

Market Opportunities Assessment for BC Berries

Final Report



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EXECUTIVE SUMMARY

PURPOSE OF STUDY

The purpose of the study is to conduct primary and secondary market research to identify key market opportunities for the blueberry, cranberry, raspberry and strawberry industries in British Columbia (BC) and to develop an action plan for each berry sector that outlines the steps that should be taken to access the identified opportunities and how potential obstacles can be overcome.

STUDY METHODOLOGY

A detailed review of the available literature, documents and statistics was conducted for each of the four berry sectors. This included gathering information on trade data, national and international production volumes, competitor profiling, purchasing trends, market channels and fruit characteristics. To determine the key marketing opportunities for each berry sector and the obstacles to capitalizing on the identified opportunities, 58 semi-structured interviews were conducted. Interviewees included key industry and sector informants, berry growers, berry processors, board members of berry associations, breeders and geneticists and berry purchasers. Interviews were held with individuals based in BC, Quebec, Ontario, Washington, New York and California. More than half of the interviews were conducted in person. Finally, data from all lines of evidence were collated and analyzed to identify the key areas of opportunities and to develop an associated action plan for each berry sector.

KEY FINDINGS

The BC berry industry is a significant contributor to the provincial economy, with farm cash receipts of \$161.1 million in blueberries, \$43.6 million in cranberries, \$19.4 million in raspberries and \$5.6 million in strawberries in 2018. BC is the top producer of blueberries and raspberries in Canada, and the second-largest producer of cranberries. Berries are one of the fastest growing fresh and processed produce categories. BC berry growers enjoy good growing conditions, a mild climate, access to water for irrigation and currently, a favourable exchange rate with the US dollar for exports. Proximity to the US border, other export markets on the Pacific Rim and international transport infrastructure also facilitate trade options for growers. Additionally, berry farmers can leverage the strong Canadian brand and perception that is held in international agri-food circles.

The BC berry industry however, is not without challenges. Access to labour has become a critical issue for all four berry sectors. The industry almost exclusively relies on the Temporary Foreign Worker Program without which the industry would suffer almost immediately, highlighting how finely balanced the supply of labour is. When local labour is accessible, the subsequent cost can be prohibitive as can the rising price of land and other production costs in the province. Increased demand among consumers for berries has prompted countries around the world to begin production. This, coupled with the globalisation of the berry market, has intensified competition for BC growers. And as global production continues to expand, the fundamental principles of supply and demand have taken effect, placing downward pressure on prices. How the industry and government tackle these seismic shifts will define the future of the BC berry sector.

While each of the four berry sectors share many commonalities, as mentioned above, they also face their own unique set of circumstances and opportunities. The individual conditions and the specific opportunities identified for each berry sector are summarized in the following paragraphs.

Blueberries

Home to over 600 blueberry growers, BC is the fifth largest highbush producing region in the world. The provincial industry however, is operating in an increasingly globalised marketplace. While BC has significantly increased its production in recent years, with the view to capitalise on rising consumption, so too have most other growing regions. Adding further to the competitive landscape is the entrance and subsequent rise of new countries, such as Peru. This recent rush of production has resulted in a large surplus of blueberries on the market, which places downward pressure on prices making it difficult for BC growers to remain competitive. The over-supply of the Duke variety in August in BC, when the market is already saturated, drives prices down even further. This annual glut emphasises the importance of finding and implementing methods to extend the growing season. Profit margins have also been squeezed as production and input costs continue to rise in BC, especially in comparison to some newly producing regions. While seasonal fluctuations of price are expected, annual prices do show volatility in any given year based on a myriad of global circumstances. Ultimately, the macro trend of recent years has seen a steady suppression of prices when all factors are considered. As the blueberry supply in the international market is expected to continue growing in the short term, BC growers must adapt to the changing landscape. To do so and to ensure provincial competitiveness, a number of opportunities for blueberry farmers have been identified below.

Opportunity	Products	Location
1. Capitalize on growth in the dried blueberry market	Dried blueberries	Canada and export
2. Expand domestic market sales	Fresh, dried and IQF blueberries	Provincially and nationally
3. Further develop export markets	Fresh, IQF, dried, powder and chocolate enrobed blueberries	1. US 2. China 3. EU
Benefits		
4. Increase rate of adoption of progressive growing and production techniques	Use of technologies such as tunnels and substrate should result in increased yield, extended season and higher prices	
5. Long-term commitment to and funding of a regional breeding program	New varieties which are specific to BC that may be higher yielding, machine harvestable, disease and climate change resistant and lengthen the season	

Raspberries

While the global raspberry industry has expanded in line with demand in recent decades, the provincial industry has undergone significant contraction. The rise of Mexico and the establishment of California as major producing regions have intensified competition for BC raspberry growers. As a result, BC has struggled to keep pace with an increasingly globalised marketplace particularly with countries that enjoy lower costs of production. The emerging dominance of vertically integrated companies, who can supply year-round in the global retail market, presents further challenges for local growers. In recent years, as profit margins have tightened, many raspberry farmers in BC have reduced their raspberry acreage in favour of the relatively more lucrative and less labour intensive blueberry crop. Due to the short shelf life of raspberries, most traded raspberries are sold in frozen blocks and are treated as a commodity product. As a result, prices for frozen raspberries can fluctuate considerably from year-to-year as they are influenced greatly by exchange rates, import duties, weather conditions, and supply and demand. With global production forecast to increase thereby putting downward pressure on prices, BC growers will continue to face significant

competition. To enhance the competitiveness of BC raspberries, the following opportunities for expansion have been identified.

Opportunity	Product	Location
1. Expand domestic market sales	Fresh raspberries	Western Canada
2. High-end IQF production	IQF raspberries	Canada and export
Benefits		
3. Increase rate of adoption of progressive growing and production techniques	The use of technologies such as tunnels and substrate should result in increased yield, extended season and higher prices	
4. Replant with new varieties	Replacing some old varieties and/or old plants should result in increased yield, season extension, improve machine harvesting capabilities and thus higher prices	
5. Long-term commitment to and funding of a regional breeding program	New varieties which are specific to BC that may be higher yielding, machine harvestable, disease and climate change resistant and lengthen the season	

Strawberries

Strawberries are one of the most popular fruits in the world, and per capita consumption is increasing annually. Of the four berry markets profiled in this report, the global strawberry market is the largest. Globally more than 9 million tonnes of strawberries were produced in 2017 which is substantially more than the three other berry markets combined. However, the BC strawberry industry is the smallest of the four provincial berry sectors, experiencing significant consolidation since the 1990's. Globalisation and the rise of new producing regions have heightened competition for BC growers. Particularly disruptive was California's ability to outprice BC in the processed market off the back of their fresh market production. With high land, labour and production costs, BC strawberry growers struggle to compete. The rise of California transformed the BC industry from a predominantly processed industry to a fresh, local market. With the move to a fresh market, growers have had to adapt to the timing of berry availability and how that pairs up with market demands. Production techniques and varieties that can lengthen the growing season for fresh strawberries are likely to remain in high demand. The opportunities outlined below emphasize season extension and growth in the domestic market.

Opportunity	Product	Location
1. Expansion of the domestic retail market	Fresh strawberries	BC and Alberta
2. Expansion of the retail market in the Pacific North West	Fresh strawberries	Washington and Oregon
3. Expansion into domestic foodservice	Fresh strawberries	BC and Alberta
4. Expansion into the foodservice market in the Pacific North West	Fresh strawberries	Washington and Oregon
Benefits		
5. Increase rate of adoption of progressive growing and production techniques	The use of technologies such as tunnels, glasshouses and substrate and the wider adoption of day neutral varieties should result in increased yield, extended season and higher prices	

Cranberries

With very few countries commercially producing cranberries, North America dominates the global market. The BC cranberry industry is a significant player, accounting for approximately 12% of North American production. The provincial industry in BC has close ties with Ocean Spray, a farmer-owned co-operative located throughout cranberry-growing areas in Canada and the US. BC cranberry growers almost exclusively deal and sell to Ocean Spray resulting in Ocean Spray accounting for more than of 95% of the provincial crop. As such, almost all of BC's cranberries are grown for processing and are exported to the US. The US co-operative has significant control over the supply of cranberries in BC. There are a small number of entrepreneurial BC cranberry growers who retain a portion of their crop to further process the berry themselves or to sell them to the fresh market. The global cranberry market has undergone a significant shift in the last two decades. At the turn of the century, the predominant market channel for cranberries was the juice market. This has evolved and now the dominant market channel is for sweetened and dried lines of cranberries. The cranberry industry faces challenges as low yielding varieties are not sufficient to off set rising production costs. The current, favourable exchange rate with the US dollar is maintaining growers for now but relying on stable exchange rates is a high risk strategy. Adding to the challenges is the rise of the sugar-conscious movement and the continued contraction of the juice market. Finally, renovating a cranberry bog in BC can be prohibitively expensive while the heavy reliance on one purchaser can carry risk. In an attempt to ensure BC cranberry growers remain competitive, the following opportunities have been identified.

Opportunity	Product	Location
1. Capitalize on growth in the dried and sweetened cranberry market	Dried, sweetened and dried and powder cranberries	Provincially and nationally
2. Further develop export markets	Frozen, dried, sweetened and dried and chocolate enrobed cranberries	1. US 2. China 3. EU
3. Expand domestic market sales	Consumer products: Dried, sweetened and dried, powder and chocolate enrobed cranberries	Provincially and nationally
4. Expand domestic market sales	Secondary ingredients	Provincially and nationally
Benefits		
5. Replant with new varieties	Replacing some old varieties and/or old plants should result in increased yield, season extension, improve machine harvesting capabilities and thus higher prices	

KEY CHALLENGES

The BC berry industry is currently facing a myriad of significant challenges affecting nearly every business and industry facet. How the industry and government tackle these obstacles will define the future of the BC berry sector.

Labour

Both access to labour and the subsequent cost of labour are some of the most significant and universal challenges faced by BC berry farmers. The consensus suggests there is a declining appetite among the BC population to work in agriculture. When local labour is available it is limited, and the ensuing cost can be prohibitive. Recent successive minimum wage hikes have reduced the

bottom line of farmers who cannot pass on these increased labour costs to their buyers. As a result of the high cost and inadequate supply of local labour, the provincial industry almost exclusively relies on importing labour through the Temporary Foreign Workers Program (TFWP). Without the TFWP, the industry would suffer immediately, highlighting how finely balanced the supply of labour is. While the TFWP is effective in providing an alternative source for additional labour, it is certainly not inexpensive to hire, fly in and house dozens of seasonal workers from Mexico and Central America for many months of the year. BC producers also face competition in attracting berry workers as they operate in an increasingly global marketplace. Berry producing regions in the US are also heavily reliant on foreign seasonal workers. The longer growing season in the US can offer seasonal workers more opportunities making the United States an attractive option for many agricultural workers. The TFWP is effective and the industry could not operate without it. Having said that, the industry's reliance on the program is so substantial that any deviation in international policy or pricing in other regions or payment structures for workers would have severe repercussions for the provincial berry industry. Compounding the labour challenge is the issue of generational transfer. With an aging farmer population and little indication that the younger age group intend to succeed their parents, the future of the industry is uncertain.

Land

Due to vast swathes of mountains and forested land, 95% of the province is unsuitable for farming. Of the remaining 5%, not all is optimal for berry growing. As such, there are only a few areas of the province in which berries can successfully be grown. These areas include the Fraser Valley, parts of Vancouver Island and the Pemberton valley for cranberries. Due to greater demand than supply, the lack of availability of arable land drives land prices up. In the case of BC, land costs are particularly high as a result of urban encroachment and restrictions in Agricultural Land Commission Act. Even though the chances of successfully excluding land from the ALR are small, the payoff is so huge that speculators and developers are buying and holding land that could be used for farming. This misuse of land has immediate ramifications for berry growers. In the Fraser Valley, where most BC berries are grown, one acre of land can cost up to \$125,000. In the words of one producer "no number of berries will return the mortgage on that price". Thus, the barriers to entry for those not involved in generational farming are steep. Not only are land prices exorbitant in BC but across the border in Washington, one acre of land is estimated to cost \$20,000. This makes it exceptionally challenging for BC producers to keep pace with their American counterparts. In an attempt to remain competitive, some BC farmers have purchased or leased land to farm south of the border to avail of this cheaper real estate and establish operations there. Land costs are also invariably cheaper in developing nations such as Peru and Mexico that are major competitors to the BC berry industry.

Production Costs

In addition to high labour and land costs, BC berry growers also face higher input costs. Production input costs such as, fertilizer, pesticides and freezer space, are higher in BC than in competing regions. Additionally, the US has been known to allow a wider array of pesticides which places US growers at a relative advantage. Finally, the cost of bees and access to them for pollination is a concern. The charge for a hive in BC is \$125 compared to \$25 in the US.

Globalization

Berries used to be characterised by limited availability during a very short summer season. However, the current reality is vastly different as it is characterised by year-round availability of fresh berries, supplied from regions all over the world. The berry industry has become a global market in the last twenty-five years. Growth in consumer demand for and consumption of berries, fuelled predominantly by health benefits, has prompted non-traditional growing regions to enter the market. Lured by a large and growing market and expansion opportunities, new international entrants have accelerated their production in a short time frame. Typically, the non-traditional regions entering the

berry market have been countries associated with cheaper costs of production such as Mexico, Chile, Peru, China and Morocco. The rise of cheaper producing regions and multinational companies with access to a year-round supply of berries coupled with declining international trade barriers, has allowed non-traditional growing regions to compete with BC berry producers. BC farmers have been unable to keep pace with cheaper growing regions even after transportation costs, sometimes from South America, have been accounted for. While BC berry growers have invariably benefited from more relaxed international trade policies, it would appear that the opening of borders and trade has been more challenging than opportunistic for BC berry farmers as other regions can produce, ship and supply product to BC more cheaply than local farmers can which makes it inherently difficult for local producers to remain competitive even in their local market. Although many may see Asia, particularly China, as a growing market opportunity the caution here is China's expansion of their own berry industry.

Increasing Production

The rise of new international entrants and their accelerated growth coupled with incumbent regions expanding production with improved management practices and superior genetic material has resulted in an increase in the global supply of berries. If demand does not keep pace with this increased supply, which is the case for some berry commodities, increased production poses a serious threat to prices as downward pressure is applied. While both the global production and consumption of berries are on the rise, BC companies must assess whether consumer demand for berries will continue to absorb the supply. There is a genuine threat that if demand does not match supply, the increasing volume of berries will cause prices to drop to a level that is unsustainable for some BC growers.

Government Policies

Changes to government regulations, policies and processes are areas of constant concern for the BC industry. Regulatory uncertainty and related costs are considerations which are beyond the control of growers and processors. Government policies such as MSP premiums, increases in the minimum wage, proposed elimination of piece rate options, carbon taxes and the requirement to register water wells/usage have all been referenced as challenges for the BC berry industry.

International Subsidies

Not only is BC facing intensified global competition, but many of its competitors benefit from generous government subsidies. By way of example, it is widely reported that Chilean farmers receive five acres of land from the government as part of a public assistance program while those in Bulgaria benefit from a 50% cost share program for the purchase of new machinery. Furthermore, irrigation has largely been subsidized by the government in Peru and Washington State. These advantages add to the competitive struggles of BC producers.

Market Access

BC berry exporters face higher tariffs than many of their competitors when it comes to exporting. For example, Canada faces a 30% tariff when exporting blueberries to China. Chile has an FTA with China and as a result does not pay tariffs on its blueberries. Thus, Chilean products are instantly 30% cheaper. Peru enjoys similar benefits when exporting to China. BC berry producers need to have access to international markets to maximise their sales opportunities.

Proprietary Varieties

In recent years, the global berry industry has witnessed a shift in plant breeding activity from the public to the private sector as a result of intellectual property protection, globalisation and pressure on public budgets. Some of the very best genetics of the different berry varieties around the world are controlled by a few very strong and powerful companies which are shaping the future of the

industry. This centralisation of proprietary varieties and associated royalties limits access for BC growers. Without access to the leading varieties, the BC berry industry struggles to remain competitive in the global berry landscape.

Exchange Rate

The exchange rate with the US dollar is currently favourable for Canadian berry exports and it is one of the sole measures maintaining many growers as the competitive landscape intensifies. However, relying on the current exchange rate is a high risk strategy as it can be heavily influenced by volatile political climates and economic factors.

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I. INTRODUCTION

The following paragraphs describe the purpose and methodology employed to undertake the assignment.

