



Trends in Washington State Organic Berry Production, Acreage, and Crop Value

WASHINGTON STATE UNIVERSITY EXTENSION FACT SHEET • FS144E

Summary

Washington organic berry producers reported a farmgate value of \$25.3 million in 2012 compared to \$7.76 million in 2009. During the same period, certified organic berry acreage increased 104% and production grew 280%. Organic sales rose to nearly 18% of the sales value of all Washington berries by 2012. Average organic yields were generally lower than the USDA-National Agricultural Statistics Service (NASS) yields for all berries during this time period. However, average organic berry market prices exceeded NASS prices, resulting in gross revenues for organic berries that were similar or higher than for all berries.

Introduction

Fresh berries have expanded their presence in produce departments as consumers seek them out for their dietary benefits. Organic berries currently generate the most sales in the organic fruit category (H. Nager pers. comm.). Expanding markets increase potential profitability for organic berry growers. However, these markets are relatively small, and entry or exit of a few producers into or out of organics can change the supply-demand relationship, impacting prices and returns. Washington State is a national leader in organic berry production. Unfortunately, very little information has been available to help berry producers and marketers anticipate or respond to organic market dynamics.

This fact sheet summarizes recent acreage, production, and value of certified organic raspberry, strawberry, and blackberry in Washington State and provides a baseline analysis of **yield, price, and gross revenue per acre**. This publication (part of a series on select Washington organic specialty crops) is intended to assist in making industry supply forecasts, and in supporting producer decisions regarding entry into or expansion of organic production. These decisions are especially important for crops where Washington production represents a significant portion of the national organic supply.

Methods and Data Description

Organic berry results reported here were derived from data provided by the Washington State Department of Agriculture (WSDA) Organic Food Program and include approximately 95% of the National Organic Program (NOP)-certified Washington producers. Four years (2009–2012) of acreage, production, and gross crop sales (farmgate, not including value added) were provided, compiled, and summarized for each berry, and then compared to similar USDA-National Agricultural Statistics Service (NASS) data for all of that berry in the state (NASS 2013a-d). In some cases, data are compared by geography within the state, with “West” meaning west of the Cascade Mountains and “East” meaning east of the mountains.

To protect producer confidentiality, all observations were anonymous and values were reported only where a minimum of 3 producers reported and where no one producer accounted for 60% or more of total value annually.

General Berry Trends

Consumption of fresh and processed berries has increased over the past decade as consumers seek out healthier foods and choose berries based on their high antioxidant or “superfruit” reputation. These same health-conscious consumers often choose organic produce, and may be motivated to purchase organic berries. All berries have been experiencing growth in both dollar sales and volume (Perishables Group 2010). Major berry suppliers, such as Driscoll’s in California, now source product from around the world, drawing on differing climates to provide a year-round supply of fresh berries. Availability of organic berries has followed the same trend. Organic berries are now the largest group (based on sales volume) in the organic fruit category (34% in 2011) in groceries, surpassing apples and bananas (H. Nager pers. comm.).

Washington State organic berry acreage increased steadily from 432 acres in 2004 to 1,735 acres in 2013 (Figure 1). While all berry acres in the state increased 19% from 2009 to 2012, organic berry acres increased 104%. As a result,

This fact sheet is part of the Trends in Washington Organic Crop Production Series.

Data Calculations

Three general types of data were calculated. For all calculations, N equals the number of observations from all farms reporting for the given parameter(s). Note, N is not the same for all parameters due to incomplete or outlier data. The N for Market Average and Grower Average was generally lower than for Aggregate, because only farms that reported both parameters needed for the calculations (for example, production and acres) were included.

