55	277.40	295.85
Pear	8.87	8.66	11.87	22.71	27.04	29.91
Cherry	9.92	10.05	17.09	15.31	16.15	16.94
Other	5.05	7.49	10.95	>11.00	?	?
Total	101.69	122.48	160.95	>248	>320	>343

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.

Data: WSDA, Washington Growers Clearing House, Wenatchee Valley Traffic Assoc.

Value of WA Organic Apples and Pears



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.

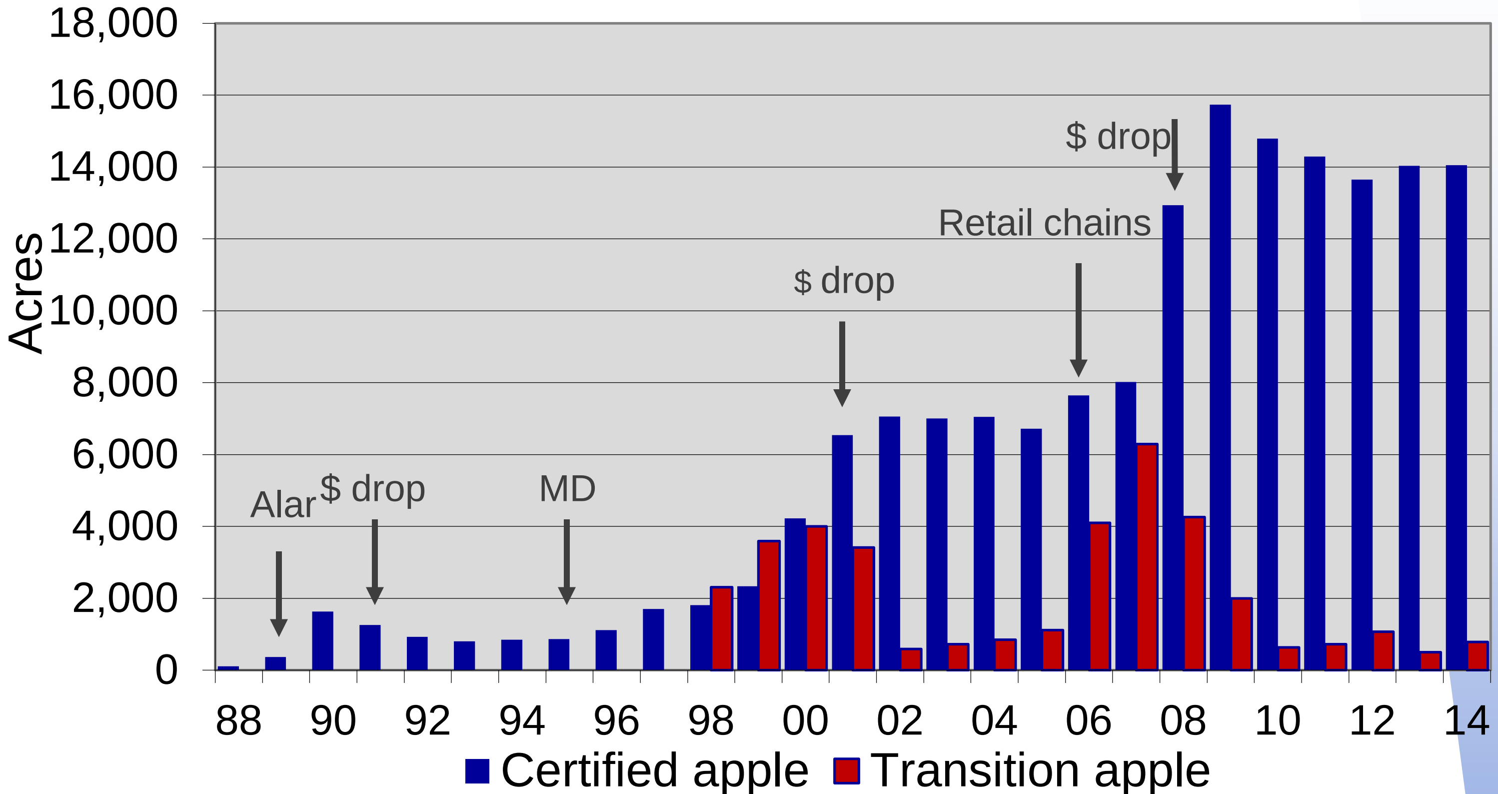
Data: Washington Growers Clearing House, Wenatchee Valley Traffic Assoc.

Organic Apples

The expansion of organic apple area in the state has proceeded in a stepwise fashion as shown in slide 19. 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.

While ‘Red Delicious’ remains the most widely planted cultivar under conventional management, ‘Gala’ and ‘Fuji’ dominate organic plantings, with ‘Honeycrisp’ increasing rapidly in area (slide 20). The change in area of cultivars over time can be seen in slides 21 and 22. In addition, many new and specialty cultivars are being grown organically, including some for hard cider production (slide 23).

Organic Apple Acreage
Washington State

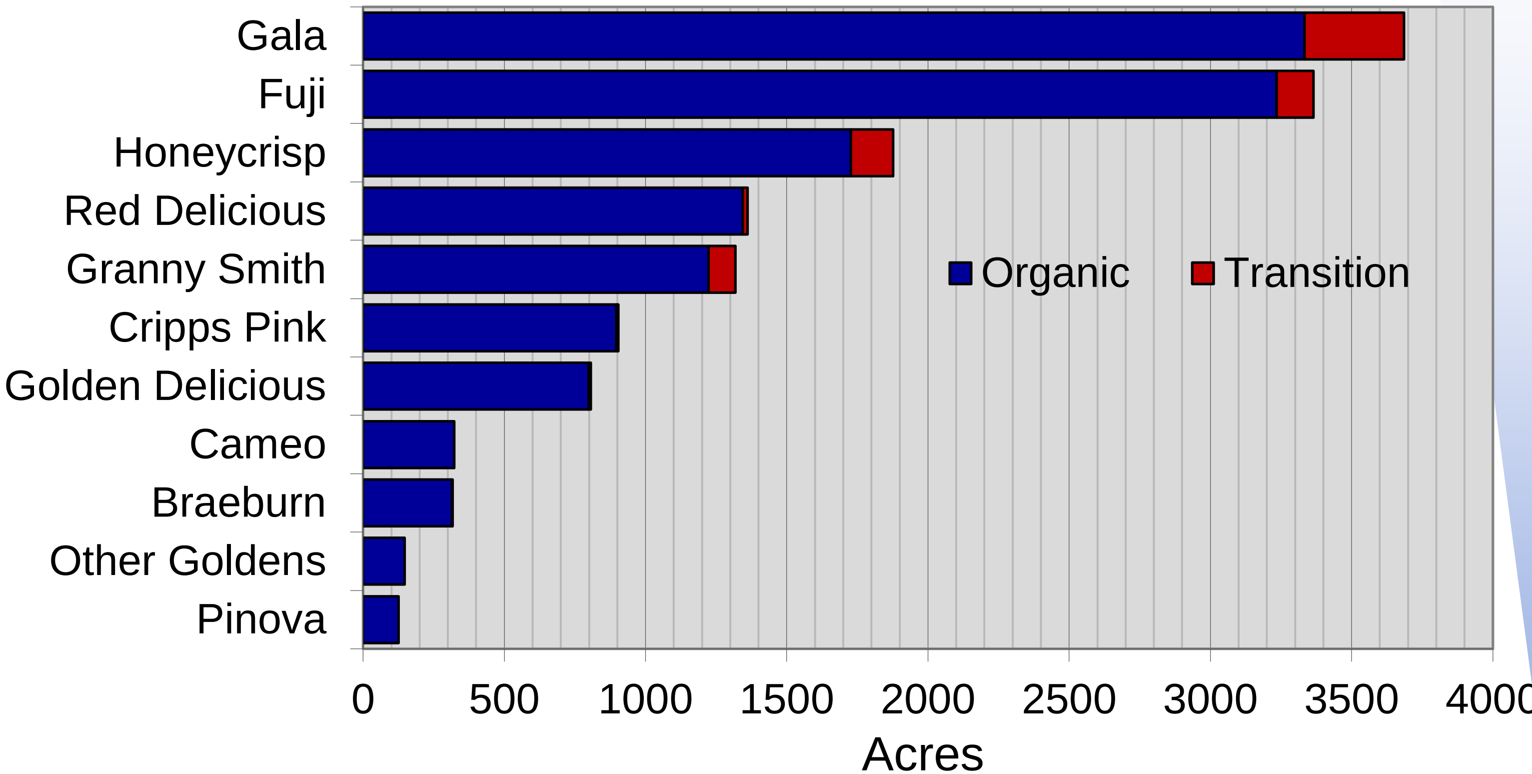


14,052 ac = 9% of WA apple bearing acreage
(based on 2013 WA-NASS estimate of 156,000 acres)

Some historical events that have influenced organic apple production include the Alar incident, price volatility ($ Drop), the introduction of mating disruption (MD) for codling moth control, and market entry by national chain supermarkets (Retail chains).

WSDA, OTCO data

Organic Apple Variety Acres Washington 2014



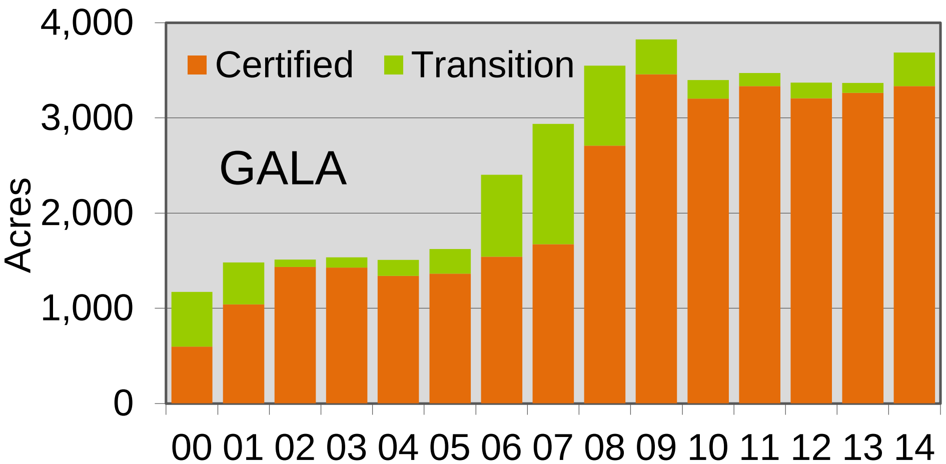
Fuji and Gala = 47% of certified apple acres;
Honeycrisp tops Red and Granny

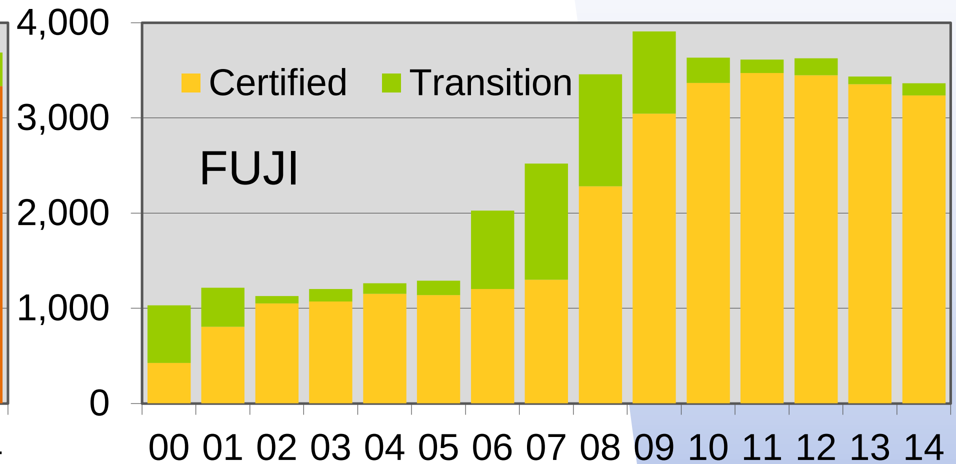
WSDA, OTCO data; Cripps Pink includes Pink lady; Pinova includes Pinata and Sonata.

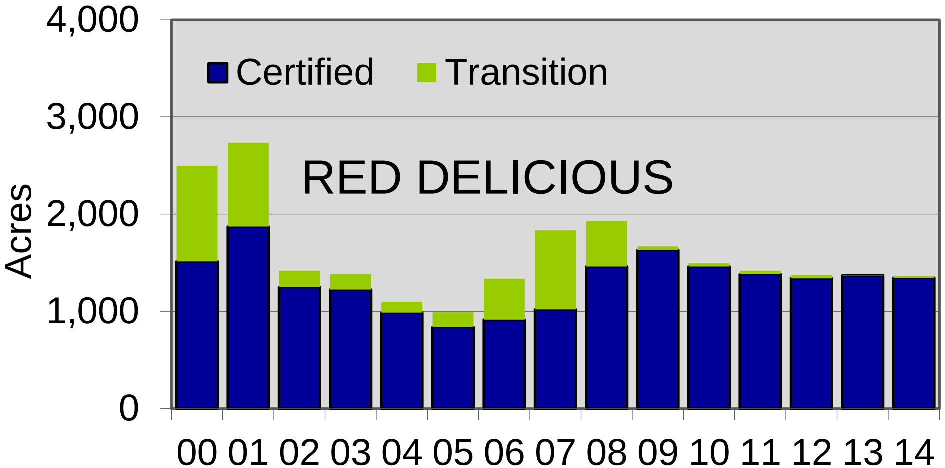
Photo: B. Barritt

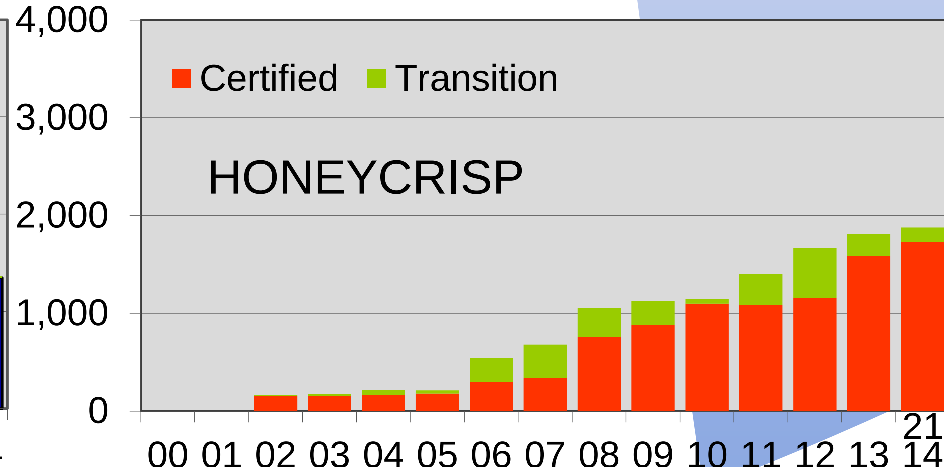
Organic Apple Varieties

Washington State Acres Trend









WSDA, OTCO data

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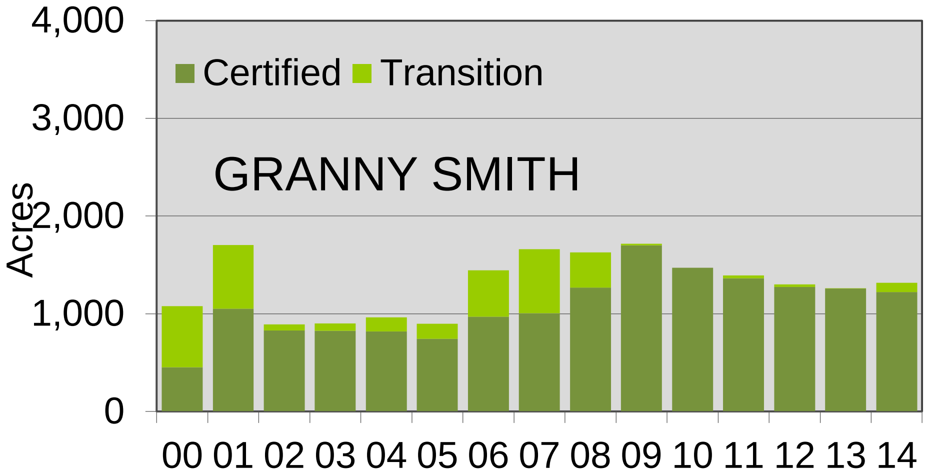
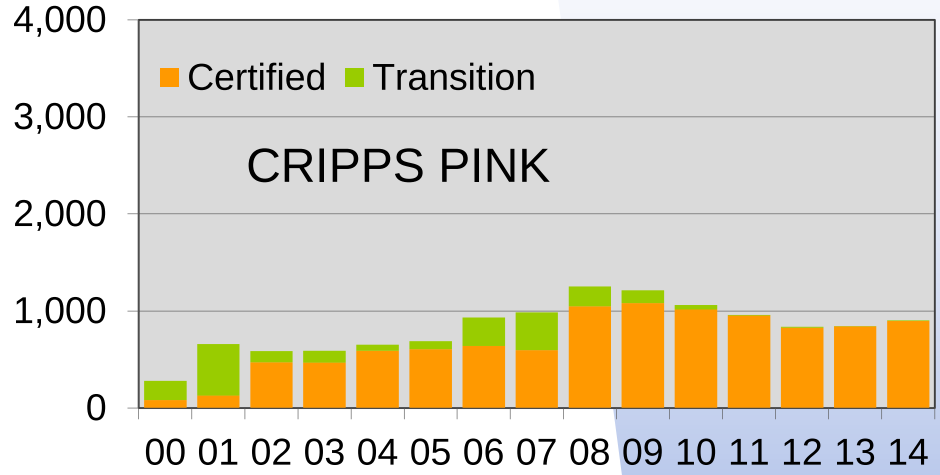
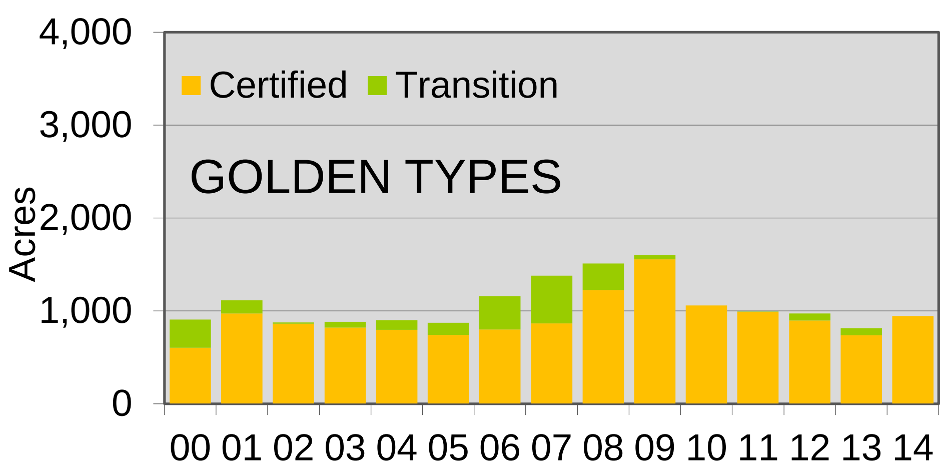
Organic Apple Varieties
Washington State Acres Trend







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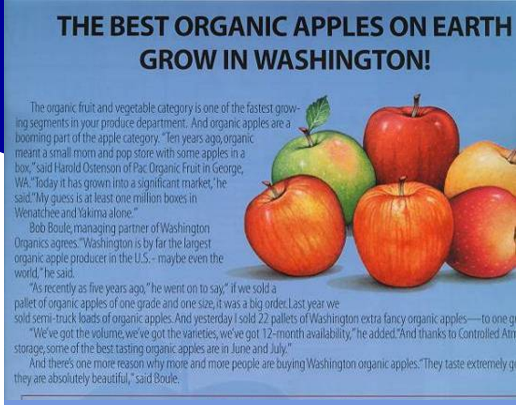
WSDA, OTCO data

Organic Specialty Apples

Washington State 2012


THE BEST ORGANIC APPLES ON EARTH GROW IN WASHINGTON!