A. PROJECT BACKGROUND

The BC berry industry is a significant contributor to the provincial economy, with farm cash receipts of \$161.1 million in blueberries, \$43.6 million in cranberries, \$19.4 million in raspberries and \$5.6 million in strawberries in 2018. BC is the top producer of blueberries and raspberries in Canada, and the second-largest producer of cranberries. Berries are one of the fastest growing fresh and processed produce categories. However, for the BC raspberry and blueberry industries, there is heavy reliance on undifferentiated export commodity markets and much of the fresh and frozen fruit is sold as generic fruit through brokers. Most of the cranberries grown in BC are destined for processing by Ocean Spray, a US owned co-operative. In contrast, the BC strawberry industry is small and focuses primarily on fresh market sales, direct from the farm. BC berry growers face higher input and land costs relative to producers in other regions of the world and may not be able to stay competitive in their current domestic and international market channels as berry production increases globally.

B. PURPOSE OF STUDY

The purpose of the study is to conduct primary and secondary market research to identify key market opportunities for the blueberry, cranberry, raspberry and strawberry industries in BC and to develop an action plan for each berry sector which outlines the steps that should be taken to access the identified opportunities and how potential obstacles can be overcome.

C. STUDY METHODOLOGY

To develop the industry and market profiles and the competitive benchmarking analysis for each berry sector, a detailed review of the available literature, documents and statistics was conducted for each sector. This included gathering information on, among other things, trade data, national and international production volumes, competitor profiling, purchasing trends, market channels and fruit characteristics.

To determine the key marketing opportunities for each berry sector and the obstacles to capitalizing on the identified opportunities, 58 semi-structured interviews were conducted. Interviewees included key industry and sector informants, berry growers, berry processors, board members of berry associations, breeders and geneticists and berry purchasers. Interviews were held with individuals based in BC, Quebec, Ontario, Washington, New York and California. More than half of the interviews were conducted in person. Finally, data from all lines of evidence were collated and analyzed to identify the key areas of opportunities and to develop an associated action plan for each berry sector.

D. REPORT OUTLINE

The remainder of report is divided into four main chapters; one chapter for each of the four berry sectors included in this study. Each chapter follows a similar format which begins by providing an industry and market profile for the berry sector in question, followed by a competitor and SWOT analysis, expansions upon the main opportunities identified and an action plan outlining key areas

of focus and the steps required to access the targeted opportunities. Please note that unless stated otherwise, all production and acreage data in this report are provided in metric tonnes and hectares, respectively. Although not reflected in this report, it should also be noted that within the cranberry industry production volume is calculated in barrels with the conversion of 1 barrel equalling 100 pounds.

II. BLUEBERRIES

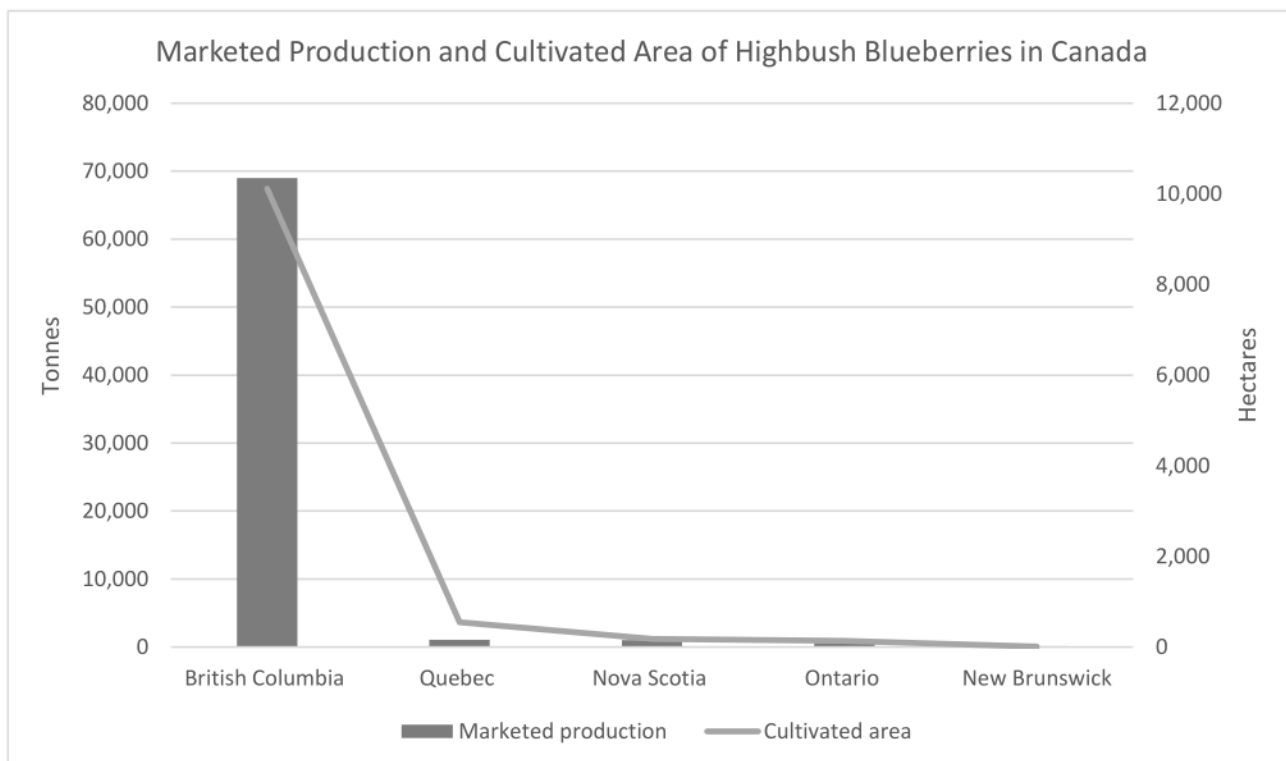
A. INDUSTRY PROFILE

Overview of Current Production in British Columbia

Blueberries are one of only three fruits native to North America that are commercially produced. There are two main types of blueberries; the lowbush (wild) blueberry and the highbush (cultivated) blueberry. The highbush blueberry was developed from the wild variety in the first half of the 20th century. Lowbush blueberries are exclusively grown in Eastern Canada while BC is predominately involved in the planting, growing and harvesting of the highbush crop. More than three quarters of the world's blueberry production is of the highbush species. As the focus of this report is the commercial BC berry industry, all future references to blueberries relate to the highbush blueberry crop unless otherwise stated.

Home to over 600 growers, BC is the largest producer of highbush blueberries in Canada accounting for 96% of production and 92% of highbush acreage in 2018. Most of the commercial highbush blueberry production in British Columbia is located in the Fraser Valley region, with the remainder on Vancouver Island. As illustrated below (Figure 1), the balance of national production (4%) is in Quebec, Nova Scotia, Ontario and New Brunswick.

Figure 1: Distribution of Total Marketed Production and Cultivated Area of Highbush Blueberries in Canada in 2018

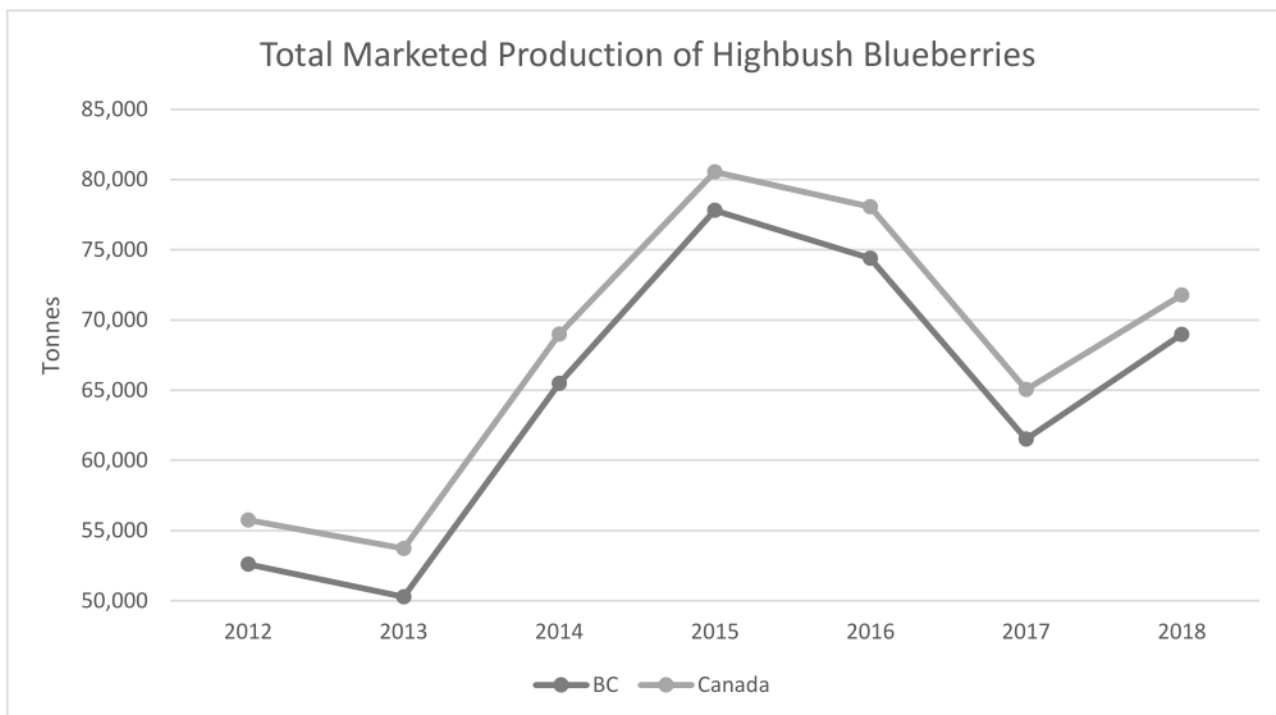


Source: Statistics Canada. Table 32-10-0364-01. Estimates, production and farm gate value of fresh and processed fruits.

Both national and provincial blueberry production experienced three years of significant growth from 2013 through to 2015 (Figure 2). In this time, BC production increased by approximately 55% from 50,277 tonnes to 77,803 tonnes. Following this notable growth, however, the industry contracted in

both 2016 and 2017 only to recover slightly in 2018. Overall, production in the industry has expanded by 72% in the last ten years. In 2009, BC blueberry growers produced 40,075 tonnes of blueberries with a farm gate value exceeding \$52.5 million.¹ In 2018, 68,968 tonnes were produced by BC with a farm gate value of \$161,168 million. Production volume is expected to continue to increase in the coming years as BC attempts to keep pace with the global blueberry market. Initial estimates for production in 2019 have indicated a record harvest of approximately 100,000 tonnes.

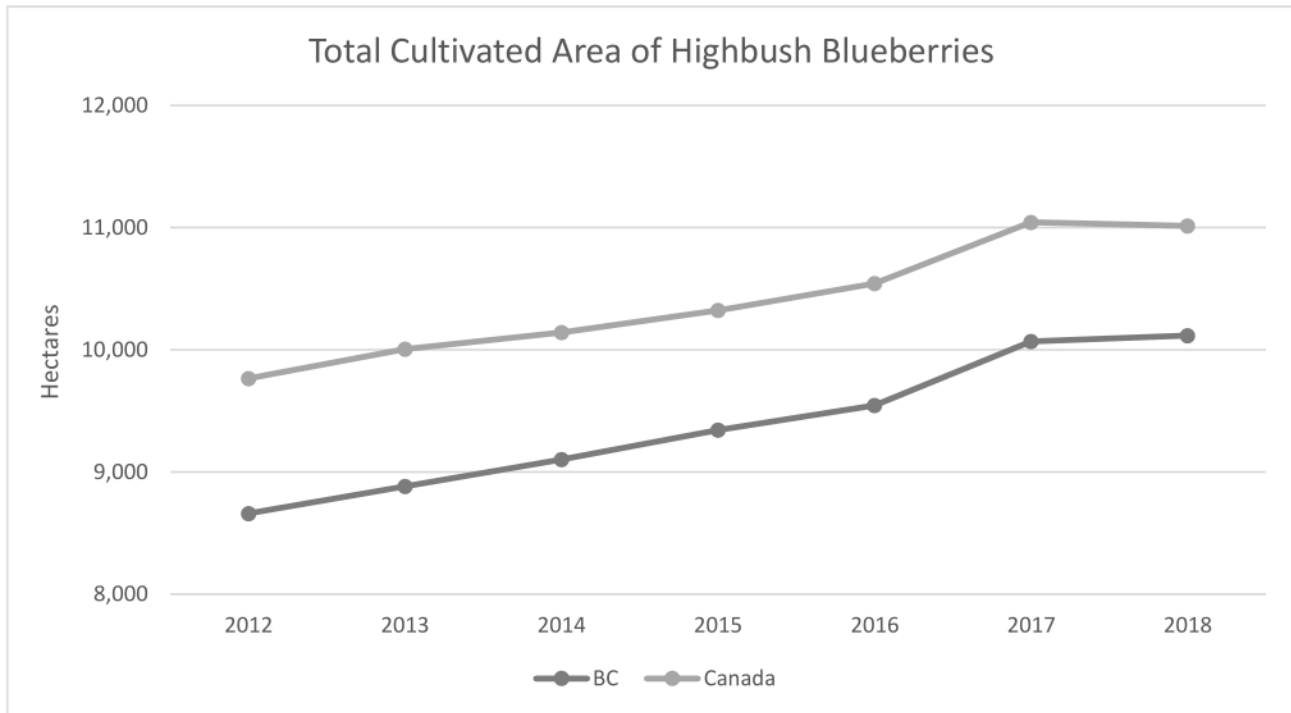
Figure 2: Total Marketed Production of Highbush Blueberries in BC and Canada 2012-2018



Source: Statistics Canada. Table 32-10-0364-01. Estimates, production and farm gate value of fresh and processed fruits.

Blueberry acreage has also been increasing in BC. For the past seven years, acreage has increased, on average, by 242.6 hectares annually. The greatest increase was between 2016 and 2017 when an additional 524 hectares were added. The smallest annual increase was in 2018 when only 49 hectares were added for blueberries. As BC accounts for the vast majority of Canada's highbush blueberry acreage, the national figures for highbush acreage largely echo this provincial upward trajectory. Overall, the acreage devoted to growing blueberries has increased by 17% in BC since 2012 as indicated in Figure 3.

Figure 3: Total Cultivated Area of Highbush Blueberries in BC and Canada 2012-2018



Source: Statistics Canada. Table 32-10-0364-01. Estimates, production and farm gate value of fresh and processed fruits.

As indicated in Table 1, the average yield per hectare has fluctuated from a low of 6,094 kilograms per hectare in 2013 to a high of 8,565 kilograms per hectare in 2016. Average farm gate value has increased from \$11,119 per hectare in 2013 to \$16,255 per hectare in 2018.

Table 1: Summary of BC's Highbush Blueberry* Farm Gate Value, Production, Acreage and Yields 2013-2018

Variable	2013	2014	2015	2016	2017	2018	Average 2013-2017	2018 vs. 2017 % change	2018 vs. average % change
Farm gate value (\$'000)	91,735	112,210	156,889	144,589	136,527	161,168	128,390	18.0%	25.5%
Cultivated area** (hectares)	8,882	9,103	9,342	9,544	10,068	10,117	9,388	0.5%	7.8%
Harvested area (hectares)	8,250	8,681	9,084	9,341	9,513	9,915	8,974	4.2%	10.5%
Production (tonnes)	50,277	65,470	77,803	74,389	61,510	68,968	65,890	12.1%	4.7%
Yield (kg/ha)	6,094	7,542	8,565	7,964	6,466	6,956	7,326	7.6%	-5.1%
Yield (\$/kg)	1.82	1.71	2.02	1.94	2.22	2.34	1.94	5.28%	20.3%
Farm gate value per harvested hectare (\$/ha)	11,119	12,925	17,271	15,479	14,352	16,255	14,229	13.3%	14.2%

Source: Statistics Canada.

*Total blueberry production includes figures from on-farm land only; Unmanaged Crown land is excluded.

Although acreage and production have been increasing over time, the local BC industry is not without its challenges. Due to the additional global supply of blueberries, the price BC farmers can command during their high season has decreased. This is particularly true in the late season when some growers have typically relied on a slightly higher return than in the peak season. Profit margins have also been squeezed as production and input costs continue to rise especially in comparison to some newly producing regions. Because of the low consumption of blueberries among non-traditional production countries and the higher prices paid for the fruit outside the regular market season in the main importing countries, blueberry supply in the international markets is expected to continue growing in the short term. This has resulted in a large surplus of blueberries on the market that is driving prices down and making it difficult for BC's blueberry growers to remain competitive in their current markets. Unless new markets are developed, demand increases and/or producers rationalize marginal acreage, the prices for blueberries will likely remain low. With little control over the worldwide supply of blueberries, BC growers will need to focus on expanding demand for their blueberries in new markets.