1) Aggregate (Ag) by crop by year for total state acres (A), production (Q , in lb), and sales (S , in \$), where “aggregate” refers to summing a variable across all growers for a given year.

$$AgA = A_{grower\ 1} + A_{grower\ 2} \dots + A_{grower\ N}$$

$$AgQ = Q_{grower\ 1} + Q_{grower\ 2} \dots + Q_{grower\ N}$$

$$AgS = S_{grower\ 1} + S_{grower\ 2} \dots + S_{grower\ N}$$

2) Market Average (MA) values for yield (Y , lb/ac), price (P , \$/lb), and gross revenue per acre (R , \$/ac) calculated as aggregate value of one parameter divided by aggregate value of another parameter. N equals the number of farms where both parameters (for example, production and acreage) were reported. Aggregate values used in the MA calculation were based on a smaller N ; thus the numeric value of AgA , for example, calculated above, may have differed from that used in the formulas for MA.

$$MAY = AgQ / AgA$$

$$MAP = AgS / AgQ$$

$$MAR = AgS / AgA.$$

3) Grower Average (GA) values for yield (Y , lb/ac), price (P , \$/lb) and gross revenue per acre (GAR , \$/ac). Here, N equals the number of farms where both parameters (for example, production and acreage) were reported.

$$GAY = [(Q_{grower\ 1} / A_{grower\ 1}) + \dots + (Q_{grower\ N} / A_{grower\ N})] / N$$

$$GAP = [(S_{grower\ 1} / Q_{grower\ 1}) + \dots + (S_{grower\ N} / Q_{grower\ N})] / N$$

$$GAR = [(S_{grower\ 1} / A_{grower\ 1}) + \dots + (S_{grower\ N} / A_{grower\ N})] / N$$

The **aggregate** value represents the statewide total for a given data series in a given year, for example, the total farmgate sales value of raspberries in 2010. The **market average** and the **grower average** differ in use and interpretation. The market average captures the typical price for a unit of raspberries sold in a given year which is done by weighting the price that a grower received by the amount they sold. This value is likely to be more relevant for larger farms as well as for processors and retailers.

The grower average first calculates the average value for each grower in a given year, and then takes the average of all the grower values. This means that it does not weight each grower by their volume. It is likely to be more useful for prospective growers who do not know how they will do relative to other growers and can see what yields, prices, and gross revenue per acre have been like in recent years.

The numerical difference between market average and grower average is accentuated when a small number of growers account for a large portion of total production and they tend to receive a price different from what other growers receive. Also, variability across growers by year can be calculated using the grower average data, which is not possible with the market average data. The grower average four-year mean, median, and standard deviation (S.D.) were calculated for yield, price and gross revenue per acre. The n reported for these summary statistics (in the Grower Average tables) is the number of observations by crop combined for all years, and varies by the parameter being analyzed.

All reported production data were converted to weight in pounds (lb) (USDA-AMS 2012). Production reported as packed fruit was not converted to a gross field production value. There was no distinction made between berries sold to the fresh market versus the processing market (generally at different prices) in the data reported to WSDA.

the portion of all Washington berry acres that were certified organic rose from 5.2% to 9.1% during this same period. Organic berry acreage increased from less than 1% of all certified organic land in the state in 2005 to 2% by 2012 (Kirby and Granatstein 2013). Nationally, Washington ranked first for organic blueberry acreage in 2011 (NASS 2012).

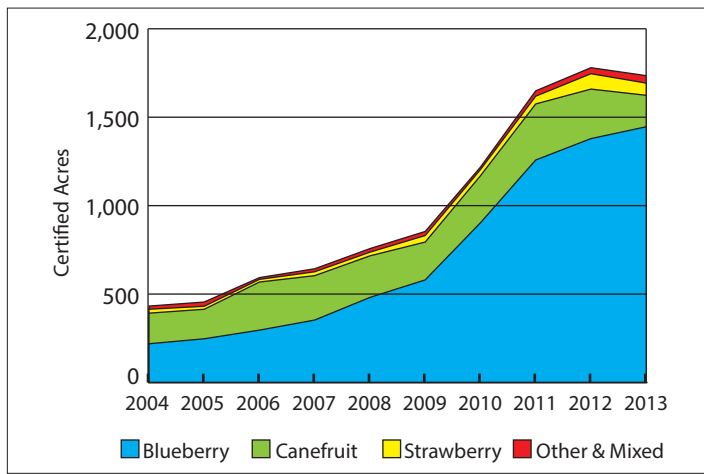


Figure 1. Washington State organic berry acreage trend.