The organic fruit and vegetable category is one of the fastest growing segments in your produce department. And organic apples are a booming part of the apple category. "Ten years ago, organic meant a small mom and pop store with some apples in a box," said Harold Ostenson of Pac Organic Fruit in George, WA. "Today it has grown into a significant market," he said. "My guess is at least one million boxes in Wenatchee and Yakima alone."

Bob Boule, managing partner of Washington Organics agrees. "Washington is by far the largest organic apple producer in the U.S. - maybe even the world," he said.

"As recently as five years ago," he went on to say, "if we sold a pallet of organic apples of one grade and one size, it was a big order. Last year we sold semi-truck loads of organic apples. And yesterday I sold 22 pallets of Washington extra fancy organic apples—to one

"We've got the volume, we've got the varieties, we've got 12-month availability," he added. "And thanks to Controlled storage, some of the best tasting organic apples are in June and July."

And there's one more reason why more and more people are buying Washington organic apples. "They taste extremely they are absolutely beautiful," said Boule.

WA Apple Commission

<u>Over 100 varieties of organic apples grown in WA, from small to larger quantities</u>

- 50-100 ac: Ambrosia®, Jonagold, Opal®
- 11-50 ac: Autumn Glory®, Empire, Ginger Gold®, Golden Supreme®, Jazz™, Jubilee, Kanzi®, Lady Alice®, McIntosh, Minneiska (SweeTango®), Pacific Rose™, RosaLynn
- 1-10 ac: Arkansas Black, Blondee, Gravenstein, Earligold, Envy™, Liberty, Rome, Cortland, Sansa, Spitzenberg, Tsugaru, Winesap, Winter Banana, Zestar!®

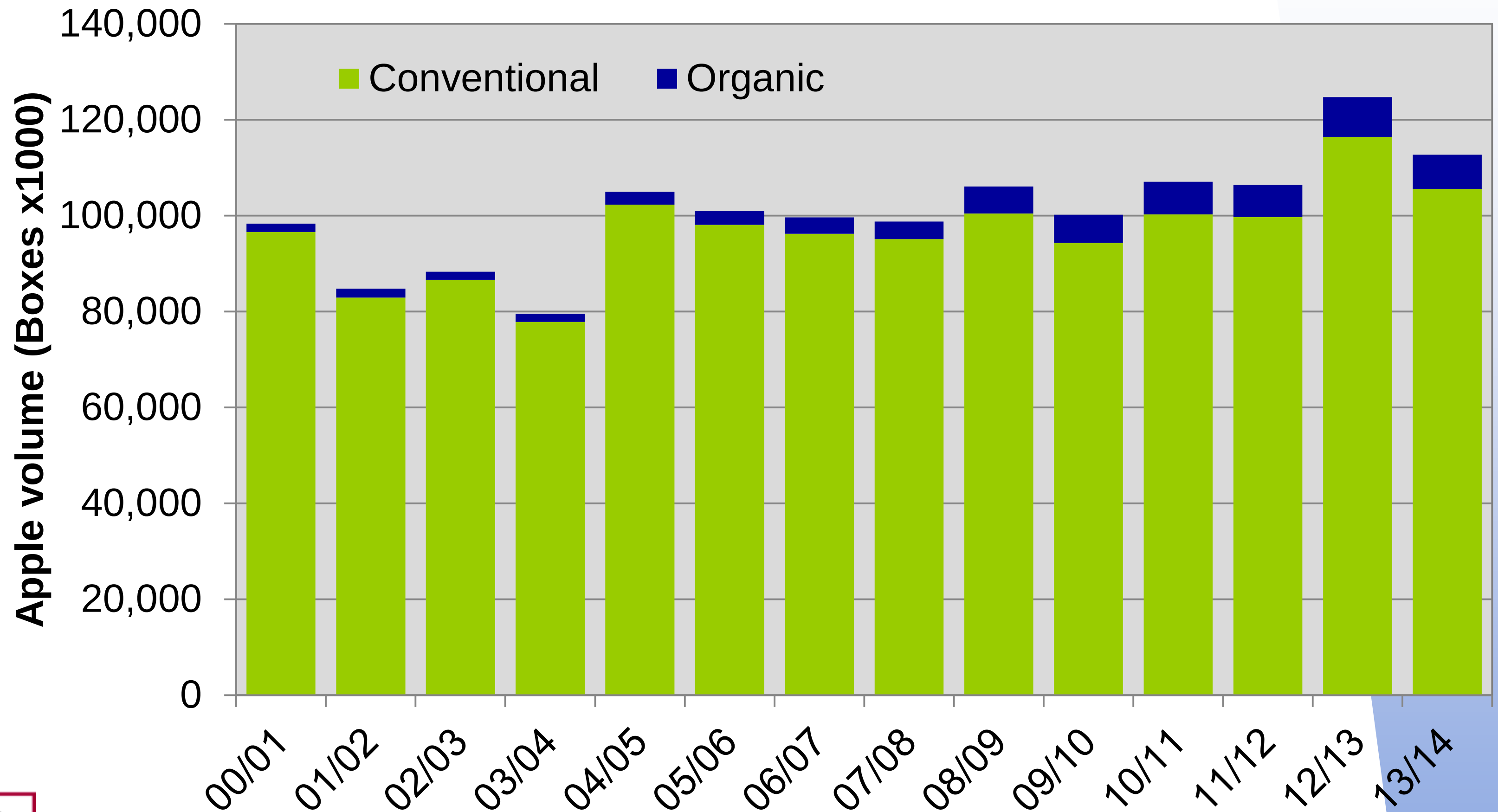
Varieties listed in WSDA producer directory.

WSDA, OTCO data

In 2014, certified organic apples represented about 9% of all bearing apple acres in the state. This has translated to about 6% of the fresh shipments of apples (slides 25 and 26), with an unknown amount of organic fruit going to the processor market or being sold as conventional for various reasons.

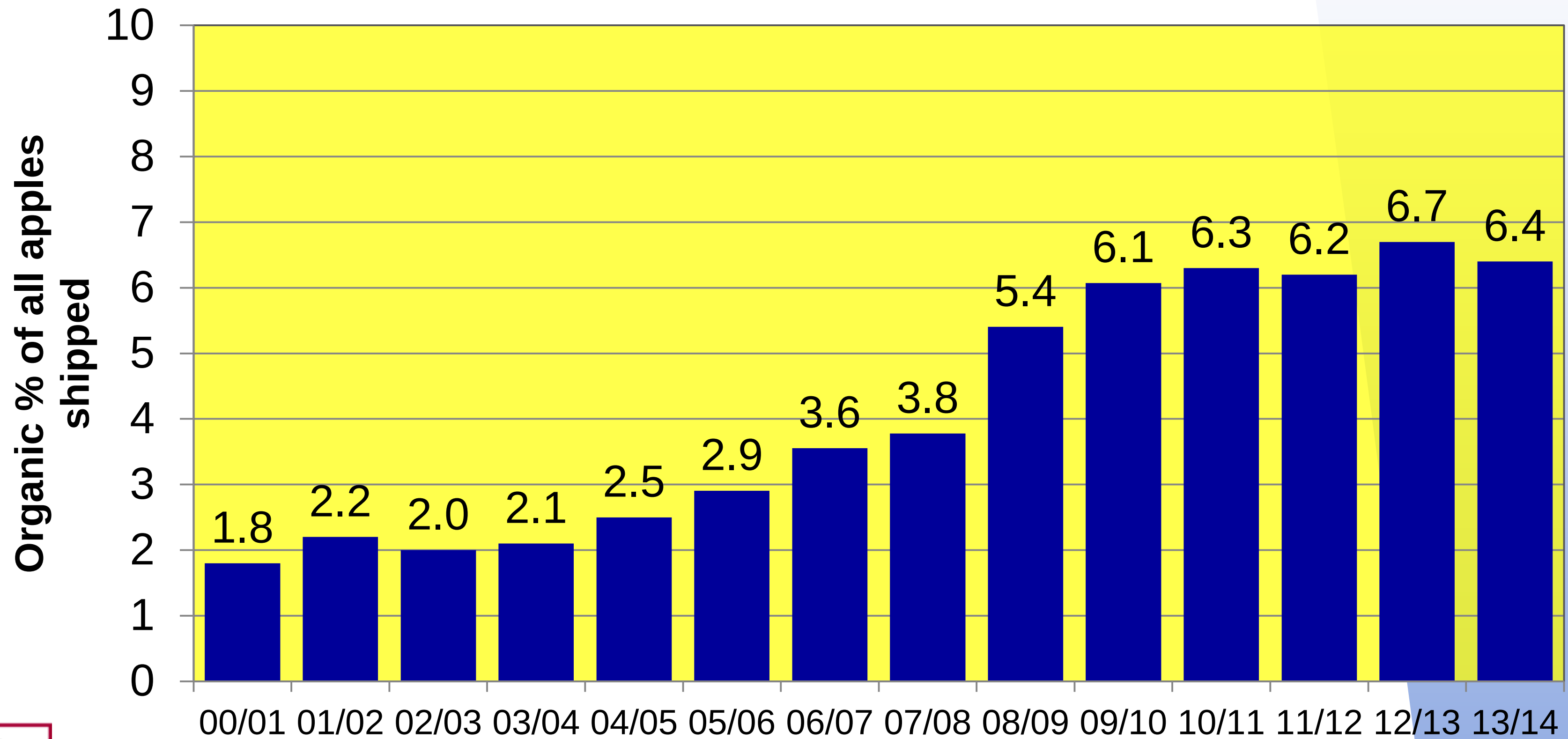
A general upward trend of shipments has occurred since a big jump in 2008 (slide 27), despite slight declines in acreage after 2009. This can be attributed to newer high-yielding plantings coming into production, as well as less fruit being diverted to conventional or other markets. The increase has been driven by dramatic rises in ‘Gala’ and ‘Fuji’ shipments, with both exceeding 2 million 40-lb boxes in 2012, a large crop year (slides 28, 29). The rise of organic ‘Honeycrisp’ production is also evident. Despite the rapid rise in supply, prices have also risen during this period.

Washington Apple Volume
Conventional and Organic



Data: WVTA & Washington Growers Clearing House; organic season average FOB history; priced boxes all grades ,sizes, storage

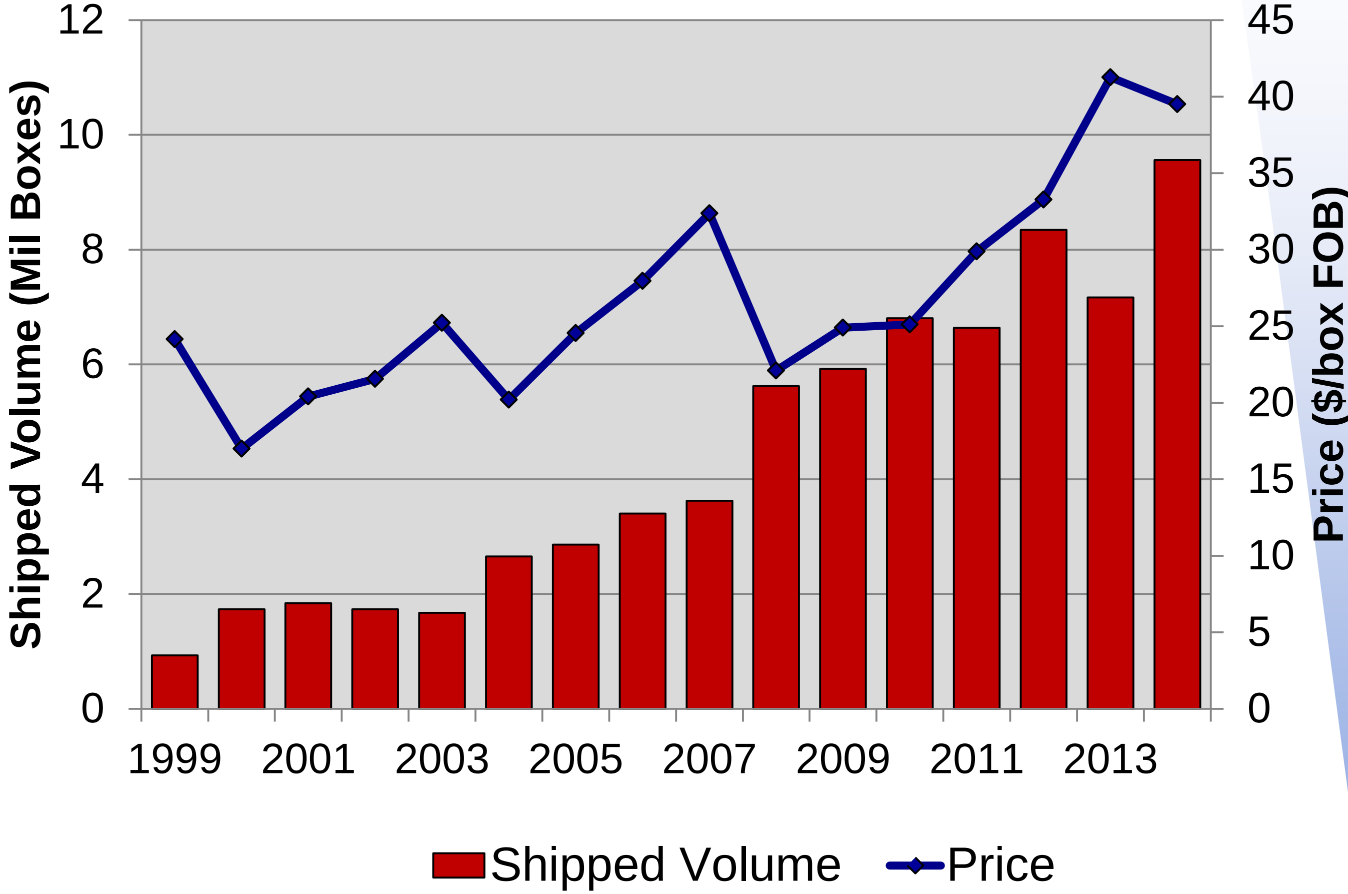
Organic Share of Apple Shipments
Washington State



Data Source: Wenatchee Valley Traffic Association

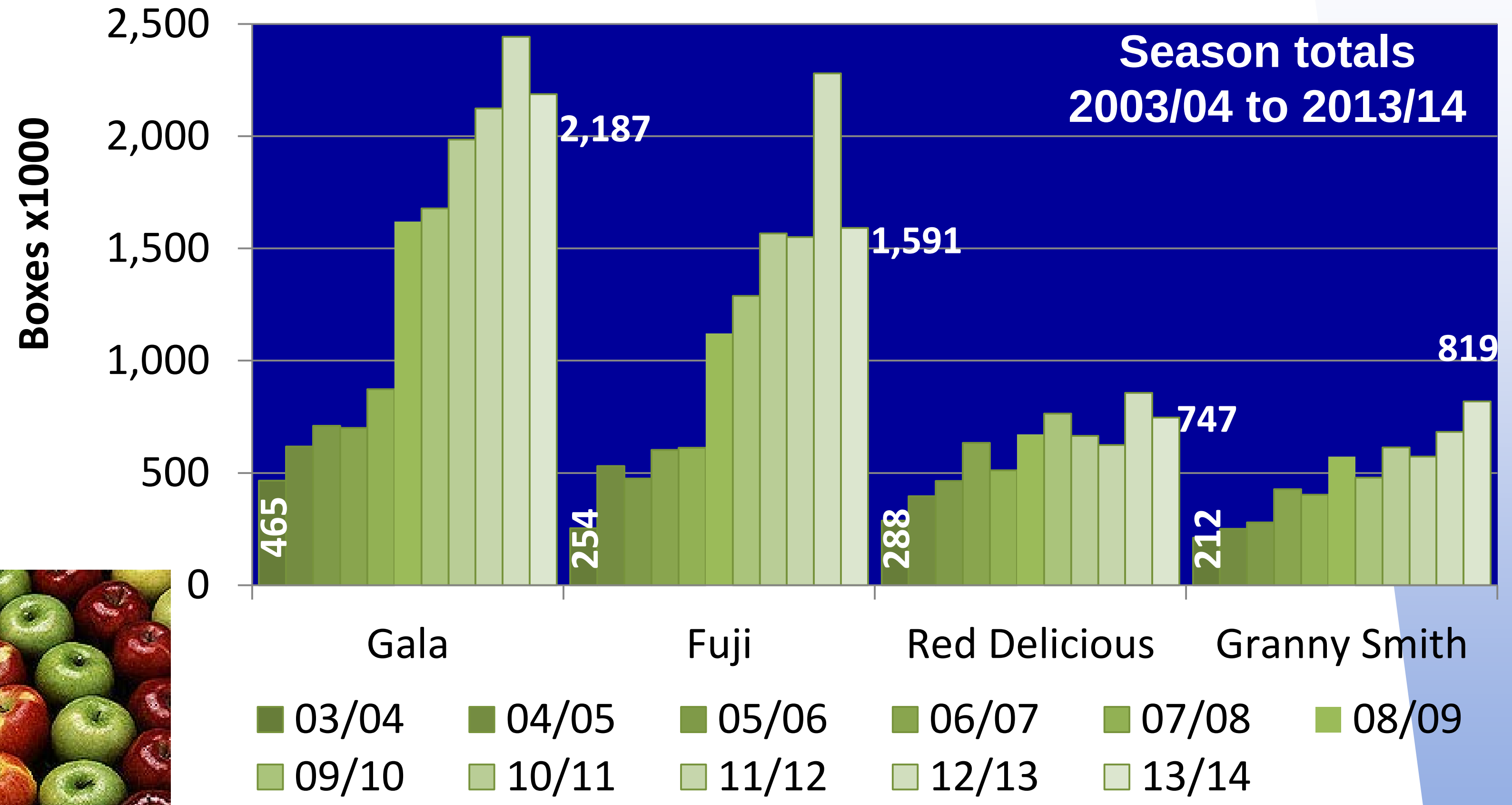
Organic Apple Sales

Volume and Price Trends - WA



40 lb box. Data: Wenatchee Valley Traffic Assoc.; Washington Growers Clearing House; WSTFA; organic season average FOB history; priced boxes all grades ,sizes, storage