Breakdown of Varieties Grown in British Columbia

BC grows a number of different blueberry varieties, but the most popular is the Duke (early-season) variety which is estimated to account for over 50% of the provincial acreage. While the Duke variety is popular among both growers and consumers, the trouble with one variety accounting for a large portion of total acreage is that the crop will invariably produce most of its yield over a short time frame. The consequence of this is that intense levels of resourcing are required for a few short weeks followed by a quieter period. Additionally, the large volume of production over a short time period results in a lower price for this variety during peak harvest. Thus, most growers report a preference for lengthening the season which would bring more stability.

The next most common varieties are Bluecrop (mid-season) and Elliott (late-season) which comprise another 30% of the remaining acreage. While the Elliot variety offers the opportunity to extend the growing season, the berry is reported to be less desirable among consumers due to its tart taste. As a result, many BC growers are now pulling out their Elliot variety in place of cultivars which are considered to have a better taste for the consumer market. Additionally, many farmers are also replacing some of their older varieties with newer releases.

Nonetheless the need remains for mid and late season varieties for the fresh market. As such, other new cultivars are planted in BC including Draper, Liberty, Aurora, Cargo, Last Call, Top Shelf and Calypso. The characteristics of the main cultivars are described below:

Duke

Duke is an early variety for the processing and fresh market. Although it blooms late, it produces early and consistently. The crop can be harvested in just two picks. The flavour is maintained in cold storage making it an excellent contender for individual quick freezing and fresh shipping.

Bluecrop

Bluecrop is a mid-season variety for the processing and fresh market. This variety is consistently productive and may even tend to over-produce if it is not carefully pruned. The crop can be harvested in three to four picks. The flavour is well received so long as it is not harvested early.

Elliott

Elliot is a very late variety which is most suited to the fresh market. The fruit size is medium size while the flavour can be slightly tart. It holds up well for storage.

Draper

Draper is a mid-season crop which arrives slightly earlier than Bluecrop. It is suited for the processing and fresh market. Benefits of the Draper variety include adaptation to machine harvesting, excellent flavour and a good shelf life.

Liberty

The Liberty variety is also a late variety, but it is slightly earlier than Elliot. This cultivar is used for processing and in the fresh market. This cultivar produces medium to large berries with excellent flavour.

Aurora

Aurora is a very late variety suited to the fresh market. This variety is likely too late for most Fraser Valley locations but has potential for late season tunnel production. It produces fruit medium in size, and dark blue in colour with a slightly tart flavour.

Top Shelf

Top Shelf is a mid-season variety suitable for the fresh market that ripens slightly earlier than Draper. It produces very large berries with excellent flavour that have good storage potential. Top Shelf has a concentrated harvest.

Calypso

Calypso is a mid-season variety that starts a little later than Bluecrop and finishes before Elliott harvest begins. It produces large-sized berries with acceptable flavour. It shows promise for picking by machine.

Cargo

Cargo is a late-season crop, which ripens around the same time as Liberty. It has similar or slightly smaller fruit size than Duke, good flavour and excellent firmness. This variety ripens uniformly.

Last Call

Last Call is a very late season variety that ripens in the same window as Elliott. It produces loose clusters of larger, light blue fruit. It shows promise for picking by machine.

Fruit Quality Traits

The characteristics listed in Table 2 below are crucial fruit quality traits for blueberries destined for both the fresh and processed market, but their relative importance in each market varies. As fresh fruit generally earns a higher price than fruit for processing, the fresh market usually demands more from the factors mentioned below. A study of breeding trait priorities of the blueberry industry in the US and Canada conducted in 2018, signaled that, in general, the most important trait cluster was fruit quality, particularly firmness, flavor, and shelf life. Fruit quality traits are important as they can affect producer price premiums, positively drive consumer demand and improve machine harvestability, all of which are critical to the economic viability of the commercial production.

Table 2: Highbush Blueberry Quality Traits and Description

Trait	Fresh	Processed
Colour	An accepted range from light blue to purple to nearly black. Colour should be bright and uniform. Reddish blueberries are not desired	An accepted range from light blue to purple to nearly black. Colour should be bright and uniform.
Flavour	A balance between sweet and tart is desired	A balance between sweet and tart is desired
Size	An accepted range from 0.5 cm to 2 cm	An accepted range from 0.5 cm to 2 cm depending on intended use and market preference for which it is destined
Defects	Free from defects, at least any that interfere with appearance and taste profiles. No internal bruising as this can reduce shelf life	Should not have any obvious external damage. Can withstand some internal bruising. Should not have any stems
Firmness	Fresh blueberries are also required to be firm. They should not be soft or mushy	Should be firm. Not soft or mushy. Must be able to withstand machine harvesting
Shelf life	A long shelf life is required to order to sustain national and international travel demands	Shelf life for a standard frozen blueberry is two years after it is packed and held below -18 degrees Celsius

The appearance of a blueberry is most important for the fresh market. This means the size, colour and firmness of a blueberry are all critical purchase points for consumers. Consumers of fresh blueberries have also come to expect the white 'bloom' or surface wax on fresh blueberries. While size isn't an indicator of maturity, color is. Berries should be deep purple-blue to blue-black. Larger berries are typically preferred for the fresh market but ultimately a range of sizes and colours are acceptable to consumers as long as the taste profile is not compromised. The flavour of blueberries is paramount to consumers. Striking a balance between a sweet and tart berry is desirable.

Blueberries, particularly those destined for the fresh market, should also be free from defects. Again, this adds to the all important visual appearance of the berry. Fresh blueberries also need to have a long shelf life to withstand national and international transport expectations while still providing the consumer with a berry that doesn't require immediate consumption. While shelf life can be fractionally extended by harvesting the berry slightly earlier, this will likely compromise the flavour as the berry won't be fully ripe which is when it has the highest sugar content and flavour.

When defrosted, blueberries frozen for individually quick frozen (IQF) purposes have similar quality requirements of fresh fruit. Therefore, appearance is important as is an absence of defects. A natural appearance should be preserved as much as possible. The result is good separated, naturally looking blueberries, which are easier to sell, often at a premium price. One of the most challenging aspects when freezing blueberries is to avoid surface cracks and burns on the berry surface. Another challenge is minimizing dehydration and keeping the yield and profitability high.

Fruit quality traits for bulk frozen and value-added processing will vary depending on the intended end product that the blueberry will be used for. For example, different traits will be desired for blueberries used in cosmetics versus blueberries added to pet food. Generally, for blueberries destined for bulk freezing or value-added processing appearance is somewhat less important as the berry will likely undergo some physical, biological and chemical alterations before it reaches the final consumer thus prioritising appearance elements would not be an efficient use of resources. Depending on the intended purpose of the frozen or value-added blueberry a range of colour, sizes and bloom are acceptable. Having said that, flavour, size and colour remain important traits as they all form part of the criteria used to determine grades and standards of blueberries and thus directly affect the price received by producers. Finally, the frozen market has a very low tolerance for blueberries with stems and it is expected that all berries would be washed.

Seasonality

As highlighted in Table 3 BC's fresh blueberry season coincides with many other origins to comprise the latter stages of the North American season, right before South America begins to play a more dominant role. During the height of its season, BC predominately shares the market with Oregon, Washington and Michigan. As these US states are located further south, their harvests commence a couple of weeks earlier meaning BC enters an already supplied market and thus the price is lower.

Although the BC season extends for nearly five months, from June through October, peak blueberry season runs from the end of July until early August. Due to the predominance of a single cultivar (Duke), it is not uncommon for more than half of the total provincial crop to be harvested in this time. This is problematic for growers and processors who regularly struggle to deal with the glut of produce during this concentrated window. Resourcing during this time proves to be particularly problematic.

Consequently, some BC growers had come to rely on the sale of later season varieties to recover some profit margin. However, this strategy is complicated by the arrival of Peruvian and Mexican berries in recent years which can now be supplied as early as September making the late season less lucrative. Recent data from Agronomics highlights the flattening of the pricing curve, particularly at the end of the season for BC growers. For the last four years, a noticeable trend emerges where every single year, the price has been lower (from mid-August onwards) than the year that precedes it. The flattening of prices is a phenomenon that is particularly relevant to Canadian producers due to the considerable price increase the market has traditionally seen towards the end of the North American season.²

Additionally, fresh blueberries are now available year-round with North America supplying the market April through October and South America occupying the time between November through March. While this is welcomed news for consumers who purchase fresh blueberries it can often hurt BC growers and processors who historically would try and sell their frozen produce in the winter months. There are concerns too that the BC growing window will continue to be encroached upon as countries continue to enter the market and varieties continue to offer season extending opportunities.

Table 3: Availability Calendar of Highbush Blueberries for Major Growing Regions

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Peru												
Mexico												
Chile												
Argentina												
China												
Florida												
California												
Michigan												
Oregon												
Washington												
BC												

Current Market Channels

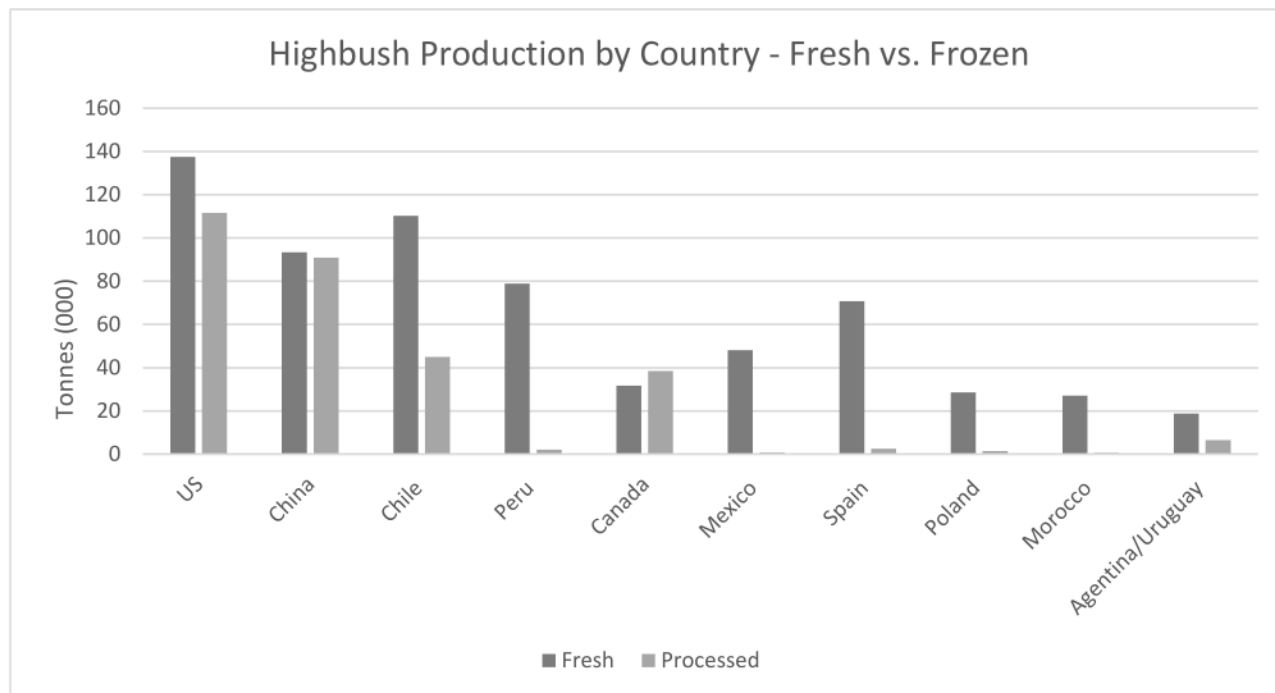
As profit margins are highest for fresh blueberries, globally most blueberries are sold to the fresh market (Figure 4). In recent years, the percentage of blueberries sold to the fresh market has increased sharply due to the rapid growth of consumer demand for fresh fruits. In order to gain a higher return, many growers prefer to sell their berries directly to consumers through farm stands, roadside sales, farmer's markets, and u-picks. The remaining percentage of blueberries are sold in the processing sector.

Canada is unique in the global context of highbush blueberries, as it is the only one of the top 10 producing country which sends the majority of its crop to processing. As highlighted in Figure 4, in 2018 approximately 45% of BC produce went to the fresh market with the remainder destined for the processed market.ⁱ Processed highbush production is primarily of North American origin, as 50% of processed highbush blueberry production was located in North America in 2018. However, this is changing as China and Chile increase their production of processed blueberries. Most of BC fresh and processed blueberries are exported out of the province and are sold in foreign markets.

In BC, frozen blueberries are the major processed product. With many IQF tunnels in the province, a significant portion of the BC crop is dedicated to IQF. Approximately 40% of the total blueberry crop is destined for IQF. The remaining blueberries (14%), that aren't sold fresh or destined for IQF are bulk frozen or sent to value-added processing. Thus, there is limited value-added processing activity in the province. Many growers and processors have found value-added activities to be time consuming and expensive endeavours, at least initially. Further the processed industry faces challenges due to limited product differentiation, lack of new product development, and a large number of handlers in a fragmented market. However, there are some small drying, freeze dry, sweetened and dried, organic, chocolate enrobed, juice and blueberry wine productions. Most of these operations are conducted by vertically integrated companies and grow their own berries for processing. Should these companies expand their processing capacity, there may be scope for growers to sell to these companies, if the vertically integrated entities are unable to expand their own growing production at a similar rate due to high land costs, among other factors.

ⁱ 2018 data from Statistics Canada recorded a higher percentage of the blueberry crop destined for the fresh market at 53%.

Figure 4: Production of Highbush Blueberries by Fresh and Frozen Channels of the 10 Largest Producing Countries 2018



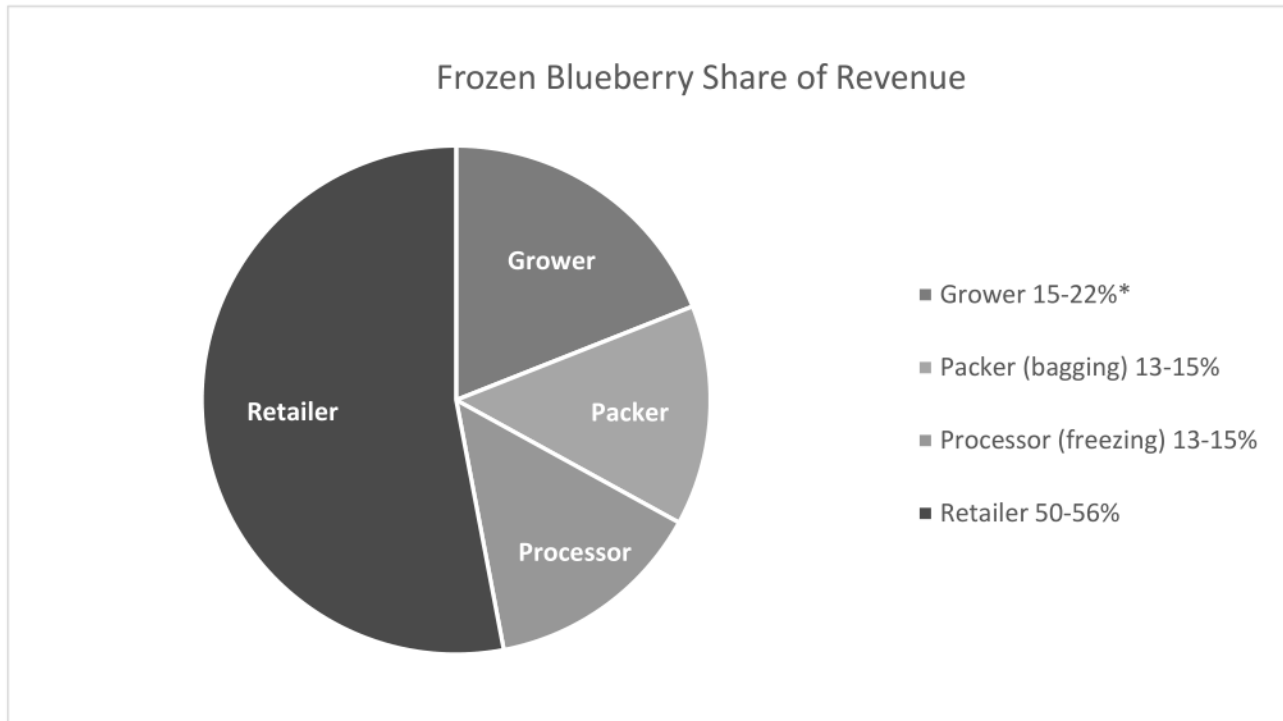
Source: International Blueberry Organization: 2019 State of the Blueberry Industry Report. 2019.