The total farmgate value of organic berries in Washington more than tripled, from \$7.7 million in 2009 to \$25.3 million in 2012 (Table 1). Blueberries accounted for over 90% of all organic berry sales in 2012. As was reflected in the acreage data, rate of growth in organic berry sales significantly outpaced conventional berries. Organic berry sales rose to nearly 18% of the sales value of all berries in 2012. Growth in sales of organic berries has also outpaced other organic crops. Berries accounted for 8% of all organic crop sales in 2011, compared to 5% in 2009. The data in Table 1 are based on crop year sales, that is, the total sales over one or several years from a single-year harvested crop. Reported raspberry values for 2011 and 2012 are assumed to be lower than actual values, due to missing data from growers who did not renew organic certification in 2013, so did not report organic data for the prior one or two years, but had substantial sales in previous years.

Berries are an important item in direct market sales in the state. Direct market prices can be substantially higher than prices received from a wholesaler or processor. For example, one organic berry producer in western Washington direct markets an Individually Quick Frozen (IQF) product online for prices higher than wholesale (for example, three

pounds of IQF organic blueberries for \$20). Fresh and IQF markets tend to pay the highest prices, and organic status provides an additional price premium. Some direct market farms report all sales as “Mixed Horticulture” and do not specify sales by individual crops such as berries, thus those sales values are not reflected in the totals in Table 1.

Historically, commercial berry production was centered in western Washington and significant production continues in that part of the state. However, in recent years, growers have tested large-scale blueberry, raspberry, and strawberry plantings under irrigation in eastern Washington, where there can be fewer pest and disease problems. This has led to experimentation with organic production, and production of organic blueberries in particular has expanded in eastern Washington. The arrival of a new insect pest, the Spotted Wing Drosophila (*Drosophila suzukii*), in 2010 presents a new challenge for all berry growers, but especially for organic growers who currently have limited pest control options. Further details on organic raspberries, strawberries, and blackberries are provided below. Details on organic blueberries, the largest organic berry crop in the state, are provided in a separate fact sheet.

Raspberry Trends

Washington State produced 90% of the U.S. red raspberry crop in 2012, with an estimated 62.7 million pounds. Raspberries were the 24th most valuable crop to the state economy, at \$37.9 million (NASS 2013a–d). In 2011, Washington ranked second, nationally, in certified organic raspberry production, acreage, and value, after California (NASS 2012).

Total Washington raspberry acreage has been stable, ranging from 9,600 to 9,800 acres during 2009 to 2012 (Table 2). Organic acreage increased 25% to 180 acres during the same period. Similar to conventional raspberry production, Washington organic raspberry production has traditionally been west of the Cascades, where most of the organic producers and acreage were located, primarily in Skagit, Snohomish, Clark, and Thurston Counties. More recently, about 25% of the certified acres were in the irrigated central region of the state. WSDA recorded raspberry acreage for 37 producers in 2009 compared to 42 in 2012. Production was dominated by a handful of larger producers; 85% of operators in 2011 had fewer than five acres of organic raspberries. Plantings ranged from less than 0.1 acre to over 30 acres in 2012, with a median of 0.75 acres. The number of producers who reported their acreage, yield, or sales segregated for raspberry

Table 1. Farmgate value of Washington State certified organic berries.

Crop Year	2009	2010	2011	2012
Blackberry	In "Berry, Mixed"	In "Berry, Mixed"	\$324,379	\$439,613
Blueberry	\$7,011,822	\$10,481,261	\$17,502,873	\$23,128,127
Raspberry	\$534,164	\$681,271	>\$617,009	>\$529,597
Strawberry	\$91,110	\$74,366	\$213,639	\$252,976
Berry, Mixed and Other	\$126,646	\$966,743	\$344,524	\$978,487
Total	\$7,763,742	\$12,203,642	\$19,002,424	\$25,328,799

Table 2. Washington raspberry acreage, production, and value.

Raspberry	Organic ^a				NASS-WA ^b			
	2009	2010	2011	2012	2009	2010	2011	2012
WA Acres ^c	143	161	180	178	9,700	9,600	9,800	9,800
Reported Acres ^d	96	131	168	120	—	—	—	—
Production (lb)	226,013	235,031	431,141	>194,308 ^e	65,700,000	61,010,000	72,300,000	62,700,000
Crop Year Value (\$)	534,164	681,271	>617,009 ^e	>529,597 ^e	57,154,000	50,254,000	44,336,000	37,871,000
Sales Year Value (\$)	536,036	598,472	699,808	>529,597 ^e	—	—	—	—

^aOrganic includes fresh and processing.