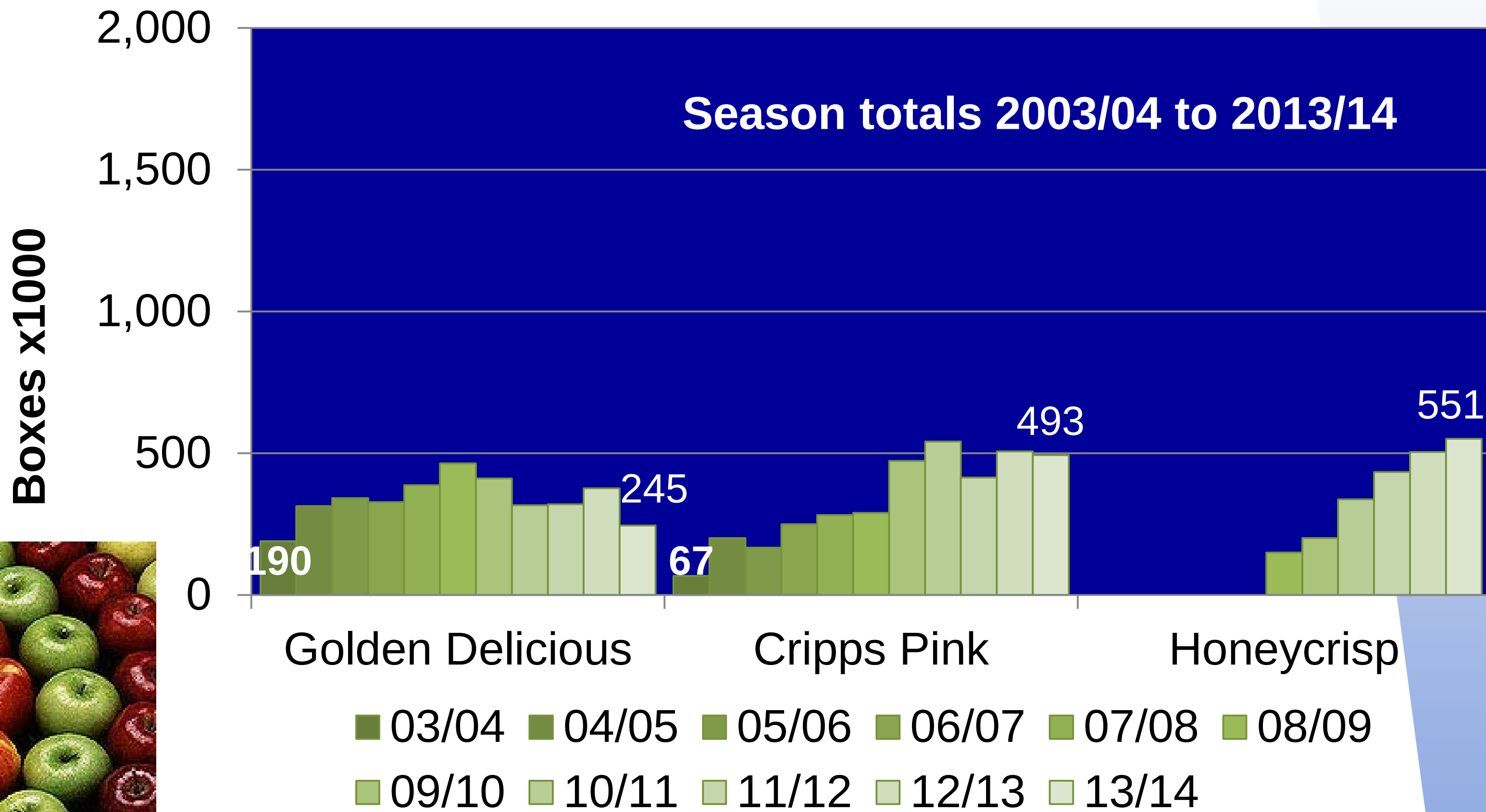
Total Shipped Organic Volume
by year and variety, Washington State



Over 2.4 million boxes of organic ‘Gala’ sold for 2012 crop

Data Sources: Washington Growers Clearing House & Wenatchee Valley Traffic Association.

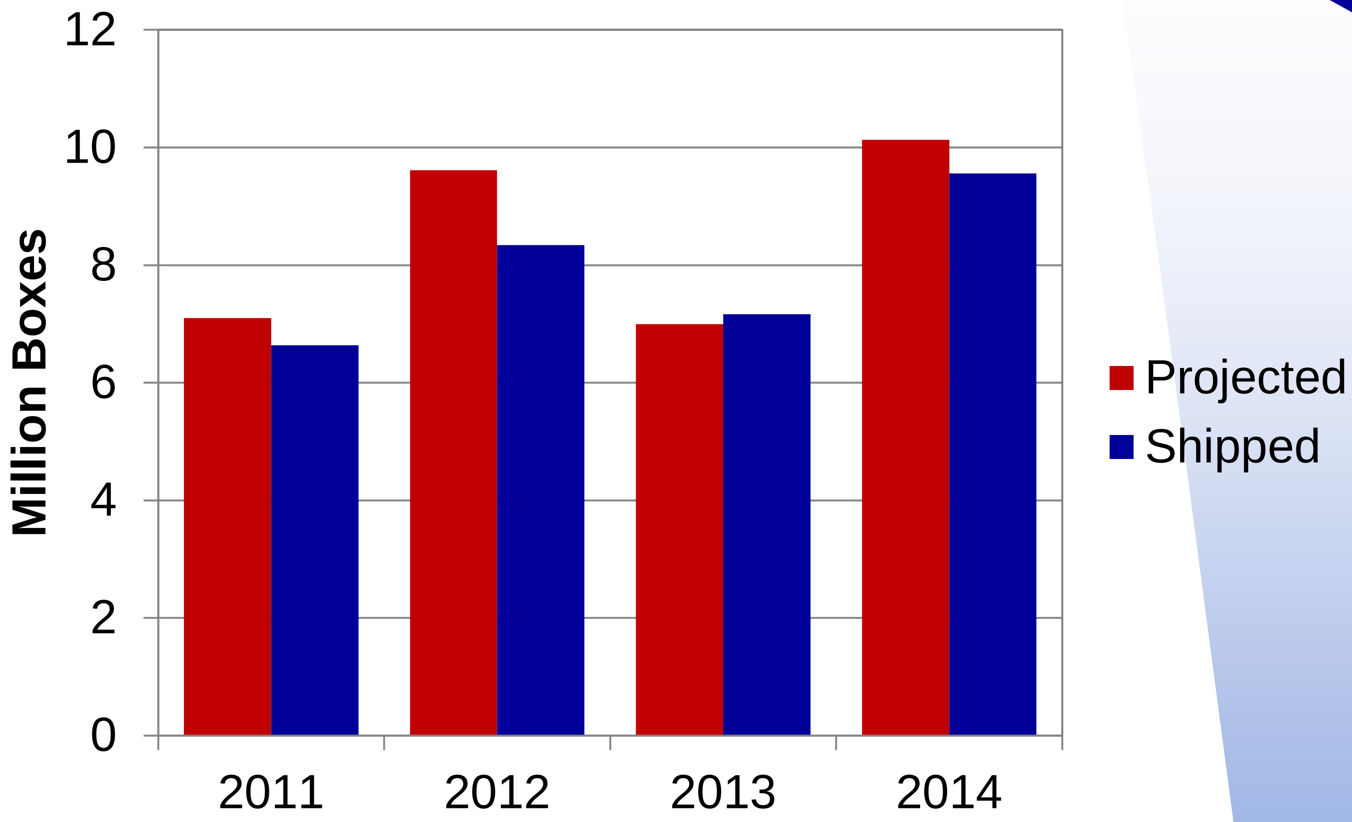
Total Shipped Organic Volume
by year and variety, Washington State



Data Sources: Washington Growers Clearing House & Wenatchee Valley Traffic Association.

The 2014 crop was the largest ever for organic apples, estimated at 10.1 million boxes (slide 31). The final shipped volume was just over 9.5 million boxes. Many varieties experienced higher demand than there was supply, despite harvested volumes up as much as 28% from the previous record (slide 32). The percent of shipped volume relative to the acres planted is generally similar for most varieties, although ‘Honeycrisp’ had a higher percent area than shipments due to many young plantings not in full production (slide 33).

Washington Organic Apple Crops



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

Data: Wenatchee Valley Traffic Assoc. and Washington State Tree Fruit Assoc.

2014
Organic Apple Crop

Total Crop = 10.13 million boxes

	Boxes x1000		2014 Increase
	2014	Previous Hi	%
Gala	3,017	2,443	23.5
Fuji	2,491	2,280	9.3
Red Del.	1,101	856	28.6
Golden Del.	534	464	15.1
Granny Smith	912	819	11.4
Honeycrisp	673	551	22.1
Cripps Pink	612	541	13.1

Data Sources: Washington Growers Clearing House, Wenatchee Valley Traffic Association, WSTFA.

2014
WA Organic Apple Crop

Share of Acres vs Crop Volume

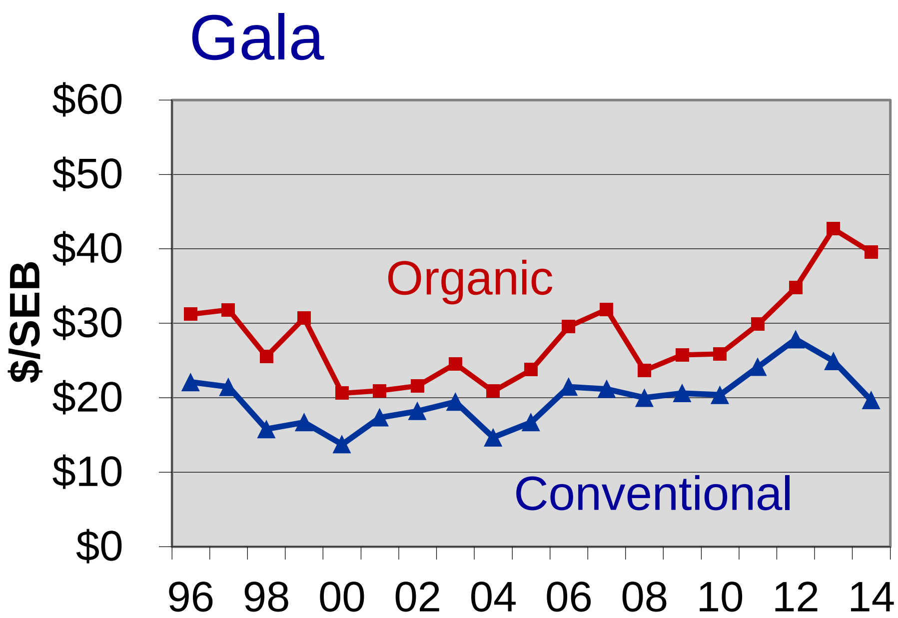
Variety	% of Acres	% of Crop
Gala	23.7	29.8
Fuji	23.0	24.6
Red Del.	9.6	10.9
Golden Del.	5.7	5.3
Granny Smith	8.7	9.0
Honeycrisp	12.3	6.6
Cripps Pink	6.4	6.0
Braeburn	2.2	2.5
Cameo	2.3	1.2
Other	6.1	4.0

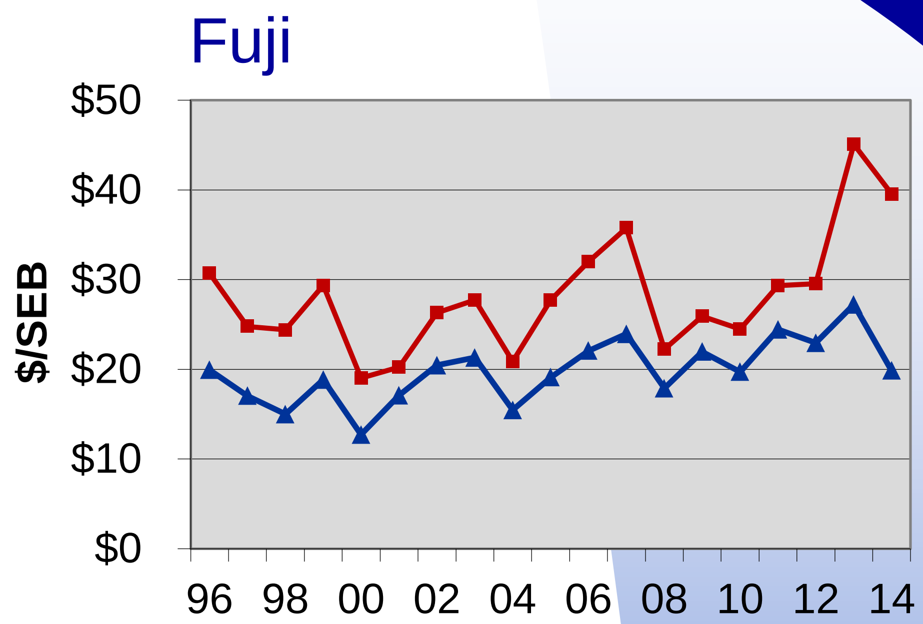
Data Sources: WSDA,Washington Growers Clearing House , Wenatchee Valley Traffic Association, WSTFA.

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 is generally identical between the two, indicating that they are both affected by the overall crop size, which tends to alternate with high and lower years.

The prices on the following slides (35-39) are for fresh packed apples (40 lb box) for all sizes and grades, domestic and export. Organic price premiums are plotted in slide 40 as both the absolute dollar amount as well as the percent difference. Prices and premiums for various varieties are shown in slide 41 for the 2013 crop, a year of high prices for both conventional and organic. By December 2014, prices for the 2014 crop were dropping substantially for conventional and modestly for organic, increasing the percent premium (slide 42). This trend continued for the rest of the market year.

Price Trends
Washington Apples





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

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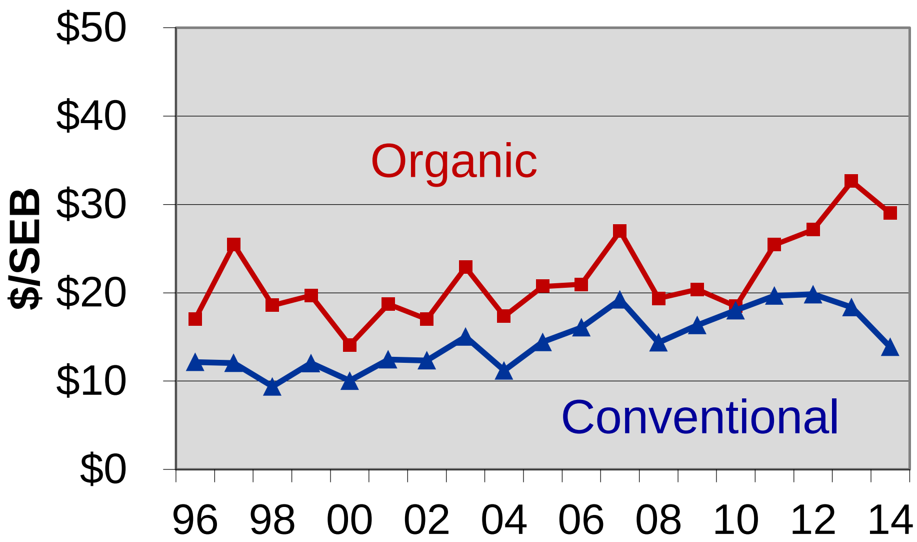
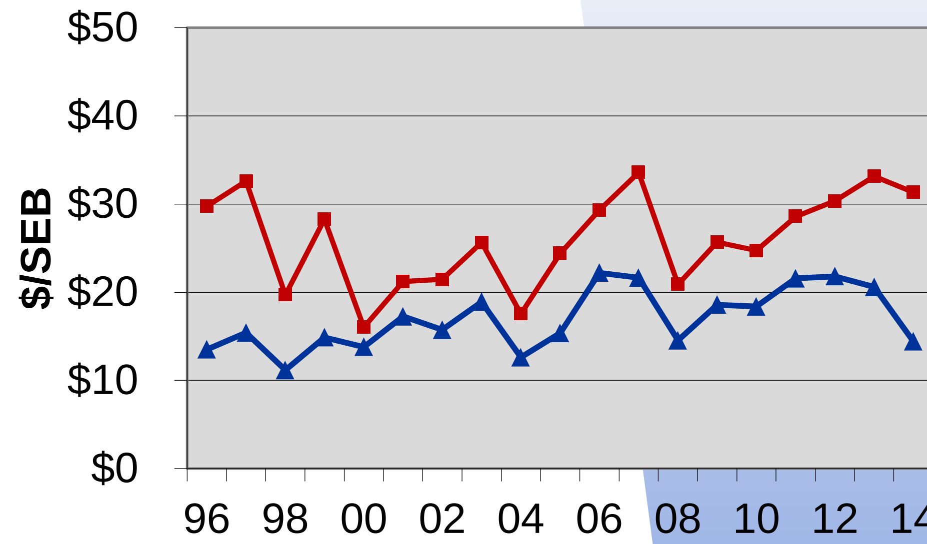
Price Trends
Washington Apples

Red Delicious



Golden Delicious

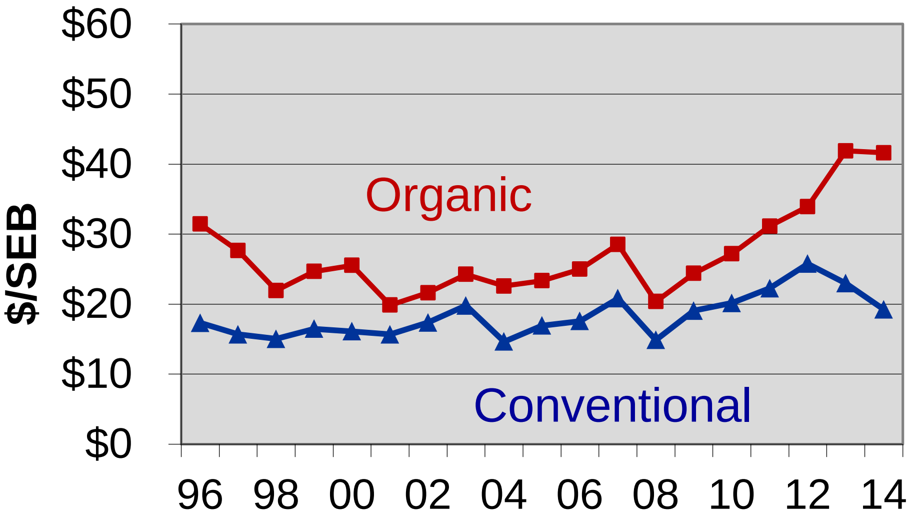


Center for Sustaining Agriculture & Natural Resources

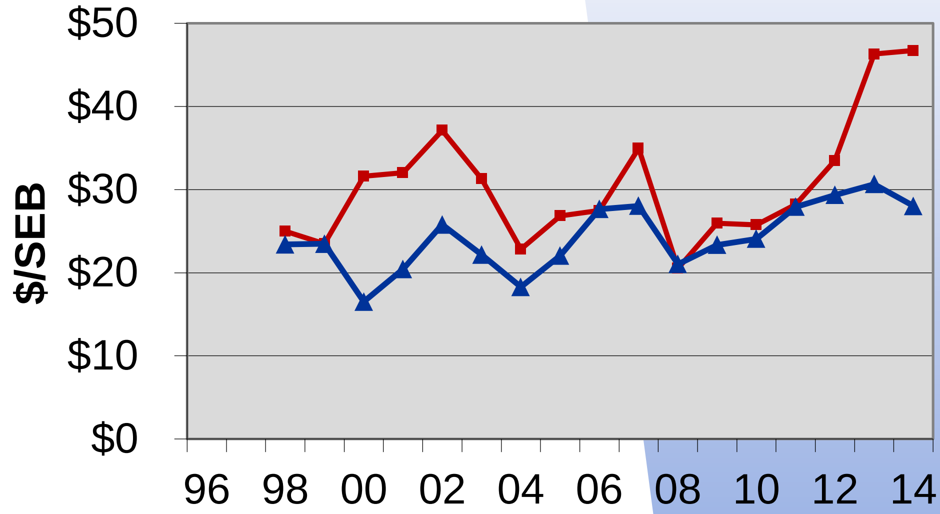
Data: Washington Growers Clearing House, WSTFA. ; FOB averages, all storage, grades, sizes. Annual data points represent season averages: season approx. Sept 1 to end of Aug.