Table 4 and Figure 5 below examine the supply chain for frozen blueberries. Figure 5 below outlines the typical share of revenue from frozen blueberries that each party along the supply chain can expect. The pie chart legend displays a small range for each group in the supply chain as different contracts will buy and sell at different price points. For diagrammatic purposes the midpoint for each range is represented. While the share of revenue is not evenly divided among the four main groups, each group has considerable costs to cover (Table 4). For each group they are as follows:

Table 4: Major Costs for Each Player in the Supply Chain of Frozen Blueberries

Grower	Processors	Packer	Retailer
Mortgage/Land rental	Delivery	Delivery	Distribution and storage
Fertilizers	Packaging	Packaging	Marketing
Pesticides	Utilities	Utilities	Sales
Pruning	Storage	Storage	Operational costs
Labour	Labour	Labour	Labour
Equipment repairs and loans	Financing/loans	Equipment repairs and loans	Financing
	Waste	Financing/loans	
	*Sometimes a broker or marketing group	Return/damaged product	
		*Sometimes a broker or marketing group	

Figure 5: Share of Frozen Blueberry Revenue within the Supply Chain



Source: Market Opportunities Assessment Study of the BC Berry Industry 2019.

*For diagrammatic purposes the midpoint of each range has been represented within the pie chart.

Export Sales

Table 5 and 6 below outline BC's export activity for both fresh and frozen highbush blueberries for the last ten years. Global exports across both product categories have approximately doubled in this time. The US is the largest recipient of BC blueberries, accounting for 99% of fresh blueberries exported from the province in 2019 and 94% of frozen berries. Japan is the second most popular destination among exports, however, annual volume shipped is minor. As a percentage of production, in 2018, BC exported nearly 75% of its blueberry production as fresh or frozen produce. BC is a net exporter of highbush blueberries, exporting more produce than it receives.

Table 5: BC's 2009-2019 Exports of Fresh Cultivated Blueberries, by Country and by Year

Quantity* (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019**	Total
Global	14,103.2	13,436.9	14,790.5	21,461.3	20,983.1	24,045.1	25,138.9	21,088.9	23,719.0	24,813.0	29,758.8	233,338.7
US	13,992.9	13,362.0	14,540.2	21,333.4	20,881.9	23,897.7	24,599.1	20,791.9	23,447.1	24,630.5	29,647.2	231,123.9
Japan	70.8	49.0	83.7	85.9	68.6	44.1	63.7	27.3	16.8	24.3	24.9	559.1
Hong Kong	16.5	11.2	19.8	8.9	14.4	39.9	9.0	66.1	72.4	35.2	0.9	294.3
Chile	0.0	0.0	0.0	0.0	0.0	0.0	285.8	0.0	0.0	0.0	0.0	285.8
Australia	0.0	0.0	0.0	0.0	0.0	21.3	119.6	80.8	48.4	0.0	0.0	270.1
China	0.0	0.0	17.8	0.0	0.0	7.7	2.0	82.8	76.8	38.0	23.9	249.0
UK	12.9	7.1	82.9	11.4	0.0	0.0	5.1	0.0	2.2	0.0	0.5	122.1
Singapore	2.5	0.0	0.0	0.0	0.0	11.4	13.4	0.4	23.0	42.9	7.6	101.2
Ireland	0.0	3.3	19.6	7.2	5.1	3.8	19.1	17.6	0.0	17.9	0.0	93.6

Taiwan	7.5	3.3	6.4	12.0	4.6	8.7	11.3	6.1	16.6	4.1	2.3	82.9
Israel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	32.0	37.0
Malaysia	0.0	0.4	0.0	0.0	3.7	6.2	7.1	11.1	5.6	2.5	0.3	36.9
Indonesia	0.0	0.0	0.0	0.0	3.1	2.5	2.3	3.1	3.4	3.5	18.6	36.5
Netherlands	0.0	0.0	9.2	0.0	0.0	0.0	0.0	0.0	0.0	7.3	0.0	16.5
Thailand	0.0	0.0	0.0	1.0	0.4	2.0	1.5	1.4	5.6	1.3	0.0	13.2

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth of a tonne.

**2019 data reflects exports during the months of Jan.-Nov. only.

Table 6: BC's 2009-2019 Exports of Frozen Cultivated Blueberries, by Country and by Year

Quantity* (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019**	Total
Global	16,202.3	20,184.0	15,675.2	19,410.1	23,724.2	26,151.9	28,615.0	30,232.5	27,273.3	26,434.0	32,652.6	266,555.1
US	14,357.9	16,978.8	12,688.3	16,281.7	21,288.4	22,922.2	24,919.3	26,038.7	23,985.3	23,754.6	30,755.1	233,970.3
Japan	1,283.4	1,812.2	1,704.2	1,919.7	1,152.5	1,836.3	2,411.8	2,297.4	2,425.3	2,116.9	1,097.5	20,057.2
Australia	390.4	972.4	896.9	379.7	397.3	482.7	490.5	1,265.8	420.6	89.5	32.6	5,818.4
China	23.8	205.3	130.7	626.5	810.2	722.5	402.5	375.1	277.0	320.2	485.9	4,379.7
New Zealand	131.3	84.8	106.8	125.4	52.6	10.0	48.9	69.9	47.6	15.8	222.9	916.0
Chile	0.0	0.0	0.0	0.0	0.0	160.0	287.2	35.9	0.0	65.3	0.0	548.4
Vietnam	0.0	0.0	48.1	0.0	0.0	0.0	23.1	58.5	0.0	0.0	0.0	129.7
Thailand	0.0	23.8	34.1	11.1	0.0	0.0	0.0	36.5	12.3	11.9	0.0	129.7
Indonesia	0.0	0.0	4.6	38.0	0.0	0.0	0.0	5.4	21.1	31.1	16.0	116.2
Taiwan	0.0	39.4	3.0	5.6	3.5	0.0	19.9	4.5	21.2	3.4	13.6	114.1
India	0.0	0.0	0.0	0.0	8.8	18.2	0.0	0.0	0.0	0.0	29.0	56.0
South Korea	6.8	44.1	11.8	10.5	0.0	0.0	0.0	0.0	25.4	25.2	0.0	123.8
Brazil	0.0	23.2	0.0	0.0	0.0	0.0	0.0	24.5	24.5	0.0	0.0	72.2
Philippines	0.0	0.0	0.0	0.0	0.0	0.0	11.9	0.0	13.0	0.0	0.0	24.9
Colombia	0.0	0.0	23.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.6
Azerbaijan	0.0	0.0	23.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.2

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth of a tonne.

**2019 data reflects exports during the months of Jan.-Nov. only.

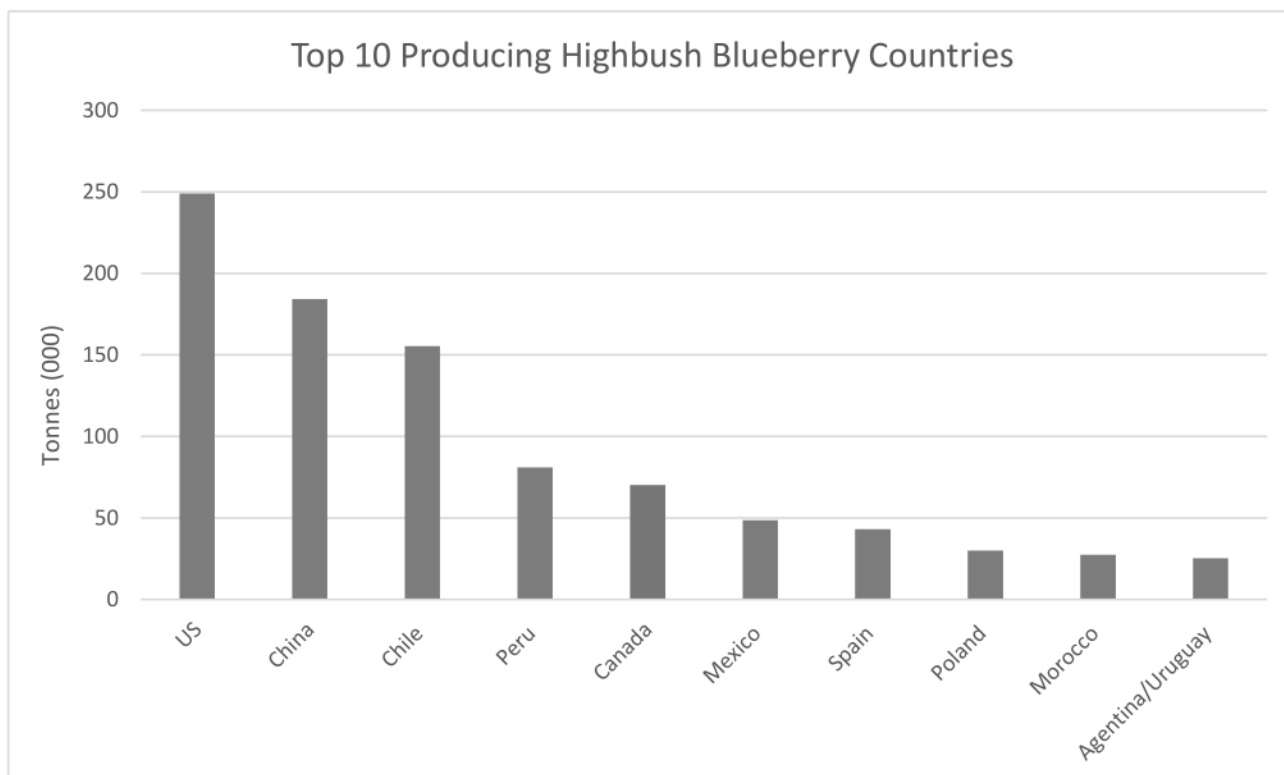
B. MARKET PROFILE

Current Global Blueberry Supply

Blueberries are cultivated commercially in more than 30 countries worldwide, most of which are located in temperate zones. Canada is the fifth largest producer of highbush blueberries in the world responsible for approximately 7% of global production in 2018 (Figure 6). Canada used to be the second largest growing region in the world, but the rise of non-traditional growing regions has intensified competition for Canadian growers. In the last two years the rise of China and Peru has been particularly pronounced, with Chinese and Peruvian production increasing by 156,000 tonnes and 64,000 tonnes respectively. Mexico is another significant riser. The top 10 producing countries in 2018 comprised nearly 90% of global production with about 60% of global volume in the Americas alone (Figure 7) ³. The share is lower than it was in 2016 as more countries have commenced blueberry production. Total global production in 2018 was just over 1 million tonnes, representing a 58% increase in global production in two years.

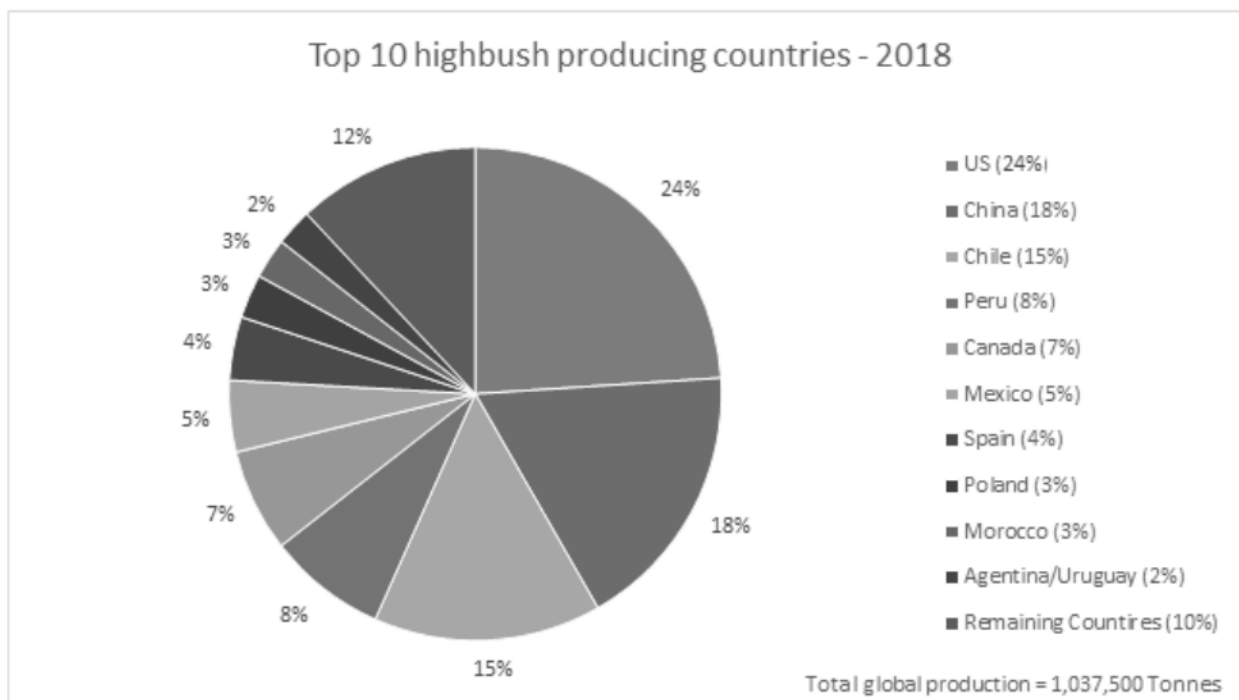
Figure 6 can be reviewed alongside Table 3 (page 9). Combined these graphics showcase global production volume by the top 10 producing countries against the seasonal supply of blueberries. Globally, the majority of blueberries are produced in the northern hemisphere resulting in a dominant season from May to October.

Figure 6: Top 10 Producing Highbush Blueberry Nations by Production Volume - 2018



Source: International Blueberry Organization: 2019 State of the Blueberry Industry Report. 2019.

Figure 7: Share of the Global Highbush Blueberry Market by Production Volume – 2018

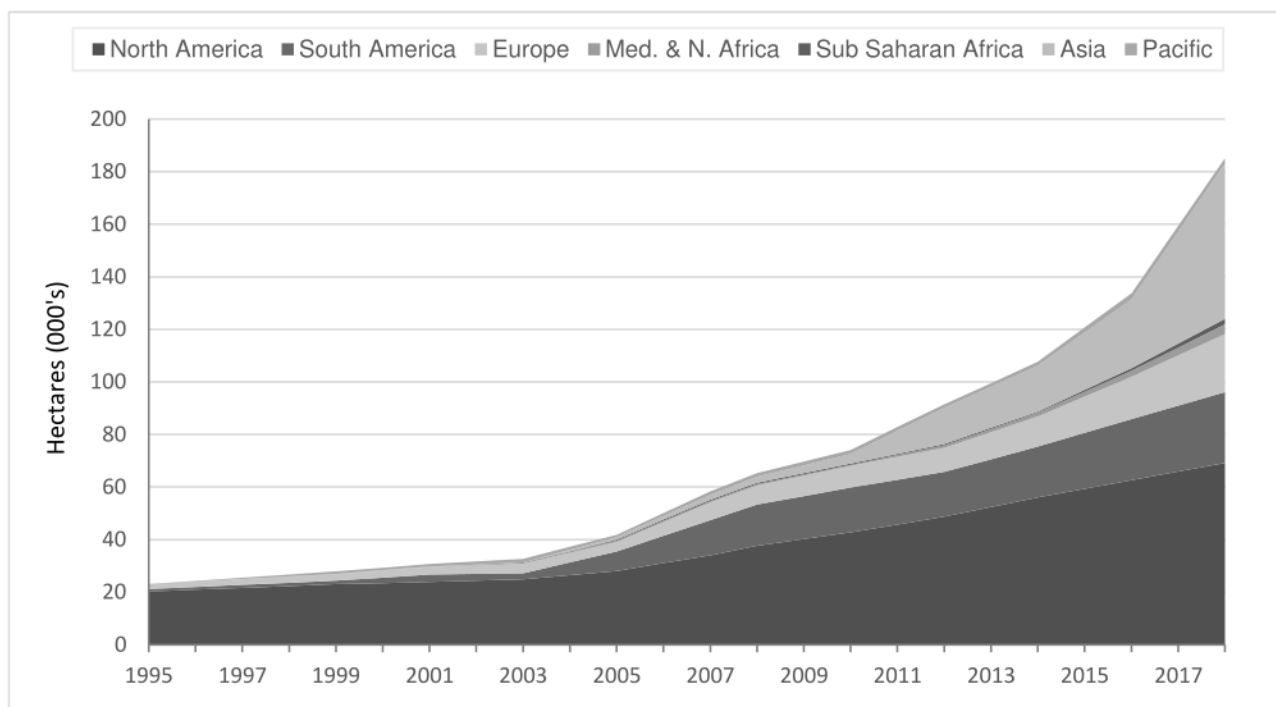


Source: International Blueberry Organization: 2019 State of the Blueberry Industry Report. 2019.