^bNASS values are for both conventional and organic.

^cIncludes acreage from WSDA site acreage data and acreage from any additional certifiers.

^dIncludes acreage from WSDA-certified producer organic income and production data.

^eMinimum values underestimate actual values due to known missing data.

(for the sales and production study) varied from 19 reporting 2009 data compared to 24 who reported 2012 crop data.

Reported organic raspberry production increased 90% from 226,013 pounds in 2009 to more than 430,000 pounds in 2011. An apparent decrease in organic production in 2012 and disparities in expected increased value (2011, 2012) were a result of missing data. Estimation of missing data for 2011 crop value and 2012 production and crop value from producers that did not renew certification in 2013 suggests that real value and production numbers for 2012 raspberry crop could be as high as \$900,000 and 340,000 pounds. However, crop value also decreased for all raspberries in 2011, a high yield year, which likely pushed prices down. Organic raspberries generated in excess of a half-million dollars per year in the state. Organic represents a minor share of Washington's raspberry industry, with 1.8% of acreage, 1.4% of crop value, and less than 1% of production.

Raspberry Yield, Price, and Gross Revenue per Acre

Average yield, price, and gross revenue per acre were calculated for organic raspberries and compared to NASS values for all Washington raspberries from 2009 to 2012 (Tables 3a, 3b). As explained earlier, the market average values are most comparable to the reported NASS values. Both market average yield per acre (MAY) and grower average yield per acre (GAY) were considerably lower for organic raspberries than for all raspberries (6,360 to 7,380 lb/ac) in each year. Nearly 15% of the organic yields observed over the four years reached 5,000 lb/ac or higher. However, organic yield doubled in 2012, relative to the previous three years, indicating the potential for growers to achieve yields that are more comparable to conventional yields. This may be due in part to increased maturity of plantings resulting in higher production. Of the producers whose yield could be calculated for two or more years between 2009 to 2012, 60% showed yields increasing over time.

The GAY values represent what the “average” grower might experience and are not weighted by number of acres. Organic raspberry GAY over four years was 1,962 lb/ac. With small organic raspberry growers dominating the sample, these lower yields may be a better estimate of what these growers might expect. The GAY median value of 1,566 lb/ac indicates that half the

reported yields were lower than this value and half were higher. Yield data showed large variability. Small data sets can exaggerate variability, especially where they are not weighted.

Factors that are likely affecting yield include the climate differences between western and central Washington and the differences in yield potential for plant varieties grown in different regions. Many cold-hardy plant varieties suitable for production in central Washington are better suited to hand harvest than to machine harvest, and this may also affect yield. Additionally, an estimated commercial life for a raspberry planting of 10 to 20 years in western Washington versus 8 to 10 years east of the Cascade Mountains (Barney and Miles 2007) may be a factor.

Organic raspberry market average price (MAP) was two to three times higher than the NASS price. The four-year grower average price (GAP) for organic raspberries was \$4.52 per pound, double the average for MAP. This price included both fresh and processed berries because it was not possible to separate them. Over 90% of organic sales reported were through wholesale markets for the 2009 and 2010 crops. The GAP ranged from \$3.81 to \$5.09 per pound across all growers and years.

The market average gross revenue per acre (MAR) for organic raspberries was similar to the NASS average for all raspberries, despite the higher prices for organic fruit. However, the grower average (GAR) values exceeded NASS values in three of four years and ranged from \$5,823 to \$8,198 per acre. Twenty-five percent of producers reporting yield and price showed gross revenues over \$10,000 per acre, 12% showed gross revenues exceeding \$15,000 per acre, and several were above \$20,000. These values seem achievable based on using a *potential* yield value of 5,000 lb/ac and the four-year GAP of \$4.52/lb.

Strawberry Trends

According to NASS, Washington State ranked fifth in U.S. strawberry production in 2012, although the state produced less than 1% of the national total. Valued at \$10.3 million, strawberries were the 33rd most valuable crop for the state in 2012, with a 15% increase in value from 2011. Washington had the second highest certified

Table 3a. Washington raspberry market average yield, price, and gross revenue per acre.