Price Trends Washington Apples

Granny Smith



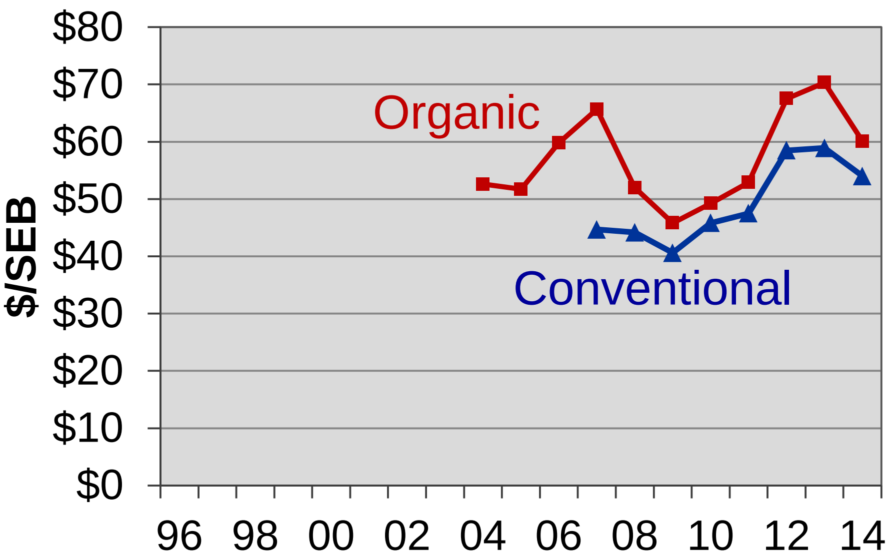
Cripps Pink



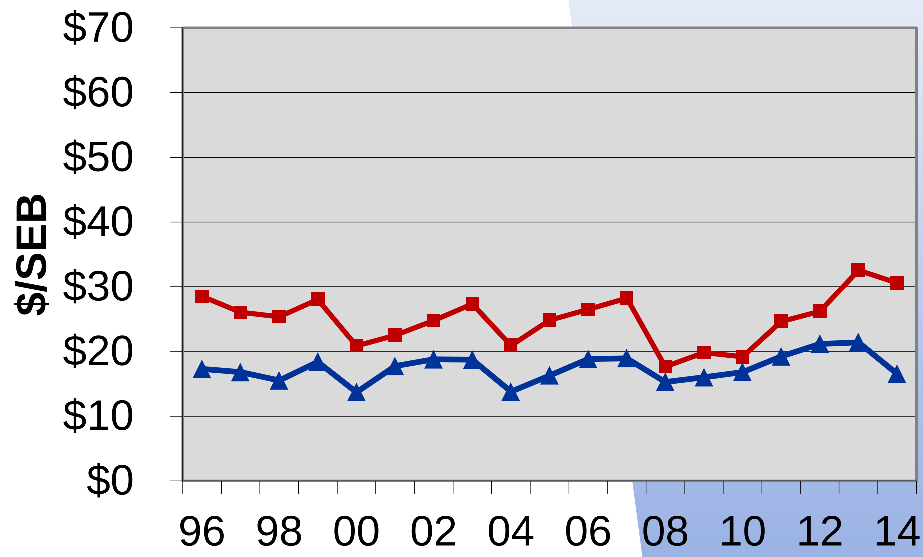
Data: Washington Growers Clearing House, WSTFA. FOB averages, all storage, grades, sizes. Annual data points represent season averages: season runs approx. Sept 1 to end of Aug.

Price Trends Washington Apples

Honeycrisp



Braeburn



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

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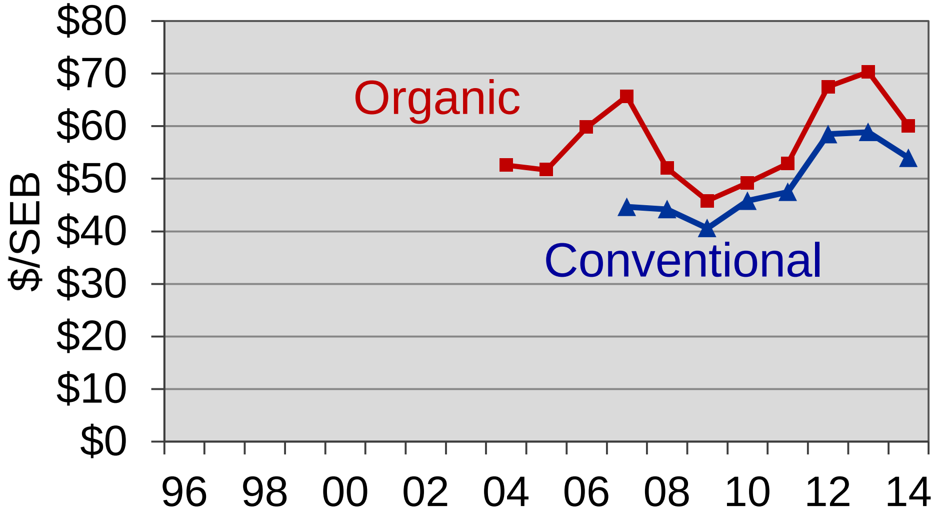
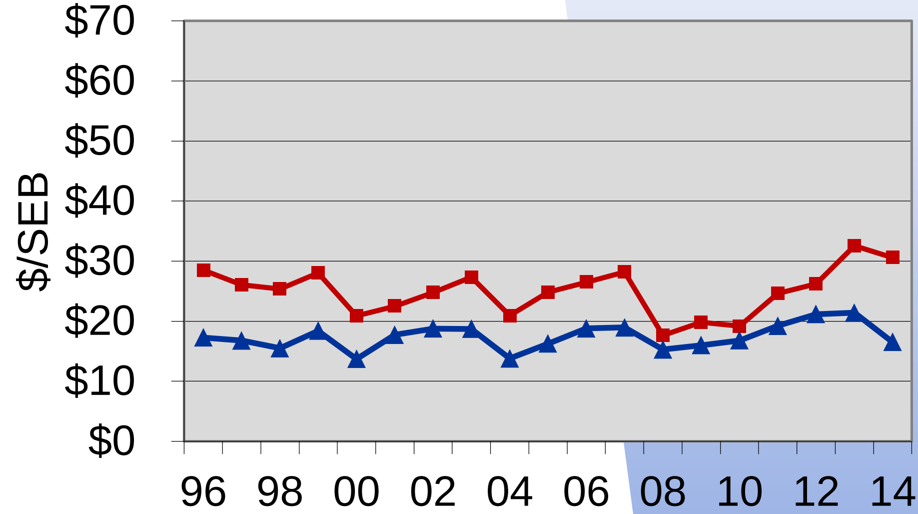
Price Trends Washington Apples

Honeycrisp



Braeburn

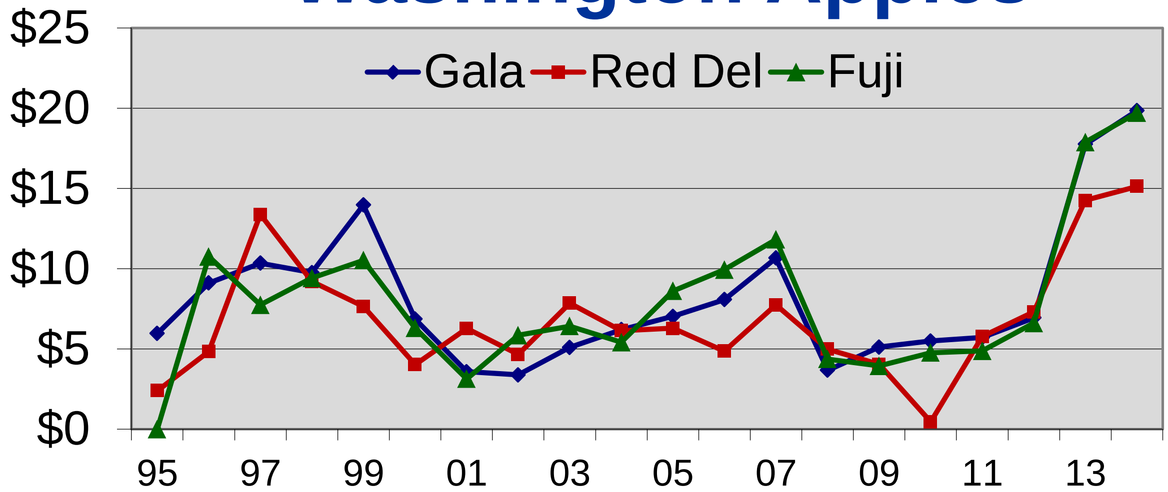


Center for Sustaining Agriculture & Natural Resources

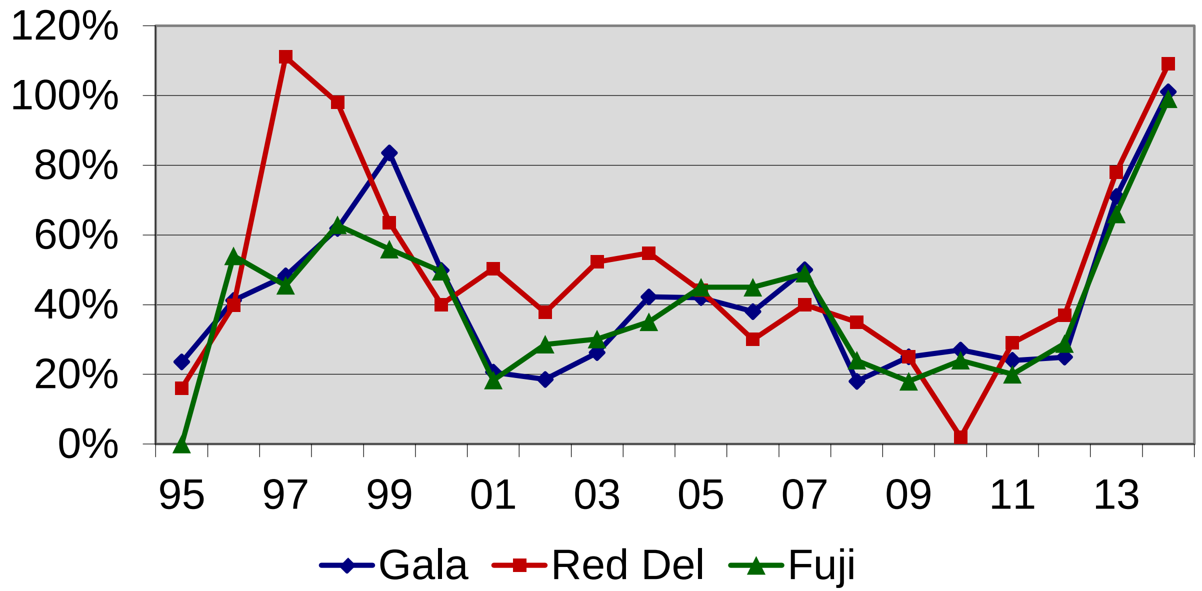
Data: Washington Growers Clearing House, WSTFA. FOB averages, all storage, grades, sizes. Annual data points represent season averages: season runs approx. Sept 1 to end of Aug.

Organic Premiums
Washington Apples

$/**Box**



Percent



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

Data: Washington Growers Clearing House, WSTFA. Annual data points represent season averages: season runs approx. Sept 1 to end of Aug.

Organic Premiums

Washington Apples 2013 Crop

	Price $/box*	Organic price $/box*	Premium $/box	Premium %
Fuji	26.85	43.51	16.66	62
Gala	24.91	41.60	16.69	67
Honeycrisp	59.59	69.27	9.68	16
Red Delicious	18.12	31.25	13.13	72
Golden Delicious	20.58	33.40	12.82	62
Granny Smith	22.86	39.67	16.81	74
Cameo	20.61	38.01	17.40	84
Jonagold	19.55	33.76	14.21	73
Ginger Gold	18.92	30.63	11.71	62
Braeburn	21.27	32.04	10.77	51
Cripps Pink	30.61	39.91	9.30	30
Piñata	33.76	39.50	5.74	17
Ambrosia	39.53	44.98	5.45	14

*Washington Growers Clearing House; 2013 crop season to date as of July 1, 2014

Organic Premiums

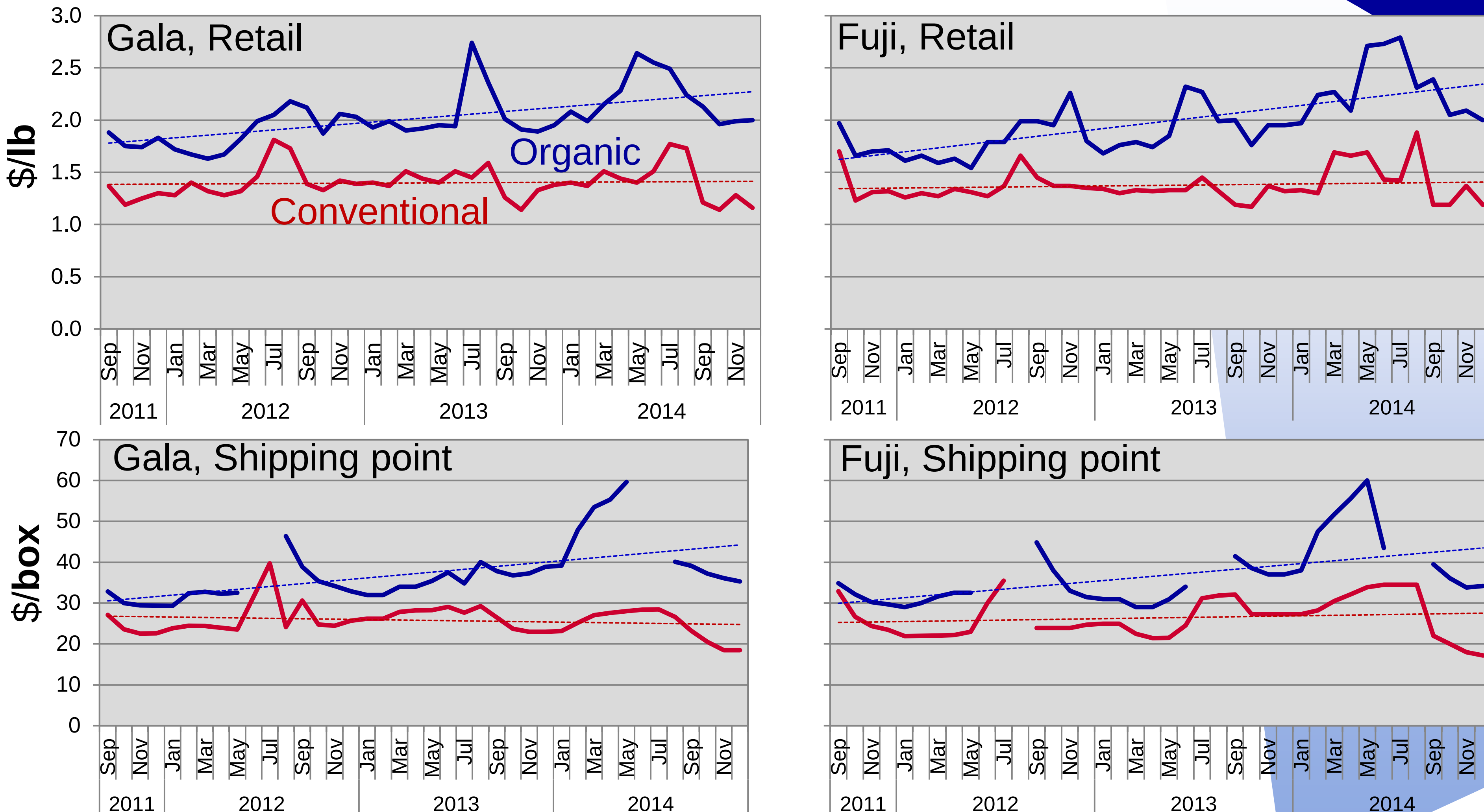
Washington Apples 2014 Crop

	Box Price		Premium	% Premium	
	Con	Org	$/box	This Yr	Last Yr
Fuji	↓	↓	17.46	84	62
Gala	↓	↑	17.27	85	67
Honeycrisp	↓	↓	13.53	30	16
Red Del.	↓	=	13.11	77	72
Golden Del.	↓	↑	13.87	76	62
Granny Smith	↓	↑	18.99	95	74
Cameo	=	↓	10.00	46	84
Jonagold	↓	↓	16.78	93	73
Ginger Gold	↓	n.d.	n.d	n.d.	62
Braeburn	↓	↑	12.77	61	51
Cripps Pink	↑	↑	11.49	36	30
Piñata	↑	n.d.	n.d.	n.d.	17
Ambrosia	↓	↓	-1.09	-3	14

Source: WSTFA; 2014 crop season to date as of December 1, 2014

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 44, monthly price trends over 3.5 marketing seasons are plotted for ‘Gala’ and ‘Fuji’ apple, for both conventional and organic. A dotted trend line is also included to make the general trend more obvious. For both cultivars, at both price points, the trends are the same – conventional prices are essentially flat during this period, while organic prices are trending upwards. Given that the cost of production is generally trending upwards, the implication for conventional growers is that prices will no longer cover costs at some point, while organic growers should be able to cover increasing costs. There is no obvious difference between the trends at shipping point and at retail, suggesting that prices at both points are responding similarly to economic factors.

National Apple Retail vs WA Shipping Point Price



Dotted lines are linear trends

Data: USDA-AMS

Organic Pears

Similar data as for apple are presented for organic pear in Washington in the next slides (46-53). 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 (over 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.