Global blueberry acreage has increased dramatically in the last decade. Canada and the US have more than doubled their acreage in the last 20 years (Figure 8). However, non-traditional growing regions have also been investing with the remaining regions outstripping North America in terms of acreage for the first time in 2018. This is significant as North America used to occupy nearly 100% of global blueberry acreage. In 2018, Chinaⁱⁱ planted the largest number of blueberry hectares globally at approximately 55,344 hectares, up from 22,000 hectares in 2016. As such, it can be expected that China will become an even bigger player in the marketplace in the future.

ⁱⁱ Data from China should be interpreted with caution as reporting has been variable in the past.

Figure 8: World Highbush Planting Acreage by Major Geographic Region 1995-2018



Source: International Blueberry Organization: 2019 State of the Blueberry Industry Report. 2019.

The blueberry industry in British Columbia is facing intense competition from growers around the world who have shifted to blueberry production in hopes of capitalizing on increased demand for this popular superfruit. Despite being the largest producer of highbush blueberries in Canada and the fifth largest producing region in the world, BC is facing challenges selling blueberries in a saturated market.

Purchasing Trends

- **Blueberries have many health benefits which have driven blueberry consumption in recent decades.**
 - Blueberries are considered a “superfood” because they have a high concentration of nutrients and antioxidants. While low in calories, blueberries are a good source of fiber and an excellent source of vitamin C.
 - As scientists continue to attribute more health benefits to blueberries and consumers use them in sweet and savory recipes, demand and volume will continue to grow.
 - A report from the North American Blueberry Council notes that blueberry sales from 2013 through 2017 were up 34% compared to 12% for the entire berry category during the same period.⁴
- **Blueberry purchases are increasingly global.**
 - Blueberry utilization is increasingly global, with the highest rate of category growth, volume, and value in Asia and Europe.
 - Blueberries are highly available in fresh as well as frozen and dried form, making it easier for consumers to have them all year-round. The rest are pureed, concentrated, canned or

dried. Blueberries can be used in a wide range of food products, including yogurt, pastries, muffins, cereals and health bars.⁵

➤ **Purchasers are increasingly influenced by the packaging material.**

- Consumers are reported to want the product to have minimal coverage on the clamshell of their berries so they can see more of the berries inside.
- Consumers are increasingly looking for sustainable packaging options, although they remain faithful to trends, such as smaller snack-size containers that are easy to transport.
- Consequently, some companies are experimenting with fully compostable and recyclable options, such as small cardboard trays and biodegradable plastics.

➤ **Shoppers of older age and higher income are more likely to buy blueberries in the US.**

- In the US, the likelihood of blueberry purchases increases with income and age. Shoppers earning more than \$100,000 annually and those age 50 and older are the most likely overall to buy these sweet berries.
- Families without kids at home were more likely to make a purchase this year than those with kids.

➤ **Consumers are increasingly preferring organic blueberries.**

- Nearly four in ten (39%) buyers said they purchased organic berries at least some of the time, up from 35% who said so last year. 17% said they always bought organic blueberries.⁶

BC Highbush Blueberry Imports by Type

Table 7 and 8 below highlight the largest importing countries of highbush blueberries into the province for the years 2009 through 2019. Following that, Table 9 and 10 outline import volume by calendar month for the year 2019 (Jan-Nov). This distinction enables visibility of both the origin of BC imports over the last decade and the time of year in which berry imports typically arrive.

BC's imports of fresh and frozen highbush blueberries have increased over time. In 2018, the province imported 13,000 tonnes of fresh and about 9,500 tonnes of frozen blueberries compared to 3,602 tonnes for fresh and 614 tonnes of frozen ten years ago. Frozen imports have more than doubled from 2018 through to 2019. For the ten years previous to 2019, on average, the province imported approximately 3,000 tonnes of frozen berries per annum. For the first 11 months of 2019, frozen imports exceeded 9,000 tonnes. The US is the predominate supplier of blueberries into BC, accounting for 85% of fresh blueberries and 79% of frozen berries. Chile is the second largest supplier significantly increasing their shipments to BC of both fresh and frozen in the last ten years. This corresponds to their alternate growing season during BC's winter. Peru and Mexico are among the other rising contributors of fresh imported blueberries while Argentinian produce has declined.

Table 7: BC's 2009-2019 Imports of Fresh Cultivated Blueberries, by Country and by Year

Quantity* (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019**	Total
Global	3,602.1	3,973.1	4,392.5	7,537.9	11,150.7	7,412.1	4,225.6	6,984.4	9,852.6	13,023.7	10,641.6	82,796.3
US	3,173.2	3,357.1	3,412.4	6,400.2	10,008.9	4,680.1	3,217.3	5,643.4	7,781.8	11,185.8	8,771.3	67,631.5
Chile	343.2	525.0	864.8	955.8	1,041.0	2,491.9	858.9	934.5	1,493.8	1,128.6	835.8	11,473.3
Mexico	0.0	3.3	8.5	25.4	23.2	45.3	83.0	185.4	334.8	399.0	521.2	1,629.1
Peru	0.0	0.0	0.0	0.0	0.0	0.0	1.2	119.4	220.8	262.7	478.2	1,082.3
Argentina	57.9	70.7	93.4	154.7	76.5	135.7	49.5	73.4	21.5	25.6	25.2	784.1
Uruguay	3.5	8.7	5.1	1.7	1.1	59.2	10.2	26.0	0.0	17.6	6.1	139.2
New Zealand	26.6	8.3	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.2
Australia	0.0	0.0	0.0	0.0	0.0	0.0	5.7	2.2	0.0	4.3	3.7	15.9
France	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Japan	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth of a tonne. Canada imports are excluded.

**2019 data reflects imports during the months of Jan.-Nov. only.

Table 8: BC's 2009-2019 Imports of Frozen Cultivated Blueberries, by Country and by Year

Quantity* (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019**	Total
Global	614.9	845.6	1,694.0	1,992.0	3,242.6	2,724.4	3,283.7	4,742.7	4,641.0	4,289.2	9,436.0	37,506.1
US	560.7	763.7	1,477.9	1,795.9	2,949.3	2,687.5	2,781.7	3,633.4	3,667.9	3,388.2	8,273.0	31,979.2
Chile	54.2	39.5	176.1	128.7	268.5	36.9	490.6	812.3	510.9	781.6	891.0	4,190.3
Argentina	0.0	0.0	40.1	67.5	0.0	0.0	0.0	28.3	462.1	112.3	261.2	971.5
Poland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	170.3	0.0	0.0	0.0	170.3
Serbia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.0	0.0	0.7	0.0	80.7
Mexico	0.0	18.5	0.0	0.0	0.0	0.0	11.4	18.4	0.1	0.0	0.1	48.5
Thailand	0.0	0.0	0.0	0.0	24.8	0.0	0.0	0.0	0.0	0.0	0.0	24.8
Germany	0.0	23.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.8
Japan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	10.9
Ukraine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	5.7

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth of a tonne. Canada imports are excluded.

**2019 data reflects imports during the months of Jan.-Nov. only.

BC sustains fresh cultivated blueberry imports throughout the calendar year, although there is a pronounced peak in imports during July and August. These two months accounted for over two thirds (68.9%) of imports among the top 5 countries from which BC imported fresh cultivated blueberries during 2019, excluding December. These months also coincide with BC's own blueberry harvest season, which begins in July and runs through October. Almost all fresh cultivated blueberries imported by BC during its own production period (98%) came from the US. These figures highlight the strong penetration of American blueberries in the BC blueberry market during the same months that BC produces its own, high quality supply. In contrast, BC fresh cultivated blueberry imports from Mexico and South America (Chile, Peru, and Argentina) constituted less than a fifth (18%) of the 2019 total, excluding December, and occurred outside of BC's own blueberry season.

Table 9: BC's 2019 Imports of Fresh Cultivated Blueberries, by Country and by Month

Quantity (tonne)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	2019 Total**
US	8.9	9.5	9.8	65.9	363.9	623.8	3,815.8	3,503.0	349.0	14.8	6.9	8,771.3
Chile	317.1	321.1	169.1	4.3	0.0	0.0	0.0	0.0	0.0	6.4	17.8	835.8
Mexico	18.6	43.0	114.1	195.3	129.9	3.9	0.0	0.0	0.1	5.9	10.3	521.1
Peru	28.9	28.8	37.3	88.4	0.0	0.0	0.0	0.0	19.8	78.1	196.9	478.2
Argentina	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	12.7	25.2
Total	373.5	402.4	330.0	353.9	493.8	627.7	3,815.8	3,503.0	368.9	117.7	244.6	10,631.6

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth. Canada imports are excluded.

**2019 import data is available for Jan.-Nov. only.

Table 10 shows how BC sustains frozen cultivated blueberry imports throughout the year. As with fresh cultivated blueberries, 2019 imports (excluding December) similarly peaked in the summer months of July and August during BC's own blueberry season. There was also a notable uptick during April. Each of these months saw increased imports driven by high quantities of frozen cultivated blueberries from the US, which accounted for more than 93% of imports during these months. BC also imported considerable quantities of frozen cultivated blueberries from Chile throughout the year and from Argentina in the winter and spring, together constituting 12% of the 2019 annual total, excluding December. Modest quantities of frozen cultivated blueberries were also obtained from Argentina in October, Japan in August, and Mexico in February.

Table 10: BC's 2019 Imports of Frozen Cultivated Blueberries, by Country and by Month

Quantity (tonne)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	2019 Total**
US	326.3	312.1	626.0	1,010.3	426.1	125.0	2,211.9	2,107.5	487.6	360.1	280.1	8,273.0
Chile	49.6	91.9	73.7	98.4	93.6	97.4	72.2	119.8	64.8	129.5	0.1	891.0
Argentina	59.0	91.1	33.6	21.8	23.1	23.1	0.0	0.0	0.0	9.4	0.0	261.1
Japan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.9	0.0	0.0	0.0	10.9
Mexico	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total	434.9	495.2	733.3	1,130.5	542.8	245.5	2,284.1	2,238.2	552.4	499.0	280.2	9,436.1

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth. Canada imports are excluded.

**2019 import data is available for Jan.-Nov. only.

Key Competitors

BC's global competitors include the US, Chile, China and the ever-growing Peru. The US is currently BC's strongest global competitor, but as world supply increases it can be expected that BC's other competitors will continue to seek a greater share of this berry market.

United States

- The US is the largest highbush blueberry-producing country, accounting for nearly 40% of global production in 2016.
- It is also an important player in the international blueberry market as both an exporter and importer. However, it is a net blueberry importer.

- Because of the availability of cultivars suitable for very different climatic conditions, blueberry production is widely spread throughout the US. While 38 states grow blueberries commercially, ten states account for more than 98% of US commercial production.ⁱⁱⁱ
- During the summer, BC growers face the strongest competition from Michigan, New Jersey, Washington and Oregon.
- The US has been increasing both their production volume and acres planted in recent years. In 2016, total production of blueberries in the US was recorded at 269,252 tonnes, an increase of about 5% from the previous year. Hectares harvested also increased, by approximately 2%, in the same time frame reaching 92,800 in 2016.

Chile

- In the last 25 years, the Chilean blueberry industry has expanded at a fast pace both in terms of production and acreage, to become the world's second largest producer.
- Chile became first movers into the North American winter market for blueberries but in recent years they have seen increasing competition from other countries, most notably Peru.
- Most of the fruit is picked by hand in Chile and exported fresh by boat to the North American market from mid-December to late January.
- Because blueberry consumption is relatively low in Chile and because the higher prices paid for the fruit outside the regular market season in the main importing countries, Chile has become the largest exporter of blueberries in the world.
- However, Chile is facing increased competition from its South American counterparts. Most notably from Peru and Argentina. In attempt to differentiate from its neighbours, Chile has prioritised high quality and the best tasting berries.
- Chile's lower costs of production and world-class reputation for fruit and wine exports have positioned the country to be a major competitor moving forward.

China

- China's domestic blueberry production has ballooned in recent years with large scale production taking off at the turn of the century. From 2016 to 2018, Chinese production grew by 558% to reach 184,200 tonnes up from 28,000 tonnes in 2016.
- Chinese production is almost equally split between fresh and processed production.
- Chinese production appears to predominately serve the domestic market exporting less than 300 tonnes in 2017.
- Cultivation mainly takes places in Shandong province, Guizhou and Liaoning.
- Investments in solar greenhouses make cultivation during winter months possible. The greenhouse harvest period continues from the end of March until the middle of May. Open ground harvesting is done between June and August.
- In 2015, Canada received permission to enter the Chinese market. Canada can supply the market from late September until October, which conveniently fills a gap in local production.

Peru

- Peru is a rising player in the global blueberry market, recording significant growth since 2014.
- Most notably, production has increased by 769% in the last four years. In 2018, Peru produced 94,805 tonnes of blueberries, i.e. 796% more than in 2015 and 81% more than in 2017.
- Between 2015 and 2018, the area devoted to blueberry production increased by 419%, rising from 1,158 hectares to 6,011 hectares.

ⁱⁱⁱ These are California, Florida, Georgia, Indiana, Michigan, Mississippi, New Jersey, North Carolina, Oregon and Washington.

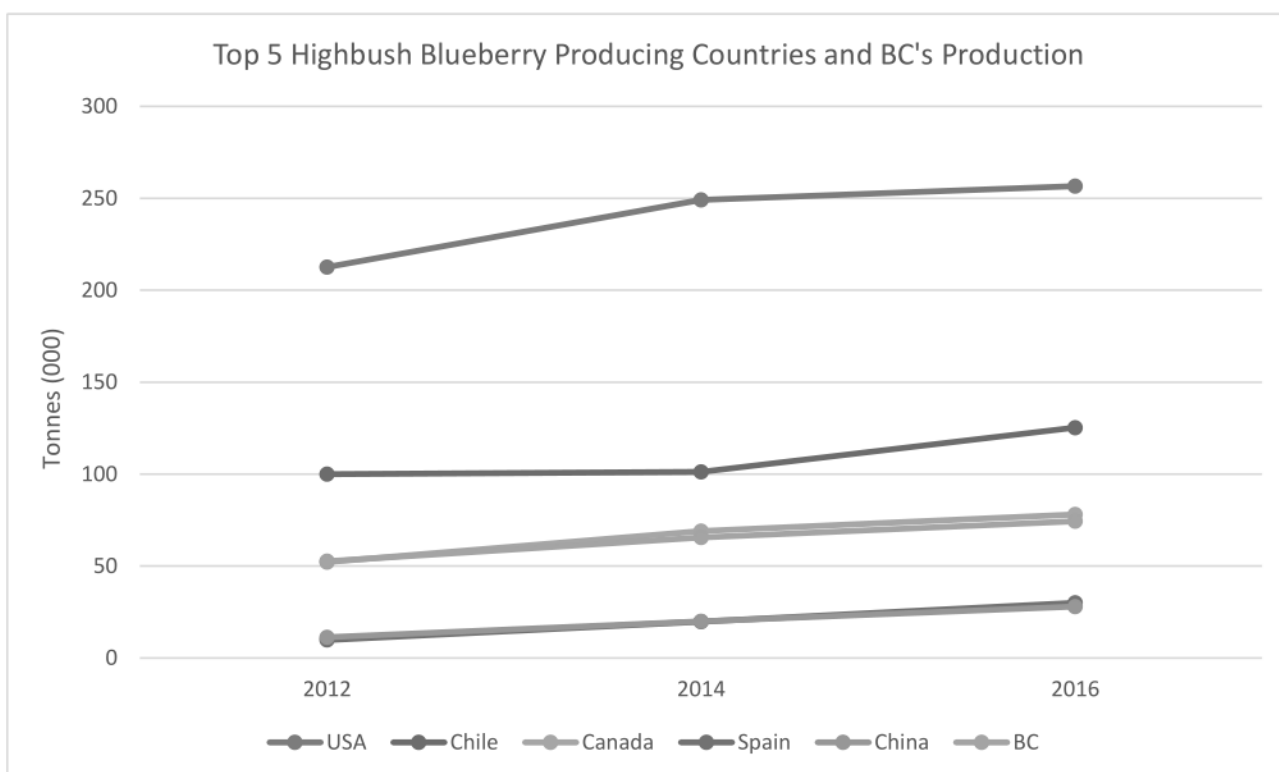
- Although Peru does not compete directly with BC's season, by mid-late August of 2018, it was a major player in the market and a viable alternative source of fresh blueberries for consumers.
- Peru is also becoming increasingly relevant to Canada because it's focusing its growth toward the beginning of its season (weeks 33 to 43), looking to take advantage of the high prices that are typical of that period.
- Blueberries are produced in the regions of La Libertad, Lambayeque, Ica, Lima, Ancash, and Arequipa. Last year, the regions of La Libertad and Lambayeque accounted for 96% of the national production.