Market Average (MA)	Organic ^a				NASS-WA ^b			
	2009	2010	2011	2012	2009	2010	2011	2012
Yield (lb/ac)	2,420	1,811	2,627	5,012	6,770	6,360	7,380	6,400
Price (\$/lb), All	2.30	2.82	1.37	1.84	0.87	0.82	0.61	0.60
Revenue (\$/ac)	5,542	5,195	3,675	4,494	5,892	5,235	4,524	3,864

^aOrganic includes both fresh and processing.

^bNASS values are for both conventional and organic.

Table 3b. Washington raspberry grower average yield, price, and gross revenue per acre.

Grower Average (GA)	Organic ^a				Organic 4-Year			
	2009	2010	2011	2012	Mean	Median	S.D. ^b	n ^c
Yield (lb/ac)	1,795	1,572	1,958	2,545	1,962	1,566	1,568	58
Price (\$/lb), All	5.03	5.09	4.28	3.81	4.52	4.16	2.92	68
Revenue (\$/ac)	5,823	7,847	8,198	7,048	7,496	5,051	7,086	70

^aOrganic includes both fresh and processing.

^bS.D. = standard deviation.

^cn = number of observations.

organic strawberry acreage in 2011, just behind California, and organic production and value ranked fourth and fifth, respectively (NASS 2012).

Washington NASS strawberry acreage and production values declined slightly from 2009 to 2012. Certified organic acreage, production, and value increased during the same period. Organic strawberry acreage increased from just 38 acres in 2009 to 87 acres in 2012 (Kirby and Granatstein 2013), compared to 1,300 acres of all strawberry acreage in 2012 (Table 4). Similar to raspberry production, Washington organic strawberry production is centered in the fruit-growing region west of the Cascades, with more than 70% of producers and acres located in Skagit, Thurston, and Snohomish Counties.

WSDA recorded acreage for 27 organic strawberry producers in 2009, compared to 45 in 2012. Average strawberry acreage, per producer, increased from 1.4 acres to 1.9 acres during that period, while the median remained at 0.5 acres for all four years. Just 15% of organic strawberry producers had more than 1.0 acre of strawberries. The number of producers reporting segregated strawberry acreage, yield, or sales for the sales and production study ranged from 8 reporting 2009 data to 25 reporting 2012 crop data.

Table 4. Washington strawberry acreage, production, and value.

Strawberry	Organic ^a				NASS-WA ^b			
	2009	2010	2011	2012	2009	2010	2011	2012
WA Acres ^c	38	35	44	87	1,500	1,500	1,500	1,300
Reported Acres ^d	19	10	33	61	—	—	—	—
Production (lb)	25,166	16,403	95,406	>63,817 ^e	14,300,000	12,500,000	12,500,000	10,300,000
Crop Year Value (\$)	91,110	74,366	213,639	252,976	8,338,000	7,640,000	8,971,000	10,331,000

^aOrganic includes fresh and processing.

^bNASS values are for both conventional and organic.

^cIncludes acreage from WSDA site acreage data and acreage from any additional certifiers.

^dIncludes acreage from WSDA-certified producer organic income and production data.

^eMinimum value.

Washington strawberry production declined from 14.3 million lb/ac in 2009 to 10.3 million lb/ac in 2012. Organic strawberry production varied greatly during the same period. Reported organic strawberry production more than tripled from 25,166 pounds in 2009 to 95,406 pounds in 2011. The production data set was incomplete for 2012; actual production was likely higher and may have exceeded 100,000 pounds. In a number of cases, producers who had reported strawberry separately in previous years did not do so in 2012 and instead included them in a “Mixed Horticulture” category. The value of the organic strawberry crop in Washington increased 178%, from \$91,110 in 2009 to \$252,976 in 2012 (Table 4).

The organic share of Washington strawberries increased from 2.5% of acreage, 1% of crop value, and 0.2% of production in 2009 to 6.7% of acreage, 2.4% of crop value, and 0.7% of production in 2012.

Strawberry Yield, Price, and Gross Revenue per Acre

The organic strawberry MAY and GAY per acre were substantially lower than NASS values for all strawberries in Washington, in all years (Tables 5a, 5b). Organic yield per acre doubled from 2009 to 2012 using either

Table 5a. Washington strawberry market average yield, price, and gross revenue per acre.