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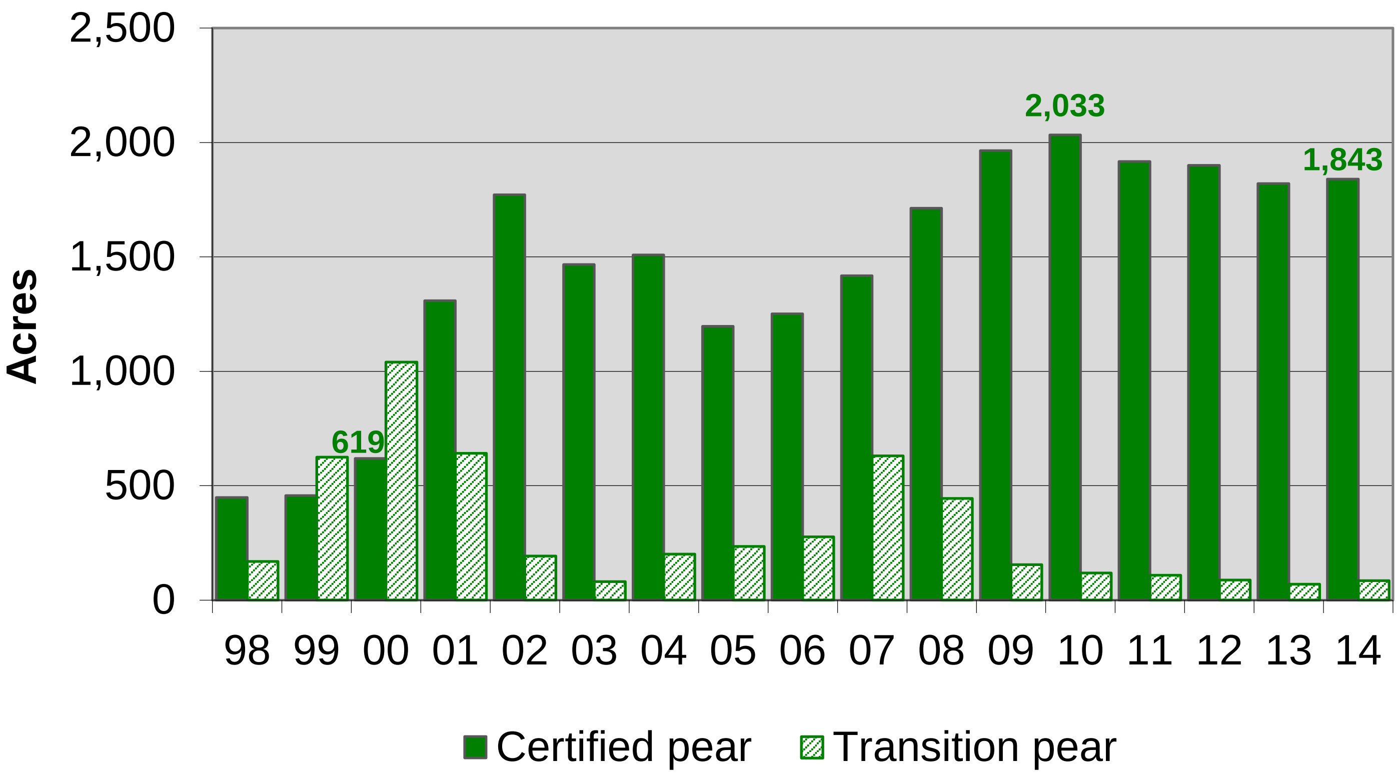
Organic Pear Acreage
Washington State

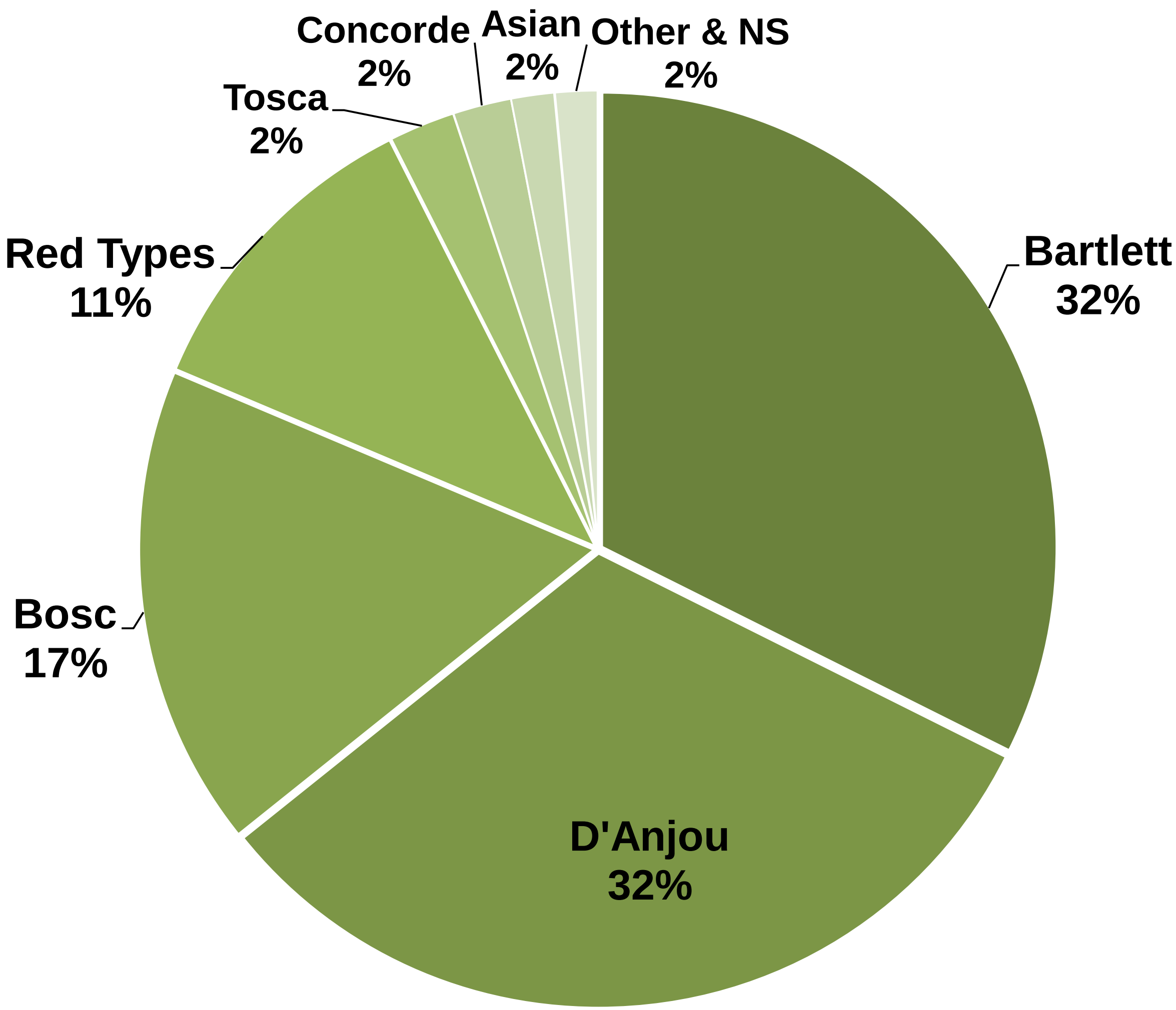


2014 organic = 8.8% of total WA pear acreage
(based on WA-NASS 2013 value of 20,900 pear acres)

Center for Sustaining Agriculture & Natural Resources

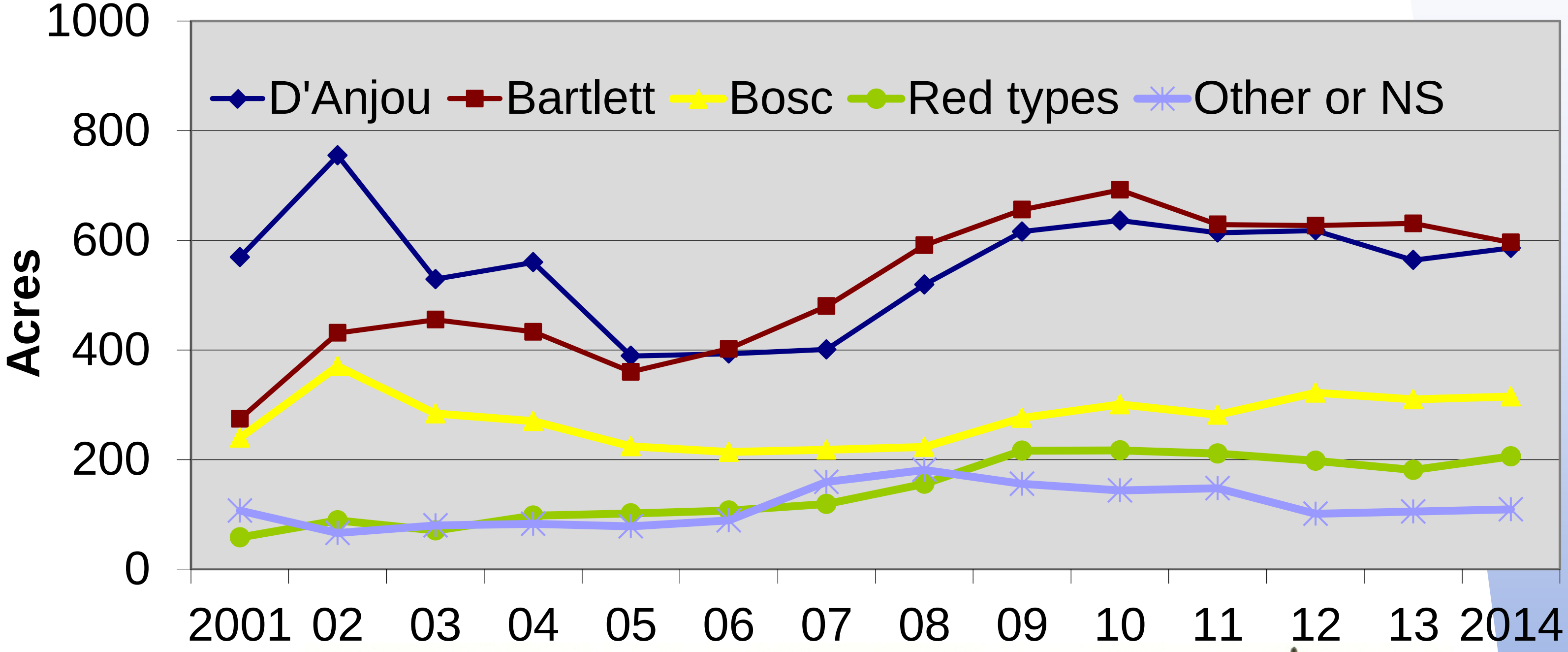
Combined certifier data

Organic Pear Acres by Variety
Washington 2014



Combined certifier data; NS = not specified

Organic Pear Variety Trend
Washington State



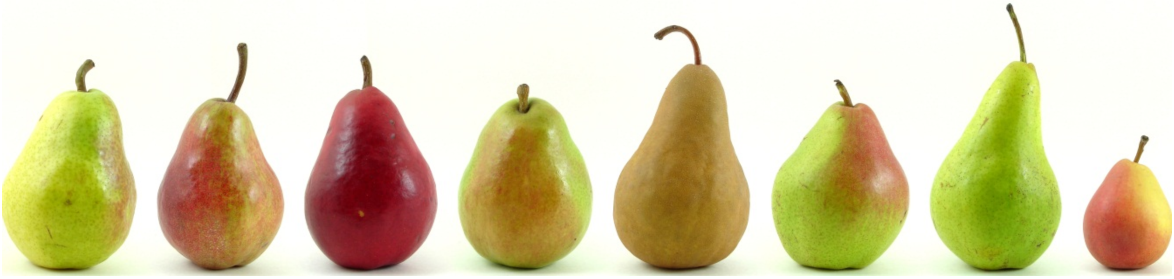


Photo: Agyle

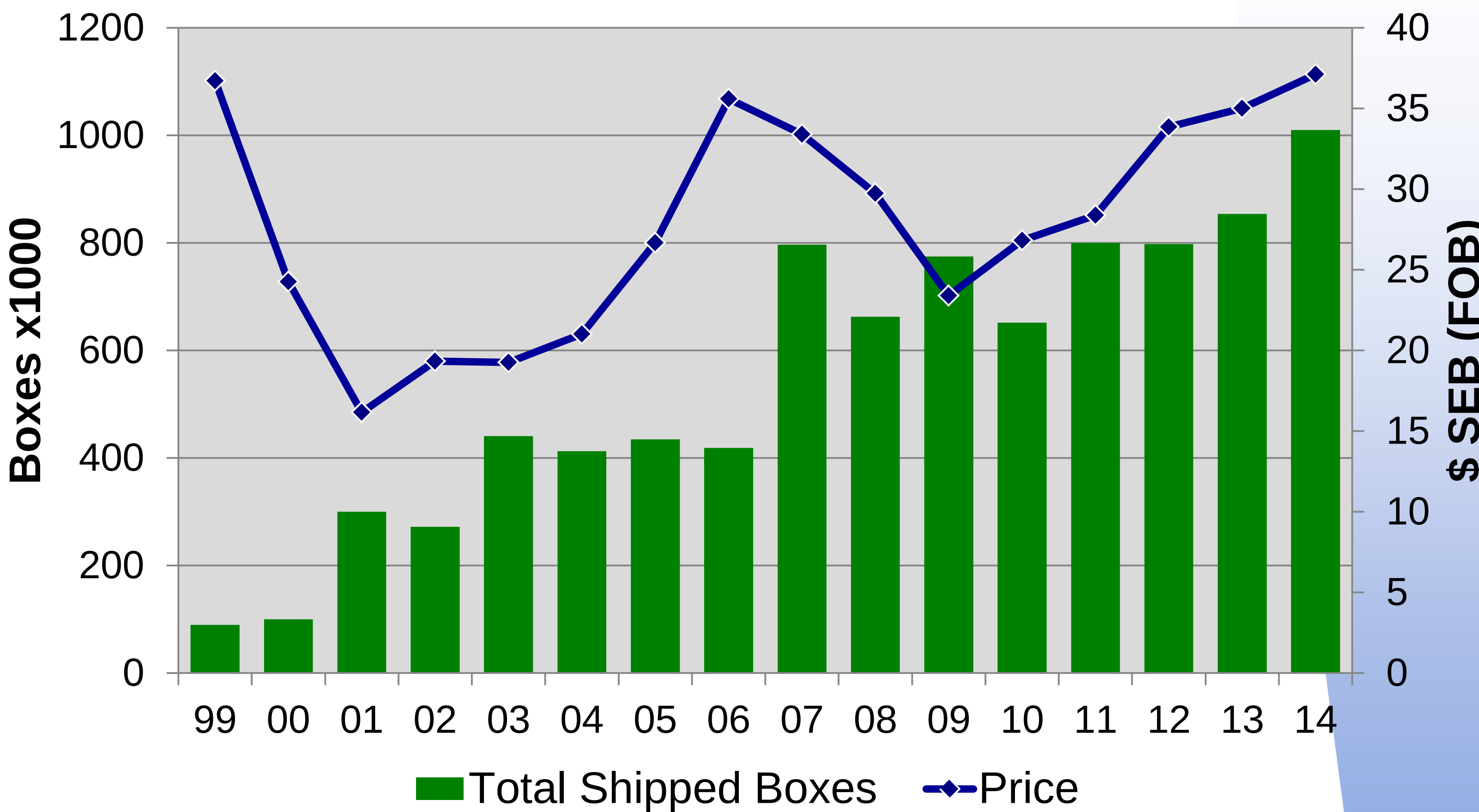
Combined certifier data

Organic Specialty Pears
Washington State 2012

- Over 25 varieties of organic pears and Asian pears grown in WA, from small to larger quantities.
- >25 ac – Concorde, Comice, Tosca, Asian
- Acreage unknown - Belle Pickard, Flemish Beauty, Forelle, Maxine, Moonglow, Seckel, others
- Varieties show on WSDA producer list .

WSDA data

Organic Pear Sales
Volume and Price Trends



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

Price Trends
Washington Pears

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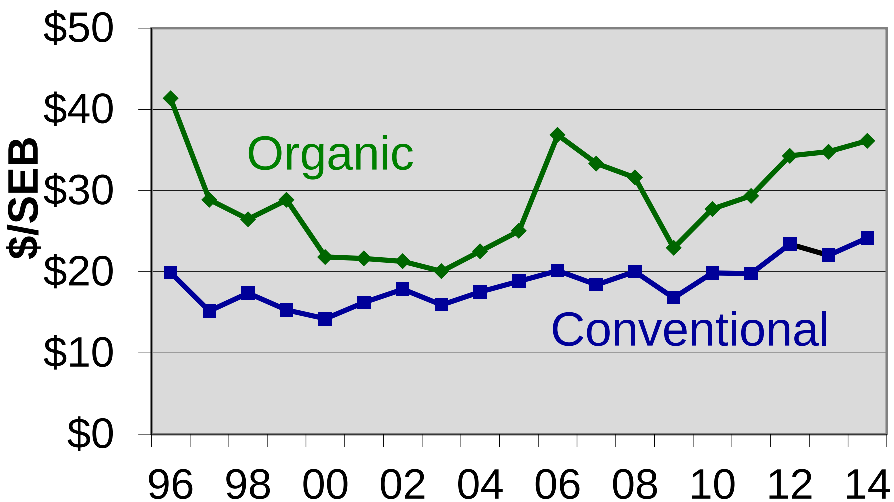
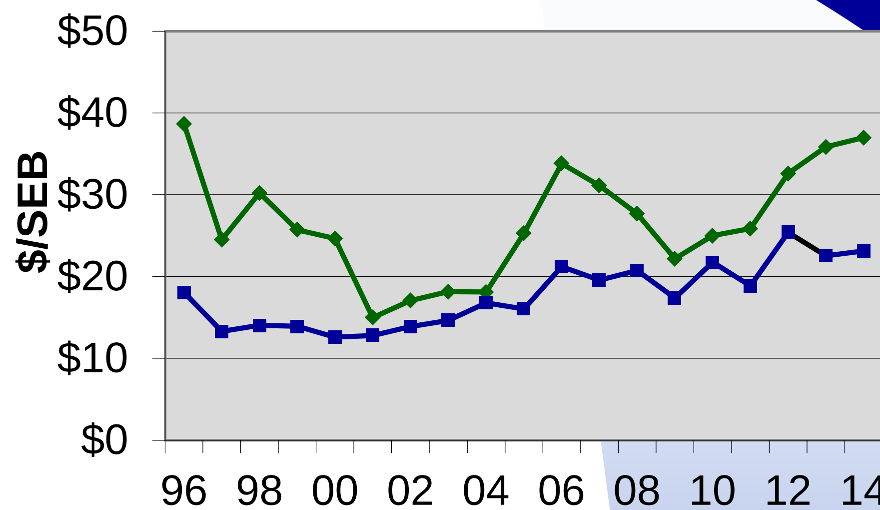
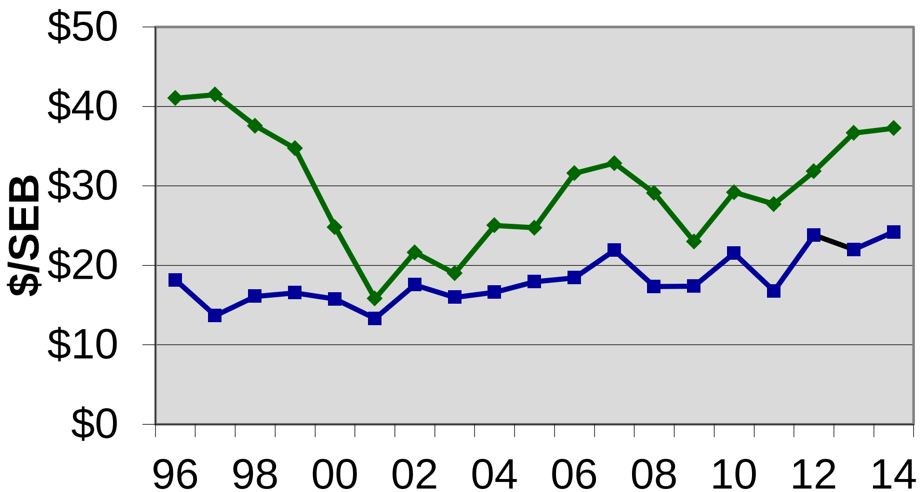
Bartlett