C. BENCHMARK ANALYSIS OF BC BLUEBERRIES' PERFORMANCE VERSUS COMPETITORS

Figure 9 below tracks the market share of the world's five largest highbush blueberry producing countries at two-year intervals from 2012 through to 2016. For comparative purposes, BC's production volume has also been included.

While BC's production has increased in this four-year period, its share of the global market has remained largely consistent (Table 11), accounting for approximately 11-12% of global production. This can be attributed to the rise in production from other major production regions as well. The top five producing countries all increased their production from 2012 through 2016. The most significant risers are Spain and China increasing 200% and 154% respectively.

Figure 9: Largest Producing Highbush Blueberry Countries and BC's Production 2012-2016



Source: UN FAOSTAT and Statistics Canada

Table 11: BC's Percentage Share of World Highbush Blueberry Production 2012-2016

Quantity (tonne)	2010	2012	2014	2016
World	342,000	466,200	563,000	658,000
BC	40,823	52,597	65,470	74,389
BC's % share	12%	11%	12%	11%

Source: UN FAOSTAT and Statistic Canada

D. SWOT ANALYSIS

A SWOT analysis was conducted to determine the key strengths, weaknesses, opportunities and threats (SWOT) facing BC's highbush blueberry industry (Table 12). SWOT analyses are often used to inform strategic planning by outlining the conditions that affect the economic and broader development potential of a region or industry. For this study, the SWOT was used to summarize the market development potential in BC blueberry industry. Data from this SWOT has also been utilized to influence strategies and actions to expand the sector.

For the purposes of this report, the SWOT is characterized in the following terms:

- **Strengths (Positive, Internal):** The capabilities, resources, or attributes of BC's blueberry sector that provide a competitive advantage to the industry and that can serve as an important foundation for market development.
- **Weaknesses (Negative, Internal):** The capabilities, resources, or attributes of BC's blueberry sector that need improvement and that may limit current or future market development.
- **Opportunities (Positive, External):** The circumstances that, if capitalized on, could contribute positively to market development growth in BC's blueberry sector.
- **Threats (Negative, External):** The circumstances that do or could have a negative impact on market development growth prospects of BC's blueberry sector.

The data for this analysis was gathered from over 58 key informant interviews as well as the literature and document review.

Table 12:SWOT Analysis for Blueberries

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ○ Blueberries have many positive attributes <ul style="list-style-type: none"> • Blueberry's health benefits are well documented. They are considered 'superfruits' packed with antioxidants, Vitamins A and C, minerals and fibre. • Blueberries are a versatile and durable berry. They have a longer than average shelf life for a berry which holds up well to international transport. • BC has access to premium varieties (Duke, Draper, Calypso etc.) which produce flavoursome, well sized, firm, high yielding berries. ○ BC has a good climate and growing conditions for berries <ul style="list-style-type: none"> • Parts of BC have a mild climate without severe winter conditions. This is especially true in the agriculturally rich Fraser Valley and Vancouver Island. • The blueberry is a native crop to North America which is suited to the temperate BC climate and rich soil. ○ The provincial industry is strong, established and a large global player <ul style="list-style-type: none"> • BC has a long history of growing blueberries. It is also the fifth largest producing region in the world. • The provincial industry is home to many dedicated farmers, many professional farmers, who have good local technical expertise. • The BC industry achieves 5-6% market growth annually. ○ Blueberry production within BC is well located <ul style="list-style-type: none"> • The Fraser Valley is located close to the US border for trade. • BC neighbours the largest blueberry consumer market, the US. • International air and seaport access are nearby. • Located on the Pacific Rim, BC has easy access to Asian markets. • Growers access to water is advantageous. ○ BC has an established association for promoting the industry 	<ul style="list-style-type: none"> ○ Market access for certain exports markets is hampered by high tariffs <ul style="list-style-type: none"> • BC face higher tariffs than its competitors when it comes to exporting. For example, Canada faces a 30% tariff when exporting to China. Chile has an FTA with China and as a result does not pay tariffs on its blueberries. Thus, Chilean products are instantly 30% cheaper. Peru enjoys similar benefits when exporting to China. ○ The international reputation of BC blueberries is lower than expected and inconsistent at times <ul style="list-style-type: none"> • Internationally, BC blueberries don't have as strong a reputation as they should. A lack of a province-wide standardized control system and food safety compliance among growers adds to this. ○ The BC industry is too reliant on the US market <ul style="list-style-type: none"> • BC sells a lot of its product to the US. Depending too heavily on any one market bears risk. ○ BC does not have sufficient or reliable access to labour <ul style="list-style-type: none"> • Blueberry growers and processors have limited access to any local labour. When they do, it is expensive. • The industry faces high costs and an administrative burden of importing foreign labour annually. • The aging farming population has no obvious replacements as younger generations show little interest in farming. ○ There is a low uptake rate of new production methods and technology <ul style="list-style-type: none"> • BC is one of the last regions to adopt and invest in new production methods and technology which could extend the growing season. Examples of new methods used successfully elsewhere include substrate, tunnels, greenhouses, etc.

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • The BC Blueberry Industry has strong partnerships established with growers, marketers, and retailers. ○ The global blueberry industry is forecast to grow with demand increasing <ul style="list-style-type: none"> • Blueberries are already one of the most popular fruits on the market with demand expected to rise. • Blueberries have experienced continuous growth in production, product extension, and sales worldwide. • Consumption growth exceeds production in the US. ○ The blueberry commodity is of strategic importance to agriculture in the province and country <ul style="list-style-type: none"> • Blueberries are BC's largest berry crop by volume. ○ Current low interest rates are helping those in the industry during what is otherwise a challenging time ○ Favourable US exchange rate <ul style="list-style-type: none"> • The current exchange rate with the USD is favourable for Canadian exports. This is helpful as 60-70% of provincial product is exported to the US. • Approximately, 30-40% of blueberries are sold domestically. ○ BC currently produces blueberries for multiple market channels <ul style="list-style-type: none"> • BC markets a variety of blueberry products including fresh berries, IQF frozen, bulk frozen, sugar infused dry, dried, juice, freeze dried, powder, chocolate enrobed and wine. • Most highbush blueberries are consumed fresh or frozen. 	<ul style="list-style-type: none"> ○ BC faces higher costs than competing regions specifically land and production costs. <ul style="list-style-type: none"> • Agricultural land costs in BC are some of the highest in North America. One acre of land in the Fraser Valley can be 6 times the price of an acre of land across the border in Washington. • Production input costs, such as fertilizer, pesticides and freezer space, are higher in BC than competing regions. • The cost of bees and access to them for pollination is a concern. The charge for a hive in BC is \$125 compared to \$25 in the US. ○ Government regulations, policies and processes are many and costly <ul style="list-style-type: none"> • Government policies are reportedly hurting local berry growers and processors. Policies such as MSP premiums, increase in the minimum wage, elimination of piece rate options, carbon taxes and the requirement to register water wells/usage have been referenced. ○ ALR restrictions <ul style="list-style-type: none"> • ALR regulations concerning on-farm processing puts a size limit for processing operations on ALR land. This encourages farmers to build smaller individual freezing units where a larger co-operative unit may be more efficient. ○ Price volatility is common within the industry <ul style="list-style-type: none"> • As blueberries are traded as a commodity product, the price regularly fluctuates with buyers/processors having limited visibility on pricing. ○ BC overlaps in production with US states <ul style="list-style-type: none"> • BC joins the blueberry market last when it is already supplied resulting in a lower price for BC growers/processors. ○ Retailer practices don't always promote local <ul style="list-style-type: none"> • Some large retailers buy based on price, as opposed to the growing location which can hurt local BC producers.

STRENGTHS	WEAKNESSES
	<ul style="list-style-type: none"> • Very little advertising is done to promote local berries. ○ The provincial industry now operates in a global marketplace <ul style="list-style-type: none"> • Blueberries are now a global market and BC is just one of many regions in competition for sales. This situation is only likely to intensify as more countries enter the market raising world supply and consequently lowering prices. • The late season blueberries from BC typically commanded a higher price than those produced during the summertime glut time but now Peru can fill that late season period. ○ The supply glut in late July and early August creates resourcing problems ○ The lack of sustainable packaging is a growing concern among the consumer base ○ The cost of replanting or planting new varieties is significant <ul style="list-style-type: none"> • While replanting may lead to improved yields and different timing of production, growers and producers need to seriously assess the financial implications of replanting. • The estimated cost of replanting is about \$10,000 per acre and the plant requires about five years to reach maturity.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ○ Development and production of new value-added food products <ul style="list-style-type: none"> • There exists significant drying potential for blueberries with the rise of dried fruits products around the world. Dried blueberries and blueberry powder are used as ingredients in a wide range of food products. • There are opportunities to use blueberries (dried, frozen) as ingredients in cosmetics, nutraceuticals and pet food. Blueberries are incorporated in 29% of dry dog food and 20% of cat food recipes in the US. ○ Exhaust the domestic and North American market 	<ul style="list-style-type: none"> ○ The increase of production from other countries is a serious threat to prices and markets for BC blueberries <ul style="list-style-type: none"> • Chile, Peru and Mexico are a major concern. Peru will become the largest producer in the world and their production comes into the market in the fall in direct competition with the late BC crop. • It is conceivable that the volume of berries from these countries will cause the prices to drop to a level that is unsustainable for some BC growers. ○ The threat of new competitors being added to an already crowded market

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • The US and Canada continue to import blueberries during their production months. Efforts should be made to match domestic consumption with domestic production. • Like Buy BC, Quebec and Ontario have successful programs promoting local foods and some ideas could be learned from these programs. <ul style="list-style-type: none"> ○ Export opportunities exist both in terms of improving access to current export destinations and opening new export markets <ul style="list-style-type: none"> • Reduction in tariffs to enhance access to current export markets. For example, Mexico and Peru face fewer tariffs when exporting to China and South Korea. It hurts Canadian imports that they have higher tariffs. • Secure attractive trade opportunities with new markets including those in South East Asia (including Singapore, Malaysia, Thailand, the Philippines and Indonesia) Mexico, the UK and the EU (including Germany, Switzerland, France and the Benelux countries). • Work to meet MRL regulations so Europe can become a legitimate export market. ○ New production methods have the potential to extend the growing season <ul style="list-style-type: none"> • Blueberry substrate production has become an important competitive growing system in new and existing growing regions. • Other opportunities include the use of tunnels, greenhouses and hydroponics. ○ Well-funded breeding programs and associated research offer long-term opportunities <ul style="list-style-type: none"> • Among other factors, new varieties are needed to extend the growing season, increase yields and to machine harvest without internal bruising. 	<ul style="list-style-type: none"> • The forecasted increase in global supply will come not only from currently producing countries but also new countries entering the market (i.e. Peru is the most recent example). <ul style="list-style-type: none"> ○ Other berries and other fruits produce in the market at the same time which heightens competition <ul style="list-style-type: none"> • Global availability of fruit has led to a variety of produce selections being available year-round. • Wild blueberries claim twice as many antioxidants as cultivated blueberries. • Blueberries must compete with other superfruits. ○ BC faces a generational transfer issues (viability, financing) <ul style="list-style-type: none"> • With an aging labour pool and with little indication that the younger age group want to succeed their parents, the future of the industry is at risk. ○ Consumers generally can't differentiate between varieties <ul style="list-style-type: none"> • Growers may want to differentiate by growing proprietary varieties, but if consumers do not recognize the difference in taste or quality, demand will not be generated. ○ Climate change will bring unpredictable and more extreme weather patterns to the province <ul style="list-style-type: none"> • Seasonal variability in weather will put pressure on nearly all aspects of the industry from growing to harvesting to breeding. ○ Further changes to government regulations, policies and processes present areas of concern for the industry <ul style="list-style-type: none"> • Regulatory uncertainty and related complications and costs are constant considerations which are beyond the control of growers and processors. ○ Securing sufficient and reliable labour is an annual concern for the industry

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ○ Education and marketing can increase consumption and drive sales <ul style="list-style-type: none"> • Utilize research conducted on behalf of the industry regarding health benefits in promotional info and campaigns. • Increase market coordination among the various industry groups. • Focus on differentiating BC berries, the BC season and buying local. • Increase consumer experiences with BC blueberries to increase the demand. ○ Currently, BC exports can benefit from a strong US dollar for international sales <ul style="list-style-type: none"> • This is a time limited opportunity while the US dollar is strong for Canadian exporters. • There is potential to also capitalize on the relatively low Canadian dollar to sell to other markets. ○ There is still room for health growth <ul style="list-style-type: none"> • Further communication and promotion of blueberry health benefits can encourage the purchase of blueberries. ○ Replanting can extend the growing season and produce higher yields <ul style="list-style-type: none"> • This is particularly true as a large volume of the BC crop is dominated by just one variety. The ability to produce outside of this window with other varieties offers the potential of higher prices. • More generally, renovating with different varieties that can spread the season over a longer time and produce greater yields. 	<ul style="list-style-type: none"> • Accessing labour is increasingly difficult with no guarantee that circumstances will improve in the future. Without the current Temporary Foreign Worker Program, the industry would cease to exist, highlighting how finely balanced the supply of labour is for this industry. ○ The rise of the sugar-conscious movement <ul style="list-style-type: none"> • There are growing concerns that sugar content could affect sales of infused products in the North American market. ○ Unstable health and viability of the honeybee industry is problematic <ul style="list-style-type: none"> • Pollination is an important aspect of highbush blueberry production. Insecticide selection to avoid harming pollinators and control of natural insect predators are essential to lower production costs and critical in growing blueberries. ○ As costs are lower, Washington State is attracting a number of larger BC growers <ul style="list-style-type: none"> • This has the potential for vast volumes of production that would otherwise have been grown in BC to migrate south of the border. ○ The threat of a positive test for food-borne pathogens such as Listeria, E. Coli, or Salmonella etc. is a constant concern for growers <ul style="list-style-type: none"> • A large scale rejection of blueberry produce due to a positive test would not be unlikely. Initial financial losses and longer-term reputational damage would be most costly to the industry. ○ US anti-dumping intentions coupled with possible action has grown in strength in recent years <ul style="list-style-type: none"> • Any action taken by the US would damage the BC blueberry industry due to the significant portion of crop that is exported to the States.

E. KEY OPPORTUNITIES AND ACTION PLAN

1. Growth in the Dried Blueberry Market

Value-added processing does not have a very large presence in the BC blueberry landscape. Most producers reference high capital costs and low volume outputs when asked about the potential of value-added processing. However, one form of value-added processing that did emerge as promising from the primary market research was drying. Revenue generated from the global dried blueberries market was around US\$381 million in 2018, which is estimated to increase at a CAGR of 6.4% by 2027 end.⁷

Berries may be dried by conventional methods (e.g. air or vacuum) or by freeze drying. Dried berries may also be made into powder which can be incorporated into other food products. Enrobing dried blueberries in chocolate and marketing them widely through retail is gaining interest. Dried berries can be sold in bulk or in consumer packages. As an ingredient, dried blueberries and blueberry powder have many uses. Dried blueberries may be used in other food products including cereals, snacks, confectionery, baked goods and pet food. The market for dried blueberry powder as an ingredient in smoothies is growing. The powder from cultivated blueberries like those from BC is preferable to that from wild blueberries for its superior taste profile, better colour and lower price. There is some consensus in the industry that BC blueberries are better suited to drying than blueberries from Peru.

Dried products require three pounds of blueberries to make one pound of dried blueberries highlighting that significant blueberry volume could be used by those interested in drying. This may be one mechanism to address the August blueberry glut in BC. However, it should be noted that if value-added processing developed in a meaningful way in the province, there would be no guarantee that the berries used in production would come from BC. A recent example of this can be seen in the BC apple industry. Much of the apples processed in the province are imported from other countries. Additionally, due to the relatively modest provincial population in BC, a reasonable portion of any significant processing operation would have to leave the province to be sold which is a considerable factor for those entering the market.