Market Average (MA)	Organic ^a				NASS-WA ^b			
	2009	2010	2011	2012	2009	2010	2011	2012
Yield (lb/ac)	1,650	2,248	3,327	3,274	9,500	8,300	8,300	7,900
Price (\$/lb), All	2.76	2.24	1.94	1.76	0.58	0.61	0.72	1.00
Revenue (\$/ac)	4,733	7,230	6,553	8,551	5,559	5,093	5,981	7,947

^aOrganic includes both fresh and processing.

^bNASS values are for both conventional and organic.

Table 5b. Washington strawberry grower average yield, price, and gross revenue per acre.

Grower Average (GA)	Organic ^a				Organic 4-Year			
	2009	2010	2011	2012	Mean	Median	S.D. ^b	n ^c
Yield (lb/ac)	2,714	3,771	4,550	4,221	4,062	2,768	3,652	50
Price (\$/lb)	2.83	2.64	3.08	4.26	3.31	2.50	3.58	50
Revenue (\$/ac)	6,795	10,185	12,122	10,052	10,452	7,053	9,871	59

^aOrganic includes both fresh and processing.

^bS.D. = standard deviation.

^cn = number of observations.

calculation. Twelve percent of organic yield observations exceeded an estimated four-year average NASS yield of 8,500 lb/ac; an additional 14% showed yields between 6,000 and 8,000 lb/ac. These values suggest that, in Washington, organic yield potential could be similar to that of conventional strawberry production.

In contrast to yield values, both MAP and GAP for organic strawberries were higher than NASS values for all Washington strawberries in all years. Organic strawberries received a four-year GAP of \$3.31 per pound compared to a NASS-estimated fresh berry average price of \$1.85 per pound. NASS strawberry prices ranged from \$0.58 to \$1.00/lb. Organic producers reported that 85% of their strawberries were sold through direct markets, where prices are generally higher than in wholesale markets.

The MAR and GAR were also higher than the NASS values for every year except for GAR in 2009. The four-year GAR for Washington organic strawberries of \$10,452 was substantially higher than NASS values that ranged from \$5,093 in 2010 to \$7,947 in 2012. Nearly 20% of observations showed GAR over \$15,000 per acre.

Blackberry Trends

NASS does not currently track blackberry statistics in Washington State. There were an estimated 500 acres of blackberries in 2012 (C. Benedict pers. comm.), of which 102 acres were certified organic (Kirby and Granatstein 2013). Using the 500-acre estimate for total blackberry area, organic represents about 20% of total blackberry acreage with an unknown share of crop value and production. Sixty-five percent of the organic blackberries were located in Skagit County. WSDA recorded acreage for 27 organic blackberry producers in 2012, up from 22 in 2009. The average acreage was 3.8 acres in 2009 and 7.7 acres in 2012, with a median of 0.5 acres and 2.0 acres in the same two years, respectively. The number of producers who reported acreage, yield, or sales for the sales and production study

varied from 5 reporting 2009 data to 13 who reported 2012 crop data.

Organic blackberry production increased nearly four-fold from 2010 to 2012 (Table 6). Reported farmgate sales for organic blackberries increased to \$439,613 in 2012, up 35% from 2011.

Blackberry Yield, Price, and Gross Revenue per Acre

Oregon NASS blackberry values were used in Tables 7a and 7b to compare with Washington organic data since no Washington NASS data were available. Washington average organic yields were much lower, in all years, than NASS yield values of more than 7,200 lb/ac for all Oregon blackberries. Organic yields were also lower than Washington average yields, estimated at 6,000 lb/ac (C. Benedict pers. comm.), somewhat lower than in Oregon.

Both organic MAY and GAY showed large increases from 2009 to 2012. Some of the yield increase can be attributed to increasing crop maturity. Also, a larger number of growers reported their organic production starting in 2010 and the increased number of observations may have affected the yield values. Organic MAY ranged from less than 1,000 lb/ac in 2009 to over 5,000 lb/ac in 2012, still 35% lower than the NASS average yield for all blackberries in Oregon. The GAY values were lower than MAY values in 2011 and 2012. This means there are some small growers of organic blackberries in Washington that get lower yields than the few larger growers. Only 10% of observations from 2009 to 2012 showed yields at or above 5,000 lb/ac. However, it seems reasonable that a commercial producer considering organic blackberry production could use the 5,000 lb/ac value as an achievable yield if there is a high level of management.