D'Anjou



Bosc



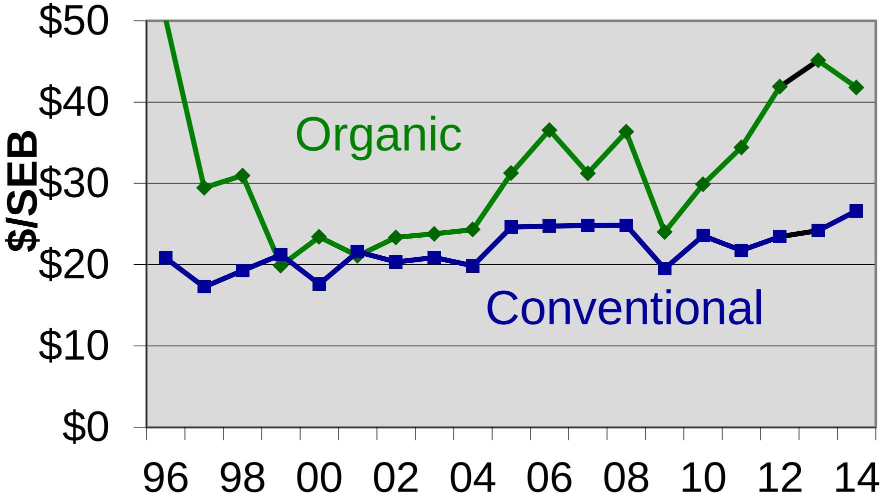
Bosc photo: US Pear

Center for Sustaining Agriculture & Natural Resources

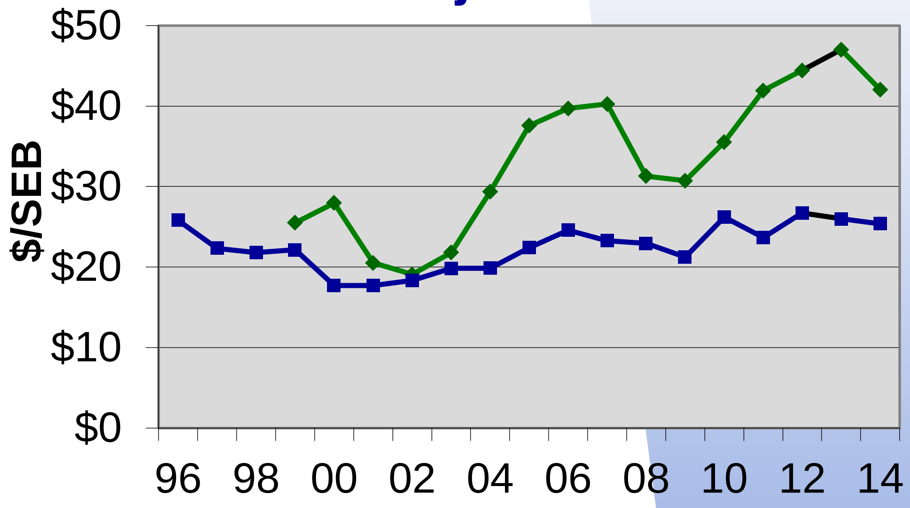
SEB = Standard Equivalent Box; Data: WSTFA, Washington Growers Clearing House. Annual data points represent FOB season price averages.

Price Trends Washington Pears

Red Bartlett



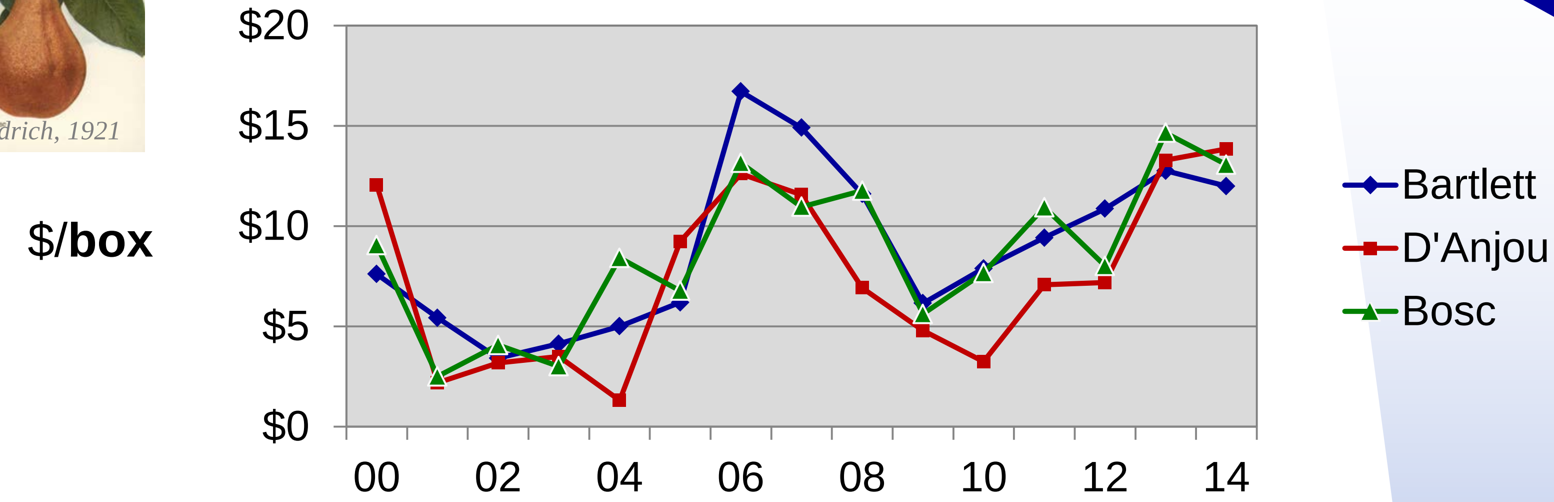
Red D'Anjou

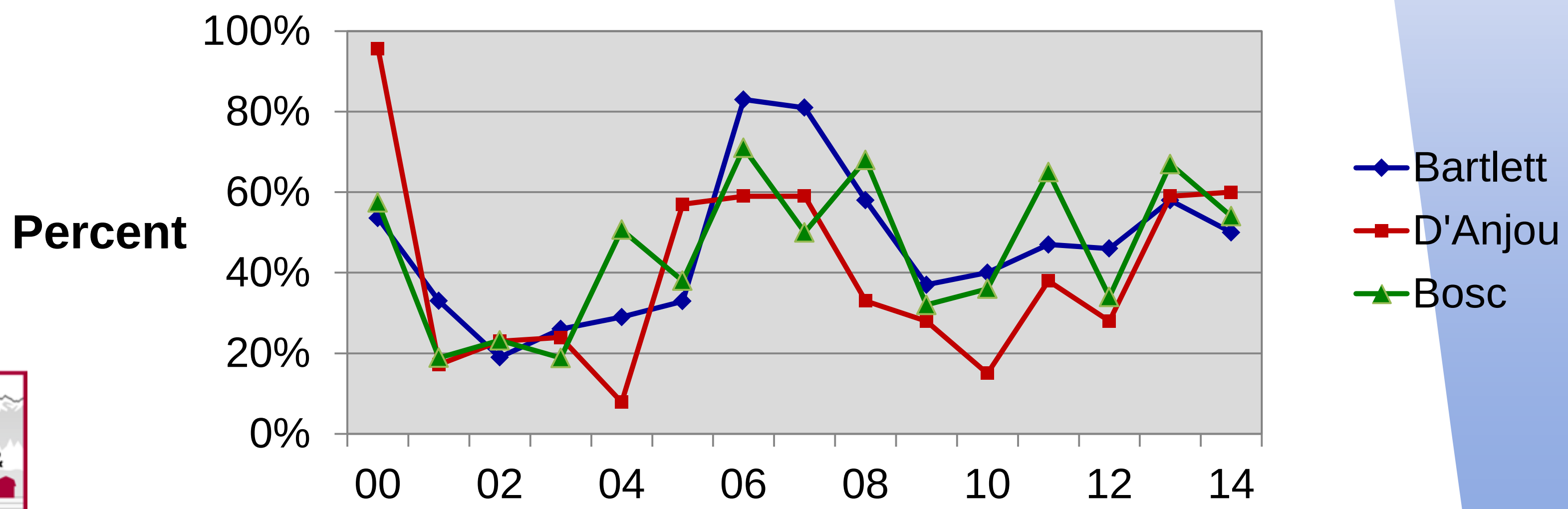


SEB = Standard Equivalent Box; Data: WSTFA, Washington Growers Clearing House. Annual data points represent FOB season price averages.

Organic Premiums

Washington Pears





SEB = Standard Equivalent Box; Data: WSTFA, Washington Growers Clearing House. Annual data points represent FOB season price averages.

Organic Cherries

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 mid-2000s. 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.

Similar data as for apple and pear are presented for organic sweet cherry in Washington in the next slides (55-57). Slide 58 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 organic fruits.

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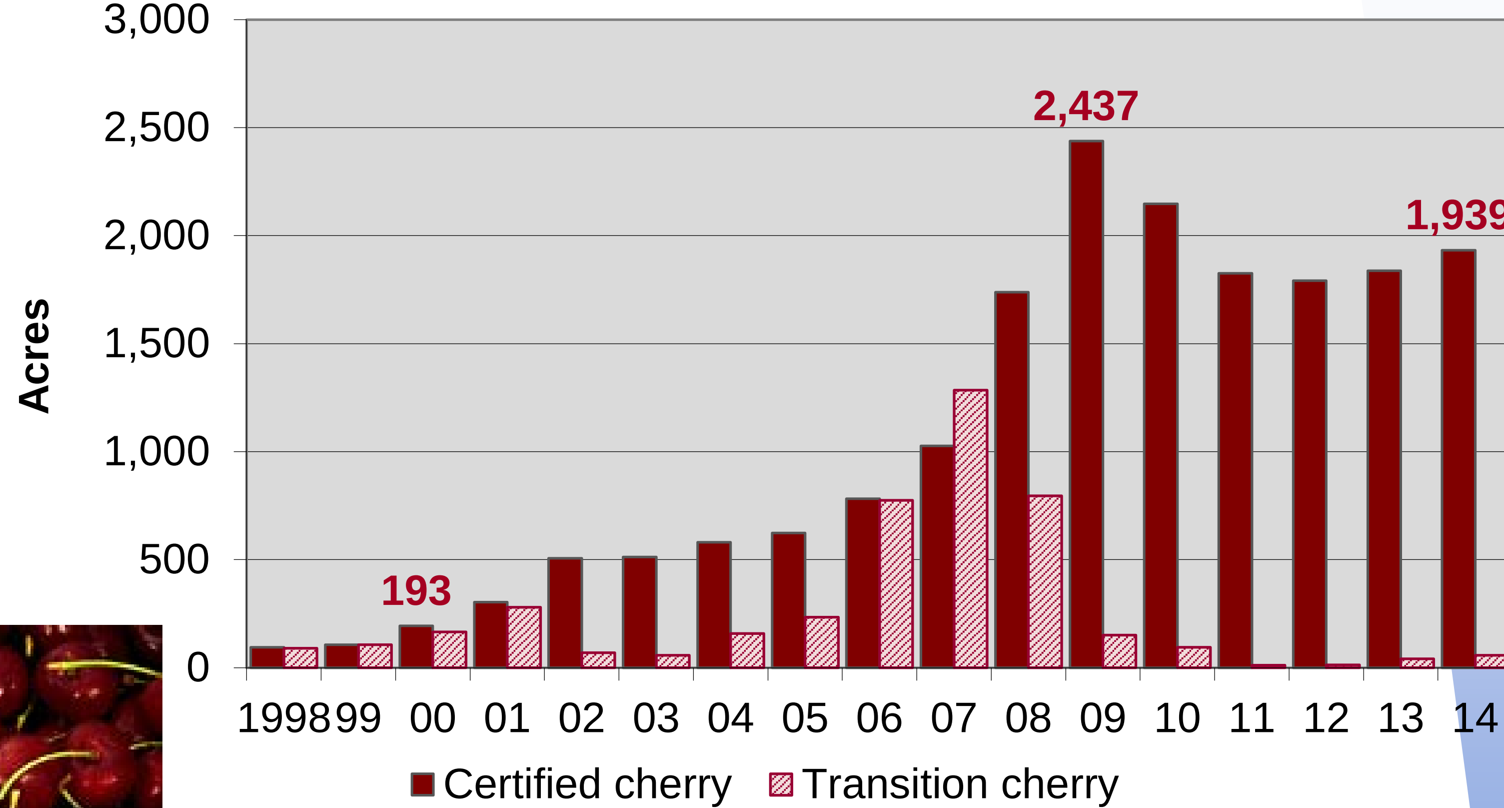
Organic Cherry Acreage
Washington State (sweet + tart)

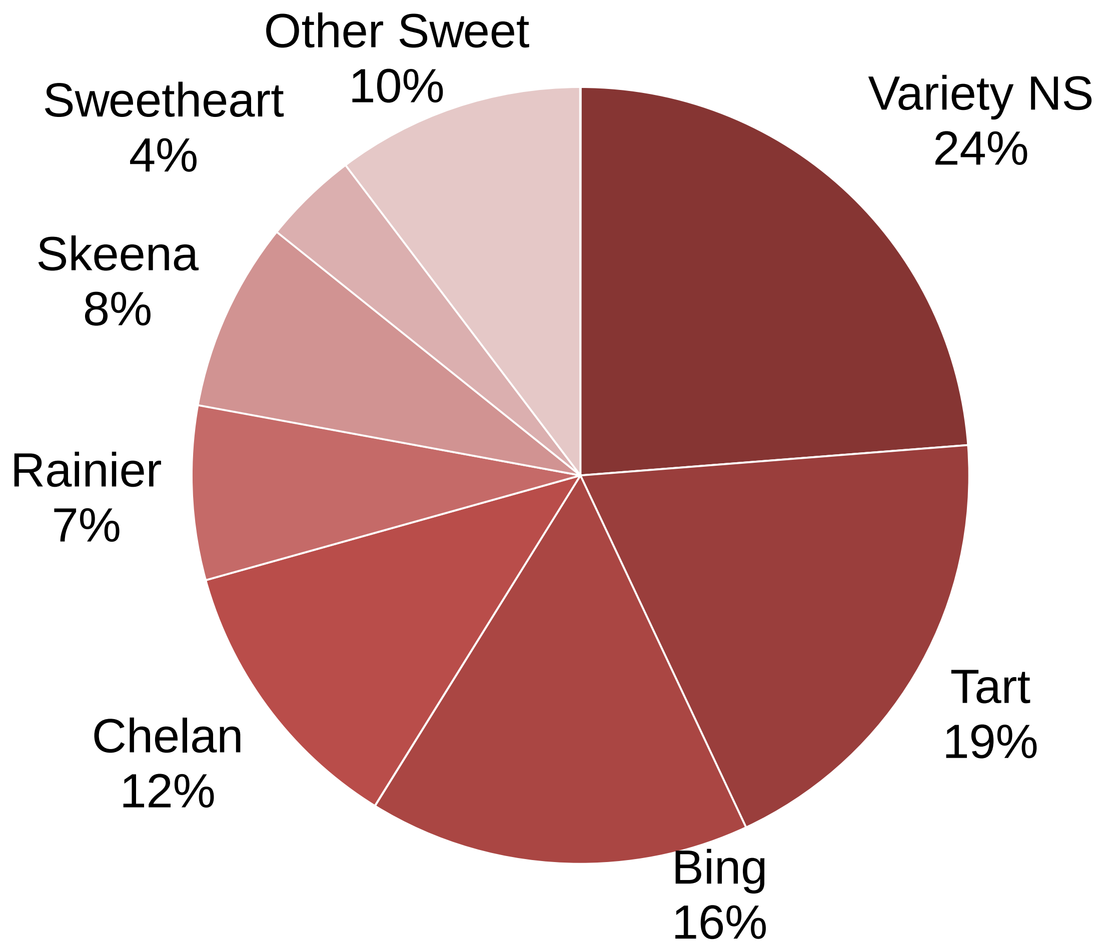


2014 organic = 5.2% of total WA cherry area
(based on 2012 WA-NASS estimate of 37,100 acres)

Combined certifier data

Organic Cherry Variety Acres

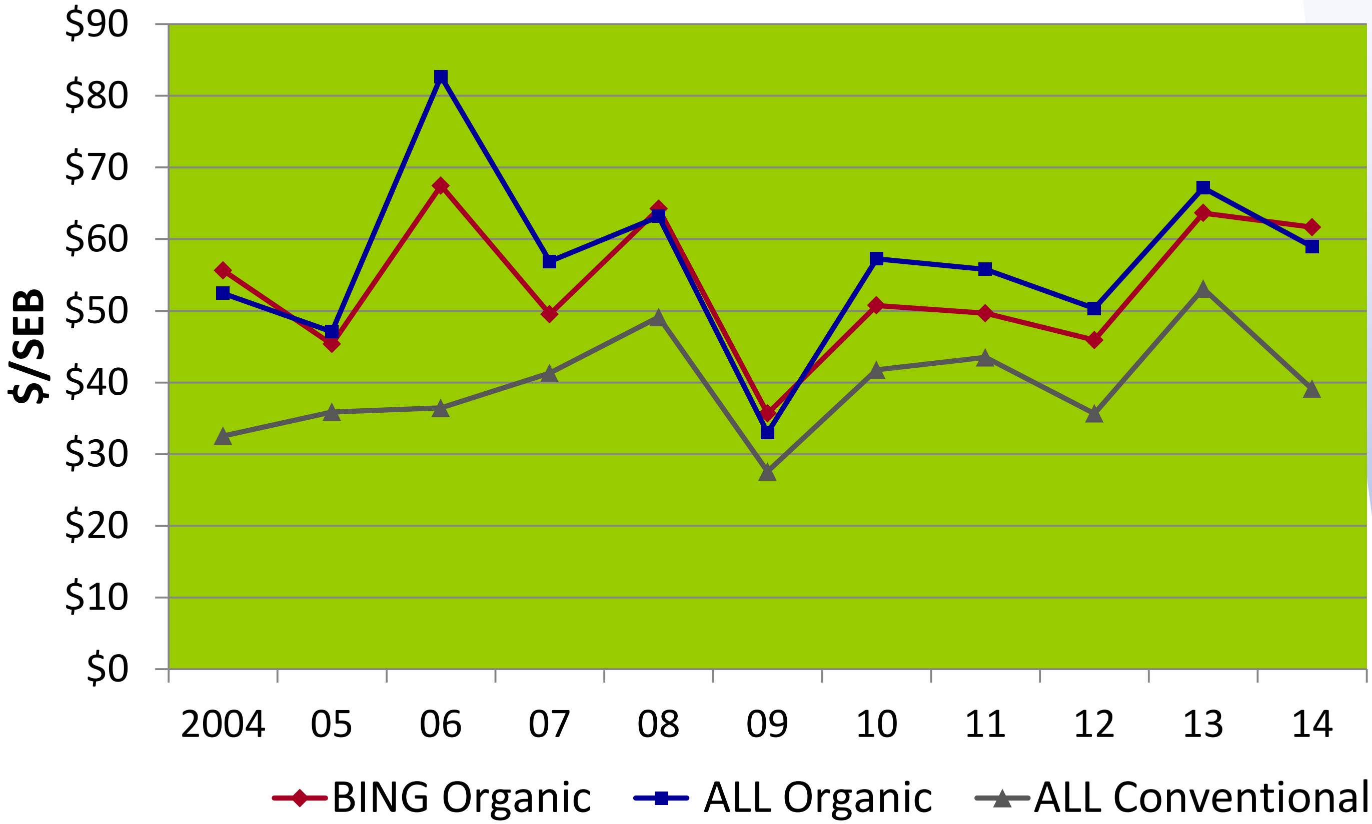
Washington State 2014



24% of cherries not reported by variety in 2014 compared to 57% in 2008

Combined certifier data; NS = not specified

Cherry Price Trends
Washington State



SEB = Standard Equivalent Box of 18 lb. Data: WGCHA, WSTFA; Conventional prices are from season FOB avg. price histories and may include organic for 2008-2010. Organic prices are from season FOB histories , all grades and sizes.