The following elements should be considered by those looking to operate in the dried blueberry market:

- **Berry traits:** blueberries destined for the dried market must be of a high quality. Additionally, larger blueberries are better suited to the drying process. As such growers and processors should prioritise varieties that produce larger berries for the dried blueberry market.
- **Packaging:** For dried blueberries that are targeted to the end consumer, stand up packaging has proven successful. However, processors should take note of the rise in the number of consumers who prefer minimal packaging, driven by environmental concerns. In terms of bulk packaging, some of those operating in the industry have found it more straightforward to export bulk product to Asia so as to avoid many of the labeling, packing and language requirements for end-consumer goods.

Actions to develop the dried blueberry market

1. Companies that are interested in entering the dried blueberry market must first establish if doing so is economically viable for their individual circumstances. To do this, blueberry companies should conduct a feasibility study based on their specific situation. Feasibility studies are used

to discern the pros and cons of undertaking a project before a significant investment of time and money is made. Among other things, elements to consider during the feasibility study include:

- Product description (type of dryer must align with product type, volume capacity of dryer compared to availability of raw material)
 - Economic feasibility (cost/benefit analysis)
 - Identification of the specific market (prevailing market, consumer demand, future market growth, competitors, potential customers, price point, projection of sales)
 - Technical capability (site analysis, existing technology, transportation, manpower)
 - Organizational feasibility (expansion or contraction, succession planning)
 - Financial projections (cost of dryer, working capital, access to financing (banks, investors, venture capitalist) and return on investment)
2. Upon completion of the feasibility study companies will need to make a 'go/no-go' decision based on the analysis and information. Individuals must judge whether the commitment is worth the time, effort and money and whether it is aligned with the organization's strategic goals and long-term aspirations.
 3. If the investment decision is positive, companies should develop a business plan for the new investment and then implement the business plan. Some potential obstacles to implementing the business plan are the high capital costs of a dryer and a long return period on the initial investment. To assist in the implementation of the business plan, companies can consult the following link which outlines information on [launching a new product line](#).
 4. Additionally, eligibility under the following funded programs should also be explored; [CAP: Canada-BC Agri-Innovation Program](#) and the federal [AgriInnovate Program](#).
 5. For companies that determine that investing in the dried blueberry market is not feasible for their individual circumstances, opportunities to sell fresh blueberries during the peak season to companies that already have drying infrastructure in place (e.g. Wild Coast Fruit, CAL-SAN, Sandel Foods, Pacific Canadian Fruit Products) may exist.
 6. For companies that already have drying infrastructure in place or hope to install the necessary equipment, they can explore the following three options:
 - i. Work with distributors who have market contacts, both domestically and internationally, to immediately gain market penetration;
 - ii. Establish direct sales with companies using dried blueberries as ingredients; or
 - iii. Package and sell directly to retail for end consumers

The advantage of using an established distributor is that they already have market contacts for dried berry products. The distributor will be able to provide guidance to the processor on the quality, packaging and product characteristics that are required by the market. One such firm that deals with BC blueberries is Yupi Inc. who identified a market for frozen blueberries for a major drying company in the USA.
 7. Already established driers should also capitalise on export growth markets. The advantage for BC is the lower shipping costs for dried product and higher prices compared to fresh. To do so, they should identify North American and international markets for their products. This includes contacting companies which use dried blueberries in their products.
 8. BC producers should consider marketing their dried blueberry products to the following types of companies who are based both in Canada and in international markets:

Pet food

According to the Pet Food Industry Journal, blueberries are incorporated into 29% of dry dog food and 20% of dry cat food recipes in the US. PetCurean, a pet food processor based in BC, uses dried berries and powders incorporating both fresh and frozen berries into its freeze dried

pet foods. There are other pet food companies across Canada and in the US that should be contacted to assess this market opportunity.

Food manufacturers

Dried berries may be marketed as an ingredient in foods such as: cereals, energy bars, trail mixes, bakeries and snack foods. Blueberry processors should make direct contact with these companies in BC, Canada and the US. Blueberry powder is an ingredient in smoothies, syrups, baked goods and dairy products (e.g. yogurt and ice cream).

Nutraceuticals and functional Foods

Some nutraceuticals and functional food companies use blueberry powder in their formulae. Most functional food companies in BC contract with companies that do custom blending and formulating for other consumer marketing firms. Standards for product quality are very high for this market. Blueberry powder processors should contact Rehma Health Products, PNP Pharmaceuticals and GFR Pharma in BC and similar companies across Canada. Companies in BC that formulate their own products include: Natural Immix Health, and Organika.

9. Some potential barriers are difficulties in establishing relationships with potential customers and established competitors in the market.

Government actions to develop the dried blueberry market

1. Primary market research indicates that the biggest barrier to capitalising on the growth in the dried blueberry market is the significant capital cost and investment required to make such an opportunity feasible. As such, the government should explore funding options which could include a cost sharing program with individual companies seeking to install expensive drying equipment or alternatively could include funding a centralised processing unit which could be shared among those interested in drying. This could take the form of a centralised food hub in the main blueberry growing region, Abbotsford. Other municipalities (e.g. Vancouver, Port Alberni, South Surrey and Quesnel,) in BC have begun, to varying degrees, to avail of the recent BC Food Hub Network launched by the Ministry which seeks to promote growth in the processing sector.
2. The second most referenced obstacle to penetrating the dried blueberry market was that of low volume. There is concern among blueberry growers that they may not have access to markets with sufficient volume. As the dried fruit market is due to undergo significant growth in Asia, in particular, the Ministry along with the Trade Commissioner Service and others should seek to expand export opportunities for BC processors. Due to BC's relatively small population, any significant processing operation will need to rely on exports to some degree. Thus, ensuring processors have sufficient export opportunity is critical.
3. Given the government's recent commitment to fund a \$2.58 million state of the art Food and Beverage Innovation Centre at UBC, the Ministry should now take action to connect the berry industry to the Centre to ensure this does not become a purely academic pursuit. While the centre won't be operational for several years, the first point of action should be to raise awareness of this new resource among the berry community and to highlight how they will be able to use this centre in the years to come.

2. Maximize Domestic Market Sales

In 2019 (Jan-Nov), BC imported 10,734 tonnes of fresh and 9,709 tonnes of frozen highbush blueberries. Approximately, 77% of the fresh and 51%^{iv} of the frozen blueberries were shipped into the province during BC's main production window (June-Sept). This suggests that a number of significant retailers do not prioritise or stock local blueberries. For both fresh and frozen produce, the US was the main supplier accounting for at least 80% of total imports for 2019.

Canada echoes similar trade patterns, importing 38,729 tonnes of fresh produce and 12,890 tonnes of frozen blueberries in 2019. This import data suggests there is significant domestic consumption, particularly in the summer months, which is not currently met by the local industry. This consumption gap represents an opportunity for local growers and processors to increase sales in the domestic market. The domestic market includes fresh and frozen blueberries and further processed products in the retail, food service and industrial markets.

Producers and government alike should capitalise on the strong business case for maximising sales to the domestic market as buying local can strengthen regional economies, support family farms, provide delicious, "fresh-from-the-field" foods for consumers, preserve the local landscape, and foster a sense of community. Farmers' markets, community supported agriculture, local food within grocery stores and food co-ops are among some of successful initiatives of Canada. Other similar initiatives include restaurant and chef initiatives, culinary tourism and regional cuisine initiatives, food security or policy groups, food box programs (door to door delivery) and regional value chains. However, there are a number of barriers to the development of localized food systems. These include lack of financing, a limited growing season and a lack of local processing infrastructure.

Potential strategies to develop a local food system include promotional programs focused on local consumers, institutional purchasing programs that create direct links between local growers and local institutions and low interest small loan programs for young farmers. Establishing a cost share program may also help farmers transition to local food production. Other important steps include increased processing capacity, increased market access, improved links between local producers and area distributors, increased private sector involvement and improved agriculture education.

Governments can play a very important role in the development of local food systems by providing system-wide support for food grown using sustainable methods and appropriate technology for small-scale farms, improving labeling laws and supporting research and extension programs to disseminate information and research findings.

The following elements should be considered by those looking to maximise sales to the domestic market:

- **Berry traits:** Primary market research indicates that going forward, BC blueberries must be firmer than they currently are. There are reports that often the BC blueberries on offer can be too soft which hampers the ability to move product around the province and beyond. The shelf life can also be compromised if the berry is too soft. Shelf life is a key purchasing factor for those buying fresh blueberries. Identifying and subsequently growing varieties that produce firmer blueberries is critical. This endeavour cannot compromise the taste profile. BC blueberries are well known for their flavour profile and this has become a key purchasing point for customers and consumers. This cannot be altered in the pursuit of other traits.

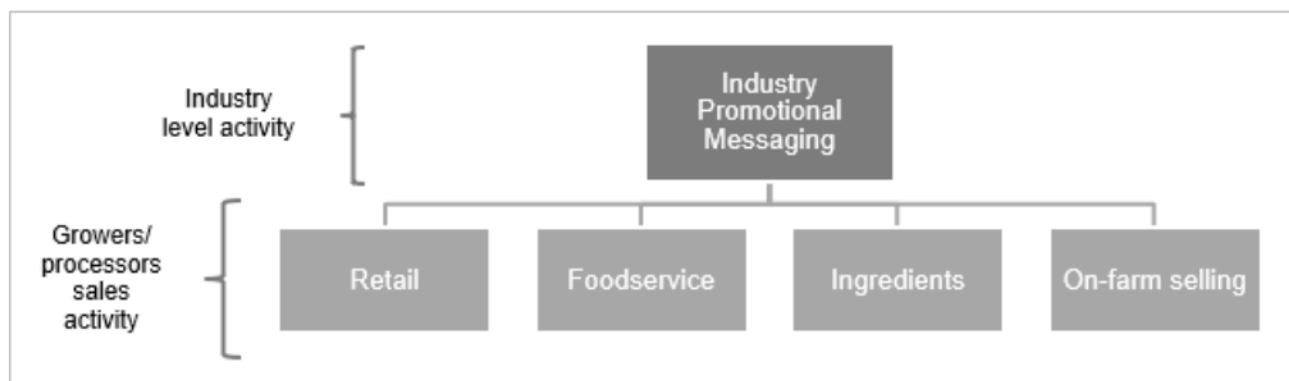
^{iv} Percentages are likely to be fractionally less than the figures quoted as the numbers referenced are based on 11 months of consumption, excluding December.

- **Seasonality:** Producers can seek to maximise domestic market sales year-round, but particular opportunity exists for fresh produce during the summer months (June-Sept) when BC imports nearly 20,000 tonnes of fresh and frozen blueberries.
- **Packaging:** The ubiquitous plastic clam shell packaging is coming under increasing scrutiny from consumers as environmental considerations are rising in importance. Producers also face an apparent conflict as some consumers would prefer no packaging at all, but simultaneously they also do not want other handling their fruit in the supermarket. Striking this balance is important. Consumers also want to be able to see their fruit which is one reason why the transparent clam shell has been successful. Any packaging must also hold up to transportation expectations and protect the blueberry. Cardboard packaging has been trialed by some but to no avail as it traps heat and retains moisture. Some are also experimenting with a bamboo based packaging. A solution to the long accepted industry standard, the clam shell, is still evolving.
- **Consistency of supply, quality and price:** In order to maximise sales to the domestic market, producers will need to focus on providing a consistent supply of high quality blueberries at a stable price. This is inherently difficult to achieve as there are many factors beyond the control of a local producer such as the weather. Those that can supply their buyers for many months will likely have an advantage.

Actions to increase sales in the domestic market

In order to maximize sales in the domestic market, activities at the industry wide or collective level should complement the market development endeavours of growers and processors. Industry activity should drive increased consumption and provide educational messages while grower/processors should focus on sales development (Figure 10).

Figure 10: Domestic Market Opportunities for the BC Blueberry Industry



Industry level activity to increase consumption

Advertising, promotion and education targeting consumers

1. The blueberry industry, including the BC Blueberry Council, should jointly be responsible for the industry wide promotion of blueberries. The industry should work collaboratively to design and implement a professional, multi-pronged promotional campaign emphasising the health benefits of blueberries and using empirical research and evidence to support their message.

2. To increase consumption by individual consumers, the following strategies should be considered: online advertising; the use of social media influencers; turning consumers into promoters; and the continuous promotion of blueberries, with particular emphasis on health benefits, in various media channels.
3. For their foodservice audience, the strategies recommended include inspiring chefs to cook with blueberries through extensive outreach programs, engaging the skills and online platforms of celebrity status chefs, editorial partnerships with cookbook authors, driving awareness of the berry's versatility on menus in schools, hospitals, restaurants and commercial canteens and attend local foodservice events to promote the use of blueberries.
4. For the health professional audience, some suggested strategies include establishing partnerships with health professionals who believe in the value of blueberries and who are willing to circulate information on the health benefits of blueberries with their audiences while also highlighting the positive health implication of blueberries to consumers.
5. For the ingredient audience, strategies include hosting a blueberry event to encourage the uptake of blueberries into recipes, recipe contests, recipe design, recipe sharing, trade shows, blogs, vlogs media coverage, and aiding ingredient companies where possible.
6. The messaging should seek to promote BC blueberries year-round but particularly in the BC summer months. The campaign should also focus on differentiating BC berries, the BC season and buying local. Consumer experiences with BC blueberries should be increased in order to increase demand.
7. Finally, the industry should capitalise on The Fruit and Vegetable Program administered by Agriculture in the Classroom which distributes products in schools from kindergarten to grade 5. This is an opportunity to attract young children (and hence parents) to eat blueberries. Contracts for this program are negotiated each spring.

Growers/processors activity to drive domestic sales

Retail

1. Each retail grocery chain has its own strategy when it comes to buying berries. Some are stronger promoters of local BC product than others. Individual producers should develop relationships directly with produce buyers at the different chains to best satisfy their requirements.
2. Generally, BC blueberry producers should emphasize and differentiate their product offering on the basis of a superior taste profile and on their local production as BC outperforms its competitors on these two metrics. To maximise these qualities, BC blueberry producers should target retail outlets and chains that also prioritise great taste and locally produced food.
3. When approaching retailers, blueberry producers should be quick to highlight the alignment between their differentiating product qualities and the priorities of the retail store. Where necessary, producers should gather supporting research on the importance of locally produced food to BC consumers and evidence for the superior taste profile of BC blueberries. This could be in the form of market statistics, customer testimonials, taste tests and through the provision of product samples. Additionally, BC producers may consider highlighting the carbon footprint associated with imports and the increased freshness provided by locally produced berries, assuming these are important factors for the retailer.
4. To begin, BC blueberry producers should consider talking to independent specialty food stores or local store managers of a food chain and selling directly to the store. Smaller, more regional stores may be easier to initially penetrate as they might not have centralized purchasing in place. This approach also allows familiarization of working with a retailer and getting product into local stores.
5. Blueberry producers should ensure they identify the right buyer for their product. Retail buyers typically have key responsibilities – specific product lines for which they are responsible. For

example, if producers are interested in selling fresh blueberries they will likely need to contact the fresh produce manager.

6. Once established, blueberry producers might consider approaching the larger national and international retail chains. With a proven track record of supply and quality, penetrating the larger stores may be somewhat more straightforward. This progression from targeting small to large retailer allows producers to gain experience, learn how to play the game, and build production and delivery capacities.
7. Another key method to penetrate the retail market is to drive demand from the end consumer. If there is a demand driven business case for retailers to stock local produce, they are unlikely to need significant persuasion. As such, producers can also focus resources on driving demand from the end consumer. This can include activities such as online advertising, the use of social media influencers, selling at farmers markets, festivals, summer events and at culinary and agri-tourism initiatives.
8. Irrespective of how producers choose to enter the retail space, once their product is on the shelf, producers will need to provide a consistent supply of their product and assure its quality. BC blueberry producers should work to build and establish a reputation for providing a superior product and service in the retail market.
9. When it comes to selling fresh blueberries, the produce department does not generally enforce the discounts, allowances and listing fees that are commonly demanded from other departments in the supermarket. However, in order to advertise their product in the supermarket flyer or to get better positioning in the store the producer should consider whether some discount or shared cost incentive program could be developed with the retailer.
10. Local retailers that could be considered include but are not limited to Stongs, Choices Market, Nesters Market, Meinhardt Fine Foods, Quality Foods, Kin's Farm Market, Fairway Market, Country Grocer and Red Barn.
11. The following guide, prepared by the BC Ministry of Agriculture, outlines information on how to sell to retailers and should be distributed to local growers/processors while Appendix 2 provides a list of the major food retailers in BC.
12. BC producers and processors can also avail of the Buy BC program which seeks to help local producers and processors market their products by re-establishing a strong, recognizable Buy BC brand and supporting industry-led Buy BC marketing activities. The Buy BC program offers cost-shared funding to applicants to undertake sector/product specific marketing and promotional activities to increase consumer demand and sales of their BC berries within the province. The program can also link producers and processors to a Buy BC retail partner and can offer the opportunity to participate in promotional events.