Organic blackberry price exceeded price for all blackberries in all years. Annual organic MAP ranged from a low of \$1.50 per pound in 2010 to a high of \$5.01 per pound

Table 6. Washington blackberry acreage, production, and value.

Blackberry	Organic ^a				NASS-WA ^b			
	2009	2010	2011	2012	2009	2010	2011	2012
WA Acres ^c	71	105	137	102	549	—	—	500 (est.)
Reported Acres ^d	59	132	107	92	—	—	—	—
Production (lb)	(d) ^e	60,050	158,745	232,939	—	—	—	—
Crop Year Value (\$)	(d)	(d)	324,379	439,613	—	—	—	—

^aOrganic includes fresh and processing.

^bNASS values are for both conventional and organic.

^cIncludes acreage from WSDA site acreage data and acreage from any additional certifiers.

^dIncludes acreage from WSDA-certified producer organic income and production data.

^e(d) = Data not disclosed to protect confidentiality.

Table 7a. Washington organic and Oregon NASS blackberry market average yield, price, and gross revenue per acre.

Market Average (MA)	Organic ^a				NASS-OR ^b			
	2009	2010	2011	2012	2009	2010	2011	2012
Yield (lb/ac)	404	586	1,578	5,011	—	—	7,220	7,870
Price (\$/lb), All	5.01	1.50	2.04	1.52	—	—	0.81	0.83
Revenue (\$/ac)	2,022	1,907	3,225	7,430	—	—	5,861	6,547

^aOrganic includes both fresh and processing.

^bNASS values are for both conventional and organic (no NASS values are available for Washington).

Table 7b. Washington organic and Oregon NASS blackberry grower average yield, price, and gross revenue per acre.

Grower Average (GA)	Organic ^a				Organic 4-Year			
	2009	2010	2011	2012	Mean	Median	S.D. ^b	n ^c
Yield (lb/ac)	939	994	1,219	2,833	1,556	800	2,027	28
Price (\$/lb)	3.49	1.83	3.03	3.23	2.85	2.27	1.55	28
Revenue (\$/ac)	2,671	2,291	2,369	5,236	3,279	2,506	3,097	29

^aOrganic includes both fresh and processing.

^bS.D. = standard deviation.

^cn = number of observations.

in 2009. Price was not segregated for the fresh versus processor market. The four-year GAP for Washington organic blackberries was \$2.85 per pound; annual GAP ranged from \$1.30 to \$3.49. The estimated NASS Oregon blackberry price was \$0.83 per pound in 2012. NASS reported average fresh market blackberry prices of \$1.56 and \$2.48 per pound for 2011 and 2012, respectively, compared to processor market prices of \$0.75 and \$2.65 per pound for the same two years, indicating significant volatility in terms of time and end use. Ninety percent of organic blackberry sales reported in 2012 were through wholesale markets compared to just 22% in 2009.

Gross revenue per acre values for Washington organic blackberries also increased from 2009 to 2012. Organic values were below NASS values until 2012. The MAR ranged from just over \$2,000 per acre in 2009 to \$7,430 in 2012, while the GAR reached \$5,236 in 2012, with a 4-year average of \$3,279. NASS reported values for all Oregon blackberries of \$5,861 and \$6,547 for 2011 and 2012, respectively. Efforts to increase organic blackberry yields will be needed to raise gross revenues, despite organic blackberry prices that were 2 to 3 times higher than the NASS average price. However,

assuming a high level of management, using a yield value of 5,000 lb/ac and the 4-year GAP of \$2.85/lb, potential organic gross revenue per acre could be estimated at more than \$14,000, well above NASS values for all blackberries. Potential organic gross revenues 60%–80% higher than NASS values in 2012 were supported by GAR data.

Conclusions

Results presented here generally support the perception that higher prices for organic crops are counterbalanced against lower and more variable average yields, in this case for raspberry, strawberry, and blackberry. Although recent average organic berry yields have been lower than reported NASS yields, it is important to note that organic yields have doubled over a few years, pointing to increased yield potential with maturity of plantings and fine-tuning of organic production management. Also, the data did show yield potentials that were similar to NASS average yields, particularly for blueberries.