Washington State

Organic Stone Fruit Trends

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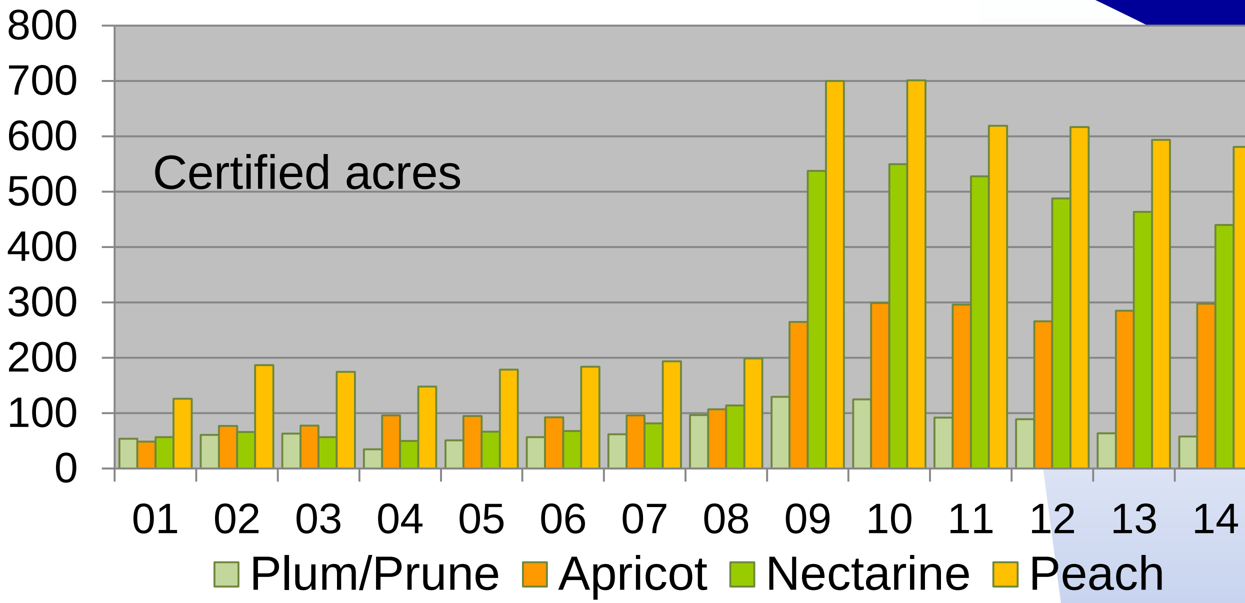
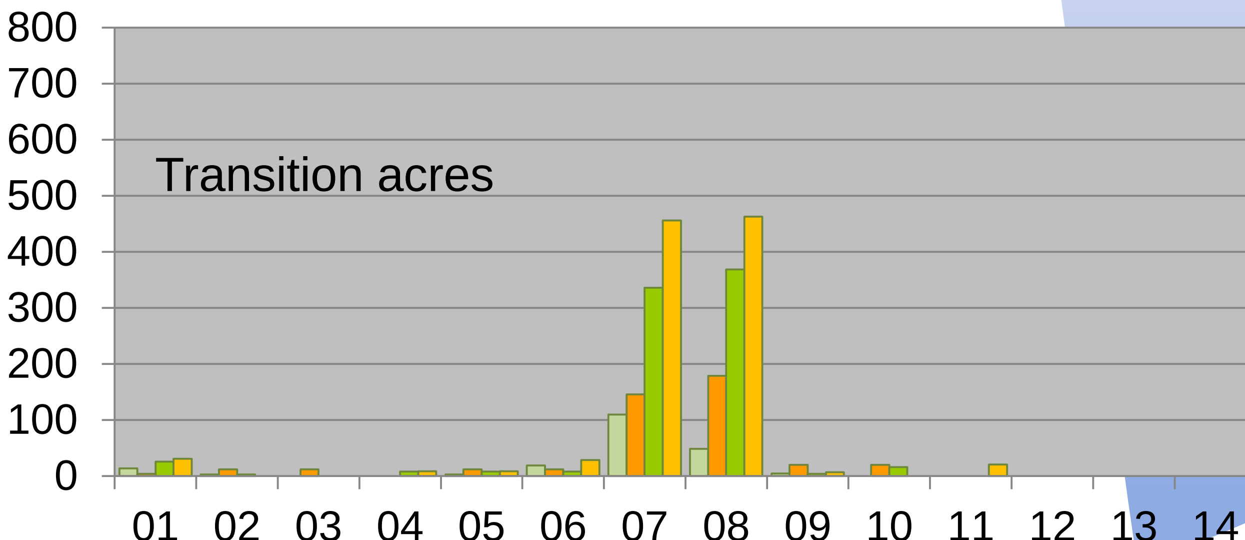




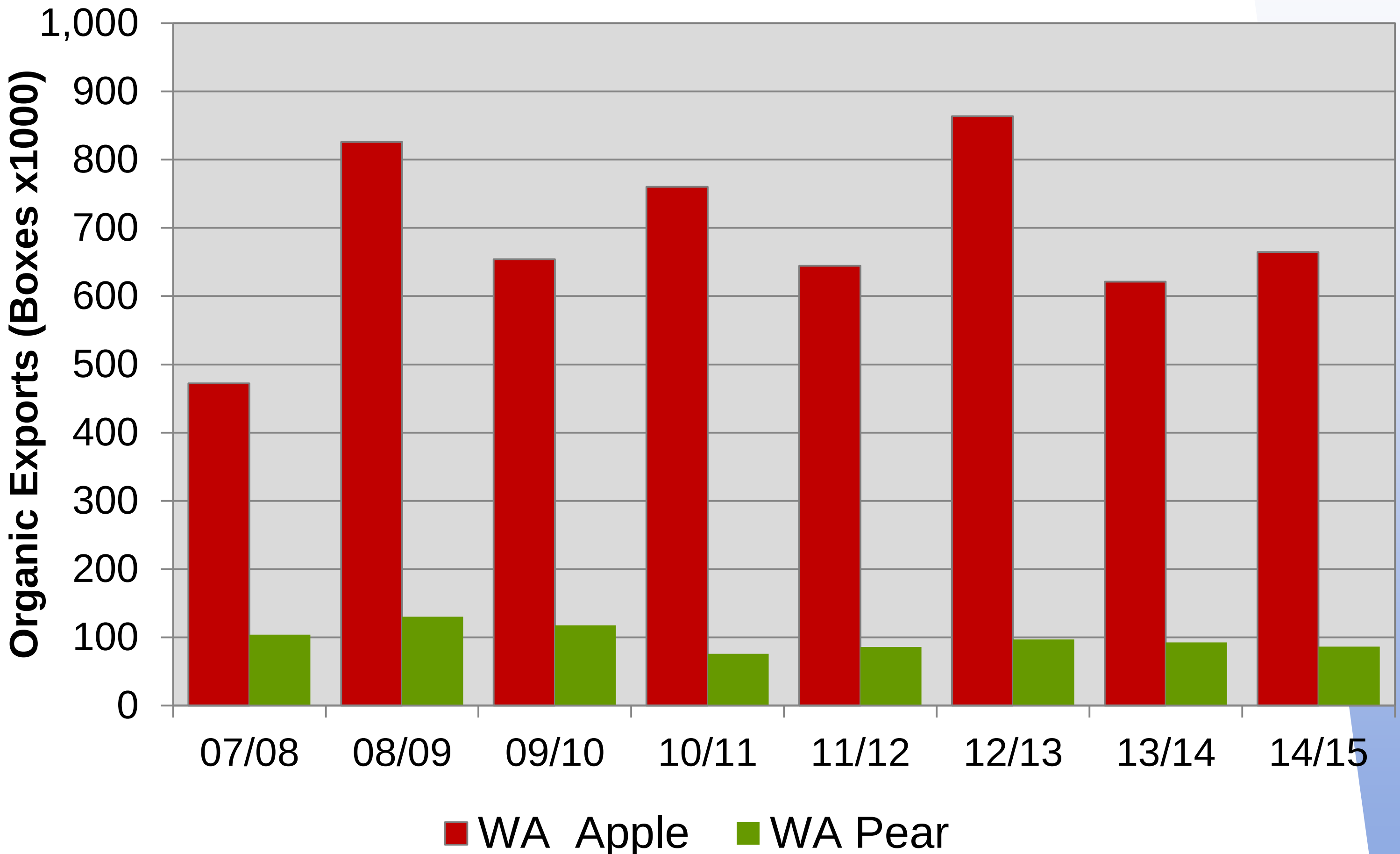
Combined certifier data

Center for Sustaining Agriculture & Natural Resources

Organic Fruit Exports

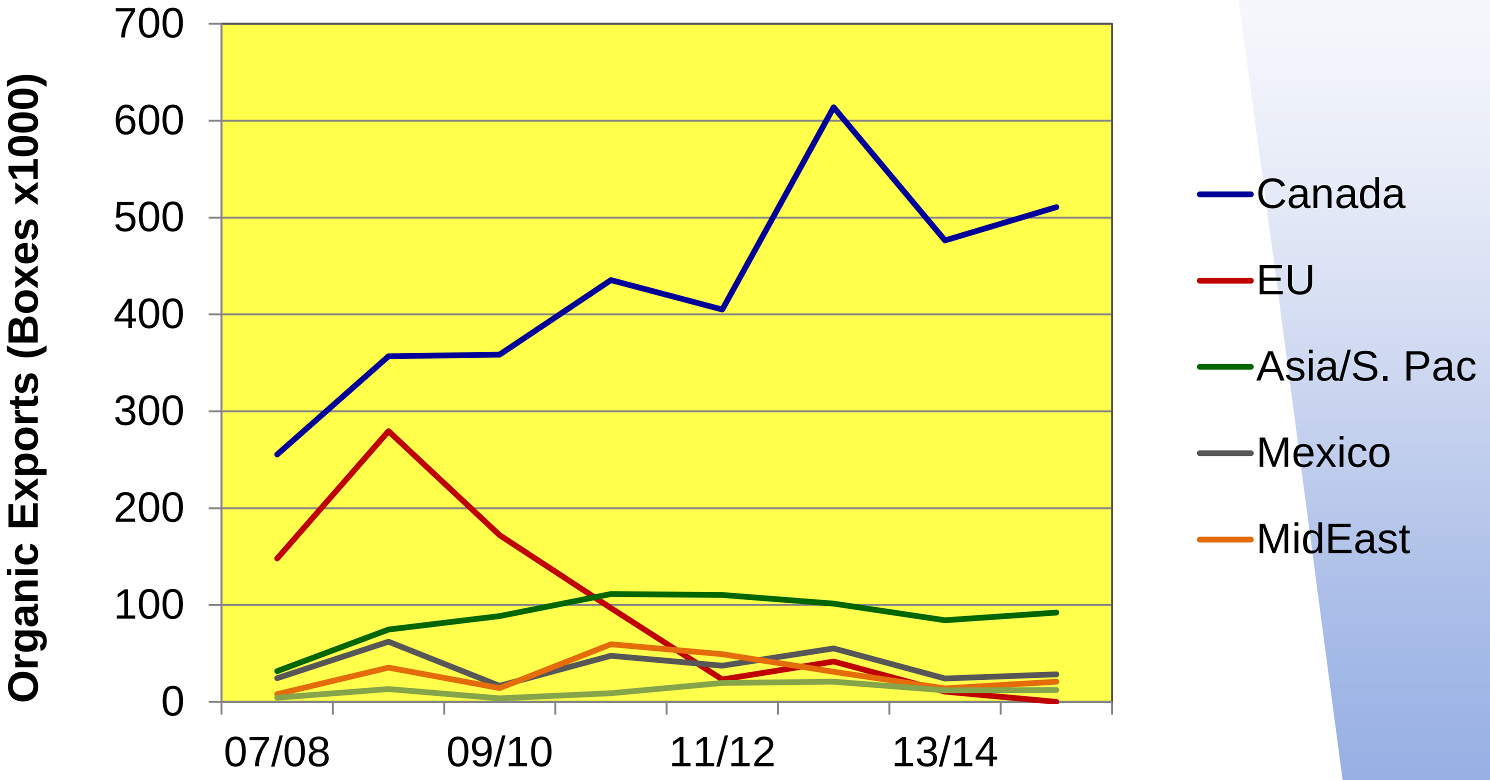
Exports of organic tree fruit from Washington have occurred for years, and have been relatively stable (slide 60). But markets have changed (slide 61). Considerable volumes were shipped to Europe, especially the UK, in previous years, but that has virtually ceased. Canada is by far the largest export destination for organic tree fruit from Washington, accounting for 77% and 86% of all organic apples and pears exported, respectively. Asia received 14% of organic apple exports and 3% or organic pear exports. Exports represented 7% of both the 2014 organic apple and pear crops. 'Gala' apple and 'd'Anjou' pear are the leading organic tree fruit exports by volume (slides 62, 63). The USDA Foreign Agricultural Service estimated that organic apples were the largest export value for a single crop in both 2011 and 2012 (slide 64).

Organic Apple and Pear Exports
Washington State



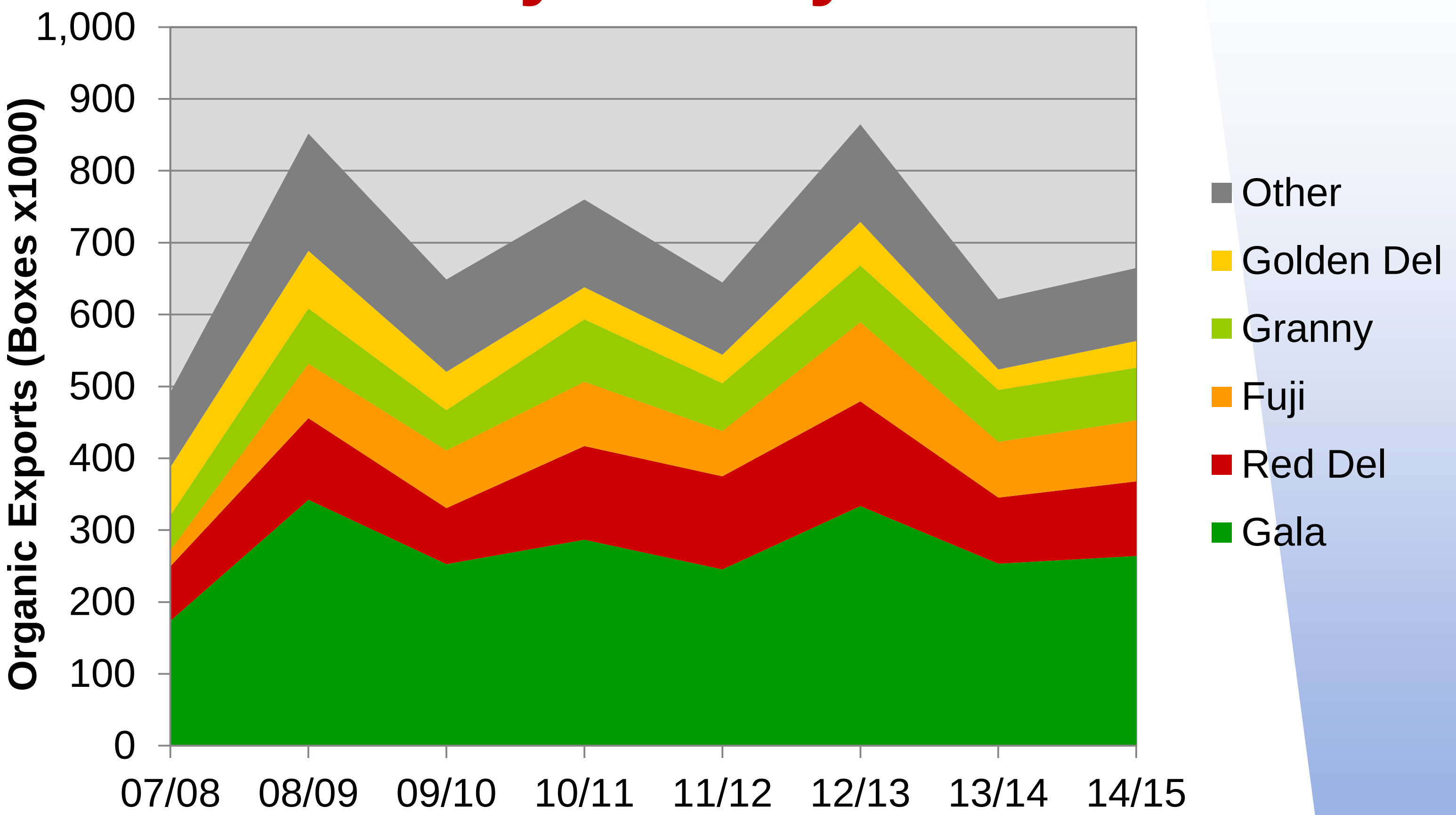
Data source: WSTFA, Wenatchee Valley Traffic Association

Washington Organic Apple Top Export Destinations



Data source: WSTFA, Wenatchee Valley Traffic Association

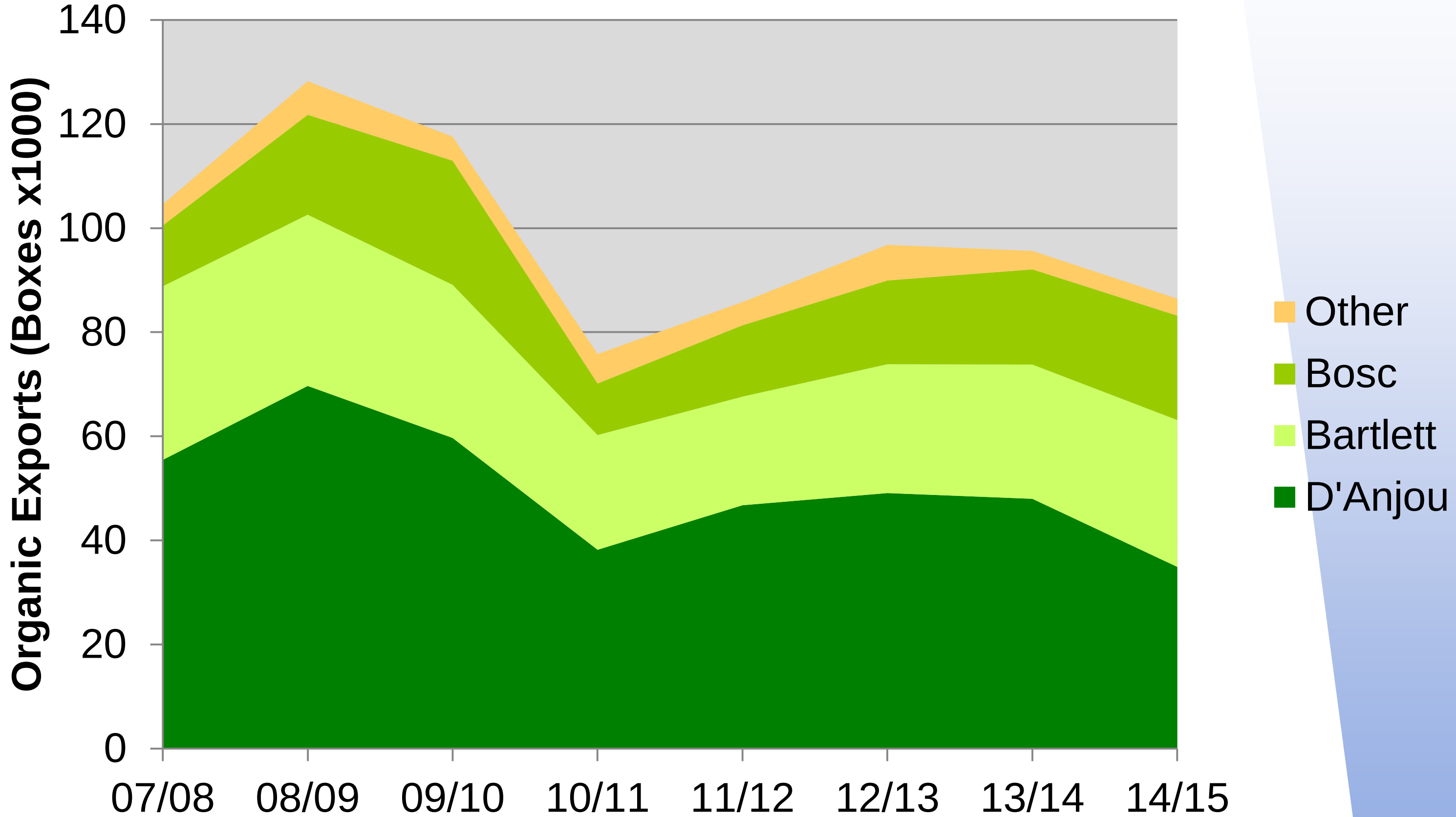
WA Organic Apple Exports by Variety



35-40% of exports = Gala

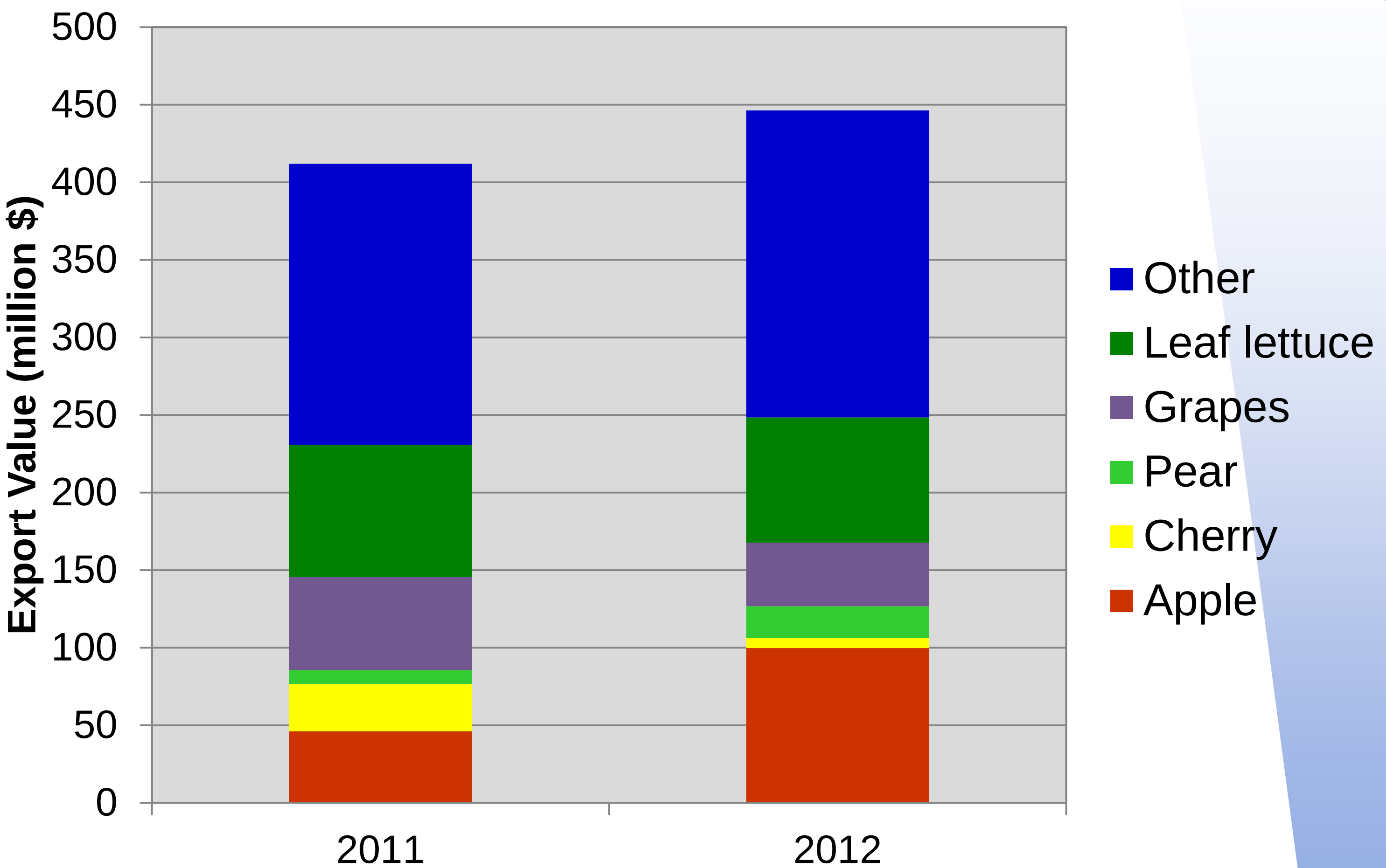
Data source: WSTFA, Wenatchee Valley Traffic Association

WA Organic Pear Exports by Variety



Data source: WSTFA, Wenatchee Valley Traffic Association

Export Value of U.S. Organic Foods



- Canada, Mexico are main markets
- Apple exports tripled, cherry exports dropped

Source: USDA-FAS GATS

Economics

Several studies have been done looking at the economics of organic apple production in Washington. Two cost of production studies were recently completed for 2014 'Gala' apple production, both conventional and organic (Galinato and Gallardo, 2015; WSU School of Economic Sciences); these will be released as on-line extension publications. They allow for a fair comparison between the management systems and some estimates of the breakeven prices.

Total variable costs were almost identical between the two systems (slide 66), while total costs were a bit more per acre for organic and about 10% higher on a per bin basis. The study assumed a 7% lower yield in organic, and 12% higher prices. Many organic blocks are yielding as well as conventional, at 80 bins per acre or more (higher than the 60 bins assumed in the study), and organic prices in recent years have been more than 12% higher than conventional. Thus, the comparison is probably conservative in terms of the relative performance of organic.

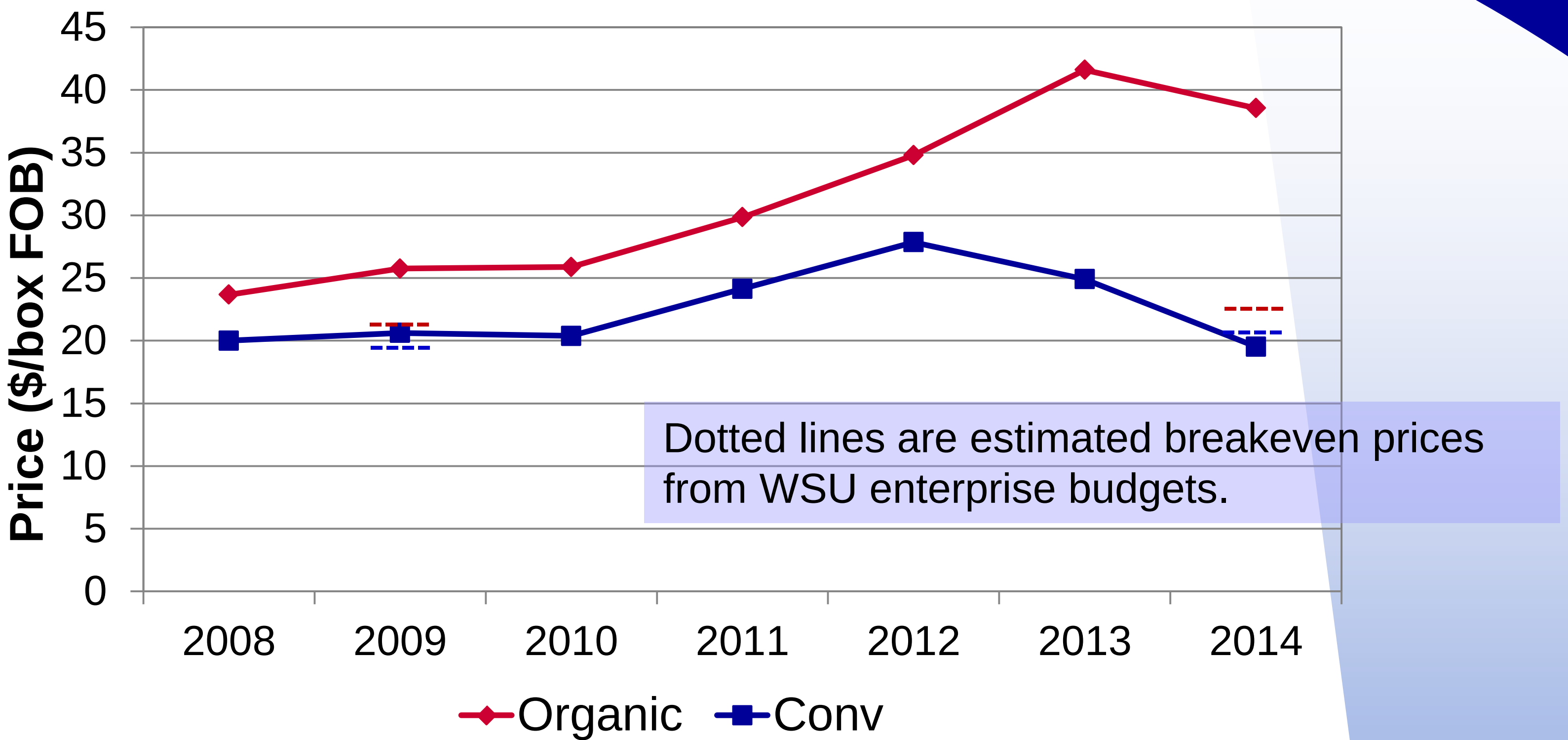
Apple Economics

'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.	
General farm labor	300	300	
Crop insurance	190	190	
Warehouse charges	11,529	12,490	
Total variable costs	20,667	20,470	
Fixed costs	4,599	4,519	
Total costs	25,267	24,990	
Cost per bin	$421/bin	$384/bin	+10
Net profit	$1,133	$490	+131
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

Breakeven prices were converted to a per box FOB basis, which is how prices are reported, for the 2014 results as well as similar studies done in 2009/2010 for ‘Gala’. These values are noted on the following graph (slide 68) as dotted lines – blue for conventional and red for organic, with the average annual price trend over that period plotted as well. At both dates, the difference in breakeven between conventional and organic was small in comparison to the difference in price, suggesting a strong economic incentive for organic production. In 2010, the average conventional price barely exceeded the cost of production, while in 2014 it appeared to fall below it. However, in both years, the organic cost of production fell far below the average organic price, indicating a strong net return for growers as well as a less risky economic scenario. With large crops of conventional apples forecast for the state and worldwide in the coming years, downward pressure on price is likely. In that scenario, diversifying into organic production does provide some risk management.

Apple Economics
Organic 'Gala'; 2014



2014		Org	Conv
Yield (bin/acre):		60	65
Breakeven price	($/bin)	421	384
	($/box)	22.76	20.79

Packout 80%

A number of review papers have been published in recent years regarding relative yields between organic and conventional systems. Generally, organic systems yielded at 70-85% of conventional, with large variation depending on the crop and location. Results specifically for tree fruits are more limited, and those for apple are presented in slide 70. The yield difference was 70-85% for most regions, except for Washington State, where the difference was smaller. Studies often reported smaller fruit for organic, and sometimes better storage characteristics, which both would influence relative financial performance.

The cost of production studies referred to above used a 7% lower yield for organic, very much in line with the research, and this is also similar to results from grower surveys in Washington where about half the responses indicated zero to 10% lower yields with organic (e.g. http://www.tfrec.wsu.edu/pdfs/P1775.pdf). Thus, the downside risk of major yield reductions for organic apples in Washington appears to be relatively small. The biggest factor in reducing yields in other regions tends to be spring and summer rainfall, leading to extensive disease challenges. The climate in central Washington avoids this.

Apple Economics

Study/Type[1]	Yield Ratio[2]	Fruit quality[3]
Bertschinger et al., 2004; Switzerland; E(r), 3 yr	**0.71-0.86**	ORG: less premium grade fruit; firmer
Dierend et al., 2006; Germany; S	**0.70**	
Reganold et al., 2001; Washington, USA; E(r), 7 yr	**0.92 ns**	ORG: firmer; sweeter; smaller fruit; lower storage losses
Brady et al., 2014; Washington, USA; S, 4 yr	**0.87 (0.79-0.92)**	
Peck et al., 2010; New York, USA; E(r), 4 yr	**0.88 ns**	ORG trend: smaller fruit; less fresh market %; more insect, disease cullage
Weibel, 2002; Europe; S	**0.70-0.85**	
Soria et al., 2010; Spain; E(f), 1 yr		ORG: fewer storage disorders; no sensory difference
Hughes, 2006; New Zealand; E	**0.79**	ORG: smaller fruit

[1]Type: E=experimental result, f=on-farm, r=replicated; S=survey or industry data; yr=number of years of the study or of data collected.
[2]Yield: expressed as Yield Ratio, organic yield/conventional yield. ns=no significant yield difference.
[3]Fruit quality: expressed as the organic attribute compared to conventional

There has been a limited amount of research comparing different organic orchard management practices, looking at relative effectiveness as well as economic performance. Several studies have examined weed control and orchard floor management, as moving away from the standard herbicide control in conventional can be challenging. Examples of the actual cost for several weed control practices are presented in slide 72. However, in addition to cost, one should consider the overall system impacts. This was done in a study of three different weed control systems in large plots in two commercial organic orchards (slide 73, see details at http://www.tfrec.wsu.edu/pdfs/P2939.pdf). Despite the initial **cost** of weed control being higher with wood chip mulch, for example, the net economic **benefit** of mulch was far greater than the other two systems in an apple orchard, due to higher fruit yields. Tillage was considered as the grower standard practice.

Weed Control Costs in Organic Orchards

	$/acre	Year
Flame weed + hand hoe	208	2014
Weed fabric (10 yr, open/close)	420	2014
Flaming (5x)	113	2012
Tillage (5x, Wonder Weeder)	115	2012
Wood chip mulch (3 yr life)	400	2012
Org. herbicide (4x)	508	2012
Mowing	210	2010

For more details, see the on line presentation http://treefruit.wsu.edu/videos/weed-control-in-orchards/

Grower Returns

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8+ yr 'Gala'/M.26, sandy soil

	2009	2010	2011	3-Yr Rel to Till
	Apple Returns* ($/ac)			
Mulch	2,320	8,440	12,764	+4,777
Herb/flame	1,971	6,193	9,638	-946
Tillage	2,942	6,843	8,963	0

Mature 'd'Anjou' pears, good soil

	2009	2010	2011	3-Yr Rel to Till
	Pear Returns* ($/ac)			
Mulch	9,580	12,636	9,377	+1,432
Herb/flame	10,274	10,621	8,141	-1,125
Tillage	10,676	11,182	8,302	0

*Gross bin returns minus weed control costs and picking costs *(Granatstein et al., 2014)*

Future Trends

Given the consistent premium prices for organic tree fruit in Washington State, the increasing number of management tools available, and uncertain prospects for conventional production, particularly for apples, more growers are considering organic certification. Growers are no longer required to register acres during the transition period, and thus predicting future growth is more difficult. A survey was done during January 2015 at several organic tree fruit meetings in Washington State. About 150 growers participated, which is half of the total number of certified organic tree fruit growers. They were asked to estimate the acres they expected to transition to organic in the next 2-3 years. From their responses, major increases in acreage, along with production, are likely (slide 75). Since the market is currently supply constrained and true demand is unknown, it is unclear how easily such an increase in production can be absorbed in one or two years. But continued demand growth as in recent years is expected (10-12% per year) and could handle such an increase over several years.

Future Growth

	2014 acres	Possible new acres 2015-17	% increase
Apple	14,050	8,500	+60
Pear	1,840	1,335	+72
Cherry Sweet)	1,932	1,370	+71

Based on a survey of organic orchardists, January 2015.
n=154

D. Granatstein, unpublished data

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

http://csanr.wsu.edu/pages/Organic_Statistics

http://www.nass.usda.gov/Statistics_by_State/Washington/Publications/Fruit/FruitTreeInventory2011.pdf

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