Prices were higher for the organic berries discussed above compared to NASS prices in every year. Strawberry data

showed the largest variation in price over the four years. In some instances, the organic price premium was enough for average gross revenue per acre to exceed NASS values, despite the lower organic yields. Without knowing organic production costs, it is difficult to assess whether the higher gross revenues translate to greater profitability. However, these yield and price numbers should prove helpful to producers when they estimate potential returns using their own production cost, yield values, or both.

Given the large variability in the data, it is likely that Washington organic berry production has not reached any sort of equilibrium. This appears especially true for blueberries. As more producers enter production and as plantings reach full bearing, a larger volume of data should give a more accurate picture of the true yield potentials, prices, and revenues for organic berries.

Acknowledgements

The WSDA Organic Food Program was an integral partner in providing data for this project and their collaboration is appreciated. Funding for this work was provided by a WSDA Specialty Crop Block Grant and a WSU BIOAg research grant.

References

Barney, D., and C. Miles (eds). 2007. Commercial Red Raspberry Production in the Pacific Northwest. *Washington State University Extension Bulletin* PNW598. <https://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/24106/PNWNO598.pdf>.

Kirby, E., and D. Granatstein. 2013. Certified Organic Acreage and Sales in Washington State: 2012. Washington State University Center for Sustaining Agriculture and Natural Resources (CSANR). Accessed

online Dec. 16, 2013. <http://www.tfrec.wsu.edu/pdfs/P2766.pdf>.

NASS. 2013a. Berry Release. Washington Field Office. Accessed online Dec. 16, 2013. http://www.nass.usda.gov/Statistics_by_State/Washington/Publications/Berries/berry13.pdf.

NASS. 2013b. Washington Berries Historic Data. Washington Field Office. Accessed online Sept. 28, 2013. http://www.nass.usda.gov/Statistics_by_State/Washington/Historic_Data/.

NASS. 2013c. Noncitrus Fruits and Nuts Summary. Washington, D.C. Accessed online Oct 14, 2013. <http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1381>.

NASS. 2013d. Washington Annual Statistical Bulletin. Accessed online Oct 2013. http://www.nass.usda.gov/Statistics_by_State/Washington/Publications/Annual_Statistical_Bulletin/index.asp.

NASS. 2012. 2011 Certified Organic Production Survey. Accessed online Sept. 28, 2013. <http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1859>.

Perishables Group. 2010. "The Shape of the U.S. Berry Market." Paper presented at the World Berry Congress, Eurofruit, London, May 12, 2010. Accessed online Oct. 22, 2013. http://www.berrycongress.com/resources/documents/1273765803BruceAxtman_TheshapeoftheUSberrymarket.pdf.

USDA-AMS. 2012. Fruit and Vegetable Market News Users Guide. Accessed online Nov.15, 2013. <http://www.marketnews.usda.gov>.



By **Elizabeth Kirby**, Associate in Research, WSU Center for Sustaining Agriculture and Natural Resources; **Michael Brady**, Assistant Professor and Extension Economist, WSU School of Economic Sciences; and **David Granatstein**, Sustainable Agriculture Specialist, WSU Center for Sustaining Agriculture and Natural Resources/Tree Fruit Research and Extension Center.

Cover header image courtesy of USDA-ARS.

Copyright 2014 Washington State University

WSU Extension bulletins contain material written and produced for public distribution. Alternate formats of our educational materials are available upon request for persons with disabilities. Please contact Washington State University Extension for more information.

You may download copies of this and other publications from WSU Extension at <http://pubs.wsu.edu>.

Issued by Washington State University Extension and the U.S. Department of Agriculture in furtherance of the Acts of May 8 and June 30, 1914. Extension programs and policies are consistent with federal and state laws and regulations on nondiscrimination regarding race, sex, religion, age, color, creed, and national or ethnic origin; physical, mental, or sensory disability; marital status or sexual orientation; and status as a Vietnam-era or disabled veteran. Evidence of noncompliance may be reported through your local WSU Extension office. Trade names have been used to simplify information; no endorsement is intended. Published December 2014.