Case study: The Quebec Strawberry and Raspberry Producers Association

- Quebec has a very strong buy local program and loyalty to it is high when it comes to the sale of strawberries and raspberries. Among other factors, contributing to its strength is the organisation of a special group known as the 'Coordination Chamber' (translated from French). The chamber is comprised of strawberry and raspberry growers and the main distributors and retailers. The group meets between 3-4 times a year to discuss the production calendar, distribution and format. Price is deliberately not reviewed at the meetings, but the quarterly gathering allows growers to establish relationships and foundations for future sales. Those close to the chamber attribute a significant portion of the successful buy local program for these berries to the proximity of growers, distributors and retailers and the subtle accountability they have to each other. Outside of the chamber, local Québécois also drive demand for local produce as Quebec is well known for its support of provincial produce. And while BC does not currently have as high a level of support for local compared to Quebec, meaning exact replication of this Chamber might be initially challenging or require some tweaking, it is likely that there are some learnings for BC when looking at Quebec and the Coordination Chamber.

Foodservice

1. With more Canadians eating outside of the home each year, supplying blueberries to foodservice is a growing opportunity. Companies should seek to develop relationships with the foodservice industry to get more blueberries onto menus.
2. The foodservice industry includes restaurants, hotels, hospitals, prisons and recreational facilities. This industry is also comprised of food distributors. Distributors range from niche specialty distributors that focus on a few unique product lines, to national broadline distributors that aim to be a one-stop-shop for foodservice operators.
3. When approaching the foodservice market, BC blueberry producers should emphasize and differentiate their product on the basis of a superior taste profile and on their local production. To maximise these qualities, BC blueberry producers should target restaurants and hospitality outlets that also prioritise great taste and locally produced food.
4. Blueberry producers should be quick to highlight the alignment between their differentiating product qualities and the priorities of the foodservice entity. Where necessary, producers should gather supporting research on the importance of locally produced food to BC consumers and evidence for the superior taste profile of BC blueberries. This could be in the form of market statistics, customer testimonials, taste tests and through the provision of product samples. Additionally, BC producers may consider highlighting the carbon footprint associated with imports and the increased freshness provided by locally produced berries, assuming these are important factors for the buyer.
5. To begin, small farmers and processors can start selling into foodservice by talking to the owners or managers of independent restaurants and smaller hospitality businesses and selling to them directly. Regional foodservice operations and distributors may be easier to initially penetrate as they and might not have centralized purchasing in place. Examples of regional distributors include FreshPoint, Sevco Foods and Yen Bros. Food Service.
6. Where possible, BC blueberry producers should target restaurants and hospitality outlets that prioritise local, seasonal food. Farm to table restaurants and those that manage their menu seasonally are among attractive options. A number of restaurants in BC that prioritise local include Edible Canada, Forage, Acorn, Fable, West, Mission Hill Winery, The Wolf in the Frog, Vineyard Terrance Restaurant, Krafty Kitchen, Restaurant 62 and the Farmers Table.
7. Once established, blueberry producers might consider approaching the larger national and international foodservice operations such as Sysco and GFS. These companies service a wide range of food service and retail outlets.
8. Another methodology to secure sales to a foodservice distributor is to generate demand from the end user. If a chef likes your product he/she will want to be able to order it from his/her distributor. As such, producers can also focus resources on driving demand from the end consumer. This can include activities such as engaging and encouraging chefs to use their blueberries including celebrity chefs, editorial partnerships with cookbook authors and promoting the health benefits of blueberries to schools and hospitals.
9. Once the producers has built demand for their product both the producer and the end user can approach a foodservice distributor with demonstrated sales, increasing the likelihood of the product being listed by the food distributor.
10. Irrespective of what approach producers choose to enter target foodservice companies, once their product is listed, producers will need to reliably provide a consistent supply of their product and assure its quality. BC blueberry producers should work to build and establish a reputation in the market of providing a superior product and service.

Healthcare Market

The BC healthcare market consists of hospitals, retirement homes and residential care facilities overseen by five regional health authorities and the provincial health services authority.

1. Producers should know that decision making about menu planning and purchasing happens at the health authority level. Dedicated dietitians for each authority play a leading role in selecting menu items. As such, producers should meet with the designated dietitians and/or the respective health authority to encourage the use of local blueberries and to increase the use of blueberries on health menus. Health menus are planned in multi-week cycles and are designed many weeks/months ahead of time.
2. In the case, where blueberries are already used by the health authorities, producers should turn their attention to achieve a listing with broadline distributors as most food is purchased through them. These companies include Compass Group, Sodexo, Health Pro and Aramark. Some health units may have more flexibility to use smaller contracts than others.
3. Under the [Feed BC](#) initiative, health authorities are required to use at least 30% locally produced food on menus. As blueberries are locally produced and many other items are not grown in the province, this represents a distinct opportunity for BC growers.
4. The top 20 BC food opportunities in BC healthcare are listed [here](#) and features frozen berries.
5. The following guide, prepared by the BC Ministry of Agriculture, outlines information on [how to sell to the food service industry](#) and should be distributed widely to local producers.
6. Other resources include:
 - [Selling BC food to BC's government-supported facilities](#)
 - [Study on BC Food Procurement in B.C.'s Public Post-Secondary Sector](#)
 - [Okanagan Bioregion Institutional Procurement Study](#)
 - [BC Government Healthcare Market Development Strategy](#)
 - [Top 20 B.C. Food Opportunities in B.C. Healthcare](#)

Ingredients

1. There are many BC companies incorporating fresh and/or frozen blueberries in their products including bakeries, confectionaries, beverage manufacturers, wineries and those making pie fillings, jams, dairy products, sauces, condiments and pet food. All of the companies in BC and elsewhere that use blueberries as ingredients cannot be listed here. An example, however, is Sandel Foods, the only company in BC manufacturing fillings, syrups, glazes and sauces. Besides price, consistency of supply and quality will be the determinants in securing the ingredient market from imports.

On-farm selling

1. Growers and processors can further maximize domestic sales through on-farm selling. On-farm activities include roadside stands, farm markets/shops, pick-your-own operations and community-supported agriculture. BC companies should consider if any of the on-farm selling activities aligns to their business model and if they can capitalise on these further sales channels.
2. When engaging in further selling it is important for companies to familiarise themselves with land use regulations, food safety, labelling, insurance, signage requirements and taxation among other things.
3. If on-farm selling isn't feasible, perhaps off-farm activities such as being a vendor at one or several farmers' markets or selling through online sales and direct delivery might be more suitable.
4. For companies looking to establish an [Agri-tourism operation](#), the following guide, prepared by the BC Ministry of Agriculture, outlines key points to consider.

3. Expand and Develop New and Existing Export Markets

Developing export markets offer many benefits which include increased sales, economies of scale, reduced vulnerability and global and domestic competitiveness. However, it is not without its

obstacles which can include increased costs, increase commitment levels, patience, language barriers, travel requirements and foreign regulations. The export markets offering the most promise, in order, include the US, China and the EU. Nonetheless, there are a number of export opportunities that exist for the BC blueberry industry. The opportunities are two-fold:

i. Improve access to markets in which BC companies already have a degree of access to

- This includes reducing the import tariffs BC companies face when moving product to China. While BC can export to China, as of 2016, the tariffs imposed (30% tariffs) are prohibitively high particularly as other major blueberry producing countries do not have similar tariffs added to their imports. As result, BC blueberries can be 30% more expensive than their Chilean or Peruvian counterparts and thus less competitive in the Chinese marketplace.
- Similarly, while BC and Canada do have access to the European market through the recently signed 'The Comprehensive Economic and Trade Agreement' (CETA), companies face significant obstacles when it comes to maximum residue limits (MLR's) for pesticides. For now, the CETA offers Canada a trade advantage when exporting to the EU when compared with US exporters. As noted above, there is a growing market for dried blueberries in the European market so it may be worthwhile to try and produce blueberries to meet European regulations. The EU is the largest economy in the world with more than 500 million people in this single market.

ii. Secure access to new markets that are rooted in competitive trade agreements

- As global blueberry consumption increases, export opportunities exist in new markets for BC producers. Export markets of note include China and Europe.

The following elements should be considered by those looking to maximise export sales:

- **Fruit quality:** The quality of blueberries destined for export must be high quality in order to compete with countries who prioritise their best blueberries for export. Chile and Peru are known to export their best product.
- **Berry traits:** Primary market research indicates that BC needs to change the varieties in which the province is exporting. Currently, there are reports that the blueberries that are exported are too soft with a high water content and even possibly too mushy all resulting in a short shelf life. This is a challenge as other countries such as Peru and Chile can provide blueberries that last up to two months and are not considered soft or mushy. In terms of size, the Asian markets are known to prefer larger berries. It would not be advisable to send smaller berries to these markets.

Actions to expand export markets for growers/processors

1. Assess export potential and readiness

- This includes examining current company resources including financial and staffing. Companies should consider their customer profile and whether product modifications will be required for their chosen export market. Transportation, production resources, domestic market success, packaging, labelling and local representation are other factors to be considered.

2. Develop an export plan

- Those with export ambitions should identify and document their export objectives followed by market research to determine their most appropriate target markets.
- Other key aspects to be considered are market-entry strategy, regulatory issues and risk factors.
- Financial assistance for market research and developing export plans by contracting qualified suppliers is available from the Investment Agriculture Foundation under the [BC Agrifood & Seafood Market Development Program](#).

3. Obtain financing for export endeavours

- Exporters should establish their export budget and include the following costs: staffing, market research, travel, marketing, participation in trade shows and product redevelopment. Trade show participation costs can be cost-shared with IAF's [BC Agrifood & Seafood Market Development Program](#).
- The federal and provincial government provide a wide variety of programs to assist individual exporters and the industry as a whole to undertake export marketing programs. Some examples of sources of funding for export activities are provided in the following links:
 - [Export Financing – Canada Business Network](#)
 - [How to Finance your Growing Business – Small Business BC](#)
 - [Export Guarantee Program – Export Development Canada](#)
 - [Business Development Bank of Canada](#)
 - [CanExport program](#)

4. Develop an export marketing strategy

- Language, culture, communication styles and business customs vary from country to country. By understanding the target country and customizing their marketing strategy, companies will attract buyers more easily.
- More information to create an effecting marketing strategy can be found at [Export Marketing Strategies – Canada Business Network](#)

5. Enter your target market

- The optimal market entry strategy should be determined. Options include direct or indirect exports, partnerships and acquisitions.
- Consider the use of intermediaries. Using an intermediary to represent a BC business in an international market can save time and money and improve the chances of export success.
- Exporting companies should be informed on the tariffs and export regulations of each export market.
- Consideration should be given as to how best to ship the product. Factors to assess include shipping documents, packing, labeling, cargo insurance and maybe even hiring a customs broker.

6. Utilize the wealth of resources for exporters.

Some resources can be found at the following links:

- The BC Ministry of Agriculture has previously developed Market Export Guides for BC Agrifood and Seafood companies. [Guides for 12 different international markets](#) have been prepared including China, Germany, Japan, the Philippines, Singapore, South Korea, Spain, Taiwan, Thailand, the UK, the UAE and Vietnam.
- The Trade Commissioner Service (TCS) provides services to Canadian businesses that have researched and selected their target market(s) abroad. These services can help a company prepare for the international market, assess market potential, identify qualified contacts and solve problems. With more than 160 offices in Canada and abroad, the TCS

provides a full range of international business development services to Canadian SMEs active or interested in exporting.

- MY TCS is an online platform offered by the TCS that provides companies with access to market information and insight on business opportunities that match specific business interests. A company can opt-in to receive email notifications about new export publications, upcoming trade events, webinars, videos and podcasts, as well as editorial content from the TCS flagship magazine, CanadExport.
- CanExport provides financial support for a wide range of export marketing activities that increase the competitiveness of Canadian companies. CanExport will provide up to \$50 million over five years in direct financial support to Canadian SMEs seeking to develop new export opportunities, particularly in high-growth priority markets and sectors.
- Export Development Canada (EDC) is Canada's trade finance agency, providing financing and insurance solutions locally and around the world to help Canadian companies of any size respond to international business opportunities.
- The Business Development Bank of Canada (BDC) can help you meet working capital needs through long-term financing and flexible repayment options. BDC can provide companies with expert guidance and support to help seize opportunities to expand and export to the U.S. and other international markets.
- The Agri-Food Trade Service (ATS) of Agriculture and Agri-Food Canada provides a full range of market access, market development and investment services to Canadian agri-food companies.

4. Adoption of Progressive Growing and Production Methods

Protected cropping, substrate and hydroponic techniques should be incorporated into the BC growing landscape with the view to enhance the cultivation and production of blueberry crops to capitalise on increasing global demand and to provide a financially viable, sustainable and profitable operation for commercial berry farmers.

While these progressive techniques have taken off in other parts of the world, most BC farmers have continued to employ traditional methods. However, the recent internationalisation of the blueberry market is requiring traditional growing regions to evolve and adapt as the crop becomes a year-round commodity. Advances in growing systems offer many benefits that could help offset some of the challenges faced by BC growers.

Most specifically, substrate growing appears to offer the most immediate opportunity for blueberries in BC followed by the use of high tunnels. Blueberry substrate production has become an important competitive growing system in new and existing growing regions. Blueberry substrate production is also increasing worldwide, especially in regions with mild winter climates. Tunnels are being used by some, but increased use offers further growth opportunities. The use of glasshouses is in its infancy but with more research opportunities may exist.

Actions to implement new production methods

1. Companies that are interested in the benefits of new production methods must first establish if investing in the required infrastructure is economically worth it. To do this, blueberry companies should conduct a feasibility study to discern the pros and cons of undertaking a project before a significant invest of time and money is made. The elements to consider during the feasibility study include:

- Product description (type of product (tunnel, substrate))
 - Economic feasibility (cost/benefit analysis)
 - Identification of the specific market (prevailing market, consumer demand, future market growth, competitors, potential customers, price point, projection of sales)
 - Technical capability (site analysis, existing technology, transportation, manpower)
 - Organizational feasibility (expansion or contraction, succession planning)
 - Financial projections (cost of equipment, working capital, access to finance, (banks, investors, venture capitalist), ROI,)
2. Upon completion of the feasibility study, companies will need to make a 'go/no-go' decision based on the analysis and information. The investment analysis should account for the price changes, knowing that prices might not always be as high as they were or are right now. Individuals must judge whether the commitment is worth the time, effort and money and whether it is aligned with the organization's strategic goals and long-term aspirations. BC farmers must continuously track whether the demand for blueberries will absorb the increasing global supply.
 3. If the investment decision is positive, companies should develop a business plan for the new investment and implement it. The major obstacle to adopting new methodologies is the cost associated with the infrastructure, with "the better the structure, the more investment required".

5. A Well-Funded Breeding Program Offers Long-Term Opportunities

In recent years, the global industry has witnessed a shift in plant breeding activity from the public to the private sector as a result of intellectual property protection, globalisation and pressure on public budgets. Some of the very best genetics of the different berry varieties around the world are controlled by a few very strong and powerful companies which are shaping the future of the industry. However, developing new cultivars will be critical to the long-term success of the provincial industry. As the global blueberry market changes, consumer tastes evolve, growing seasons lengthen and machine harvest is increasingly prioritised, creating new varieties to meet these ever-moving goal posts will be required. Thus, to remain competitive, the BC industry must continue to invest in breeding programs. With the move to proprietary and controlled genetics in fresh blueberries accelerating, driven by an industry-wide shift from a supply focus to a quality and value proposition focus and royalties typically attached to proprietary varieties, publicly funded programs are all the more important. A successful cultivar must be appealing to consumers' taste buds, economical to produce commercially, and, ideally, widely adapted to environmental stresses and tolerant of pests. While a breeding program offers limited immediate opportunities, as it can take at least 10 years to bring a variety to market, it is imperative that breeding programs continue to receive investment as the future of the industry relies on it.

Action for breeding opportunities

1. Government, industry and the growing community should continue to fund and prioritise breeding programs to develop new varieties that can extend the growing season, improve yields and better withstand machine harvesting.
2. There is a danger that the funding community may grow tired of investing before the benefits of the investment come to fruition. Government, industry and the growing community must avoid this pitfall and remain committed to the long-term funding of breeding programs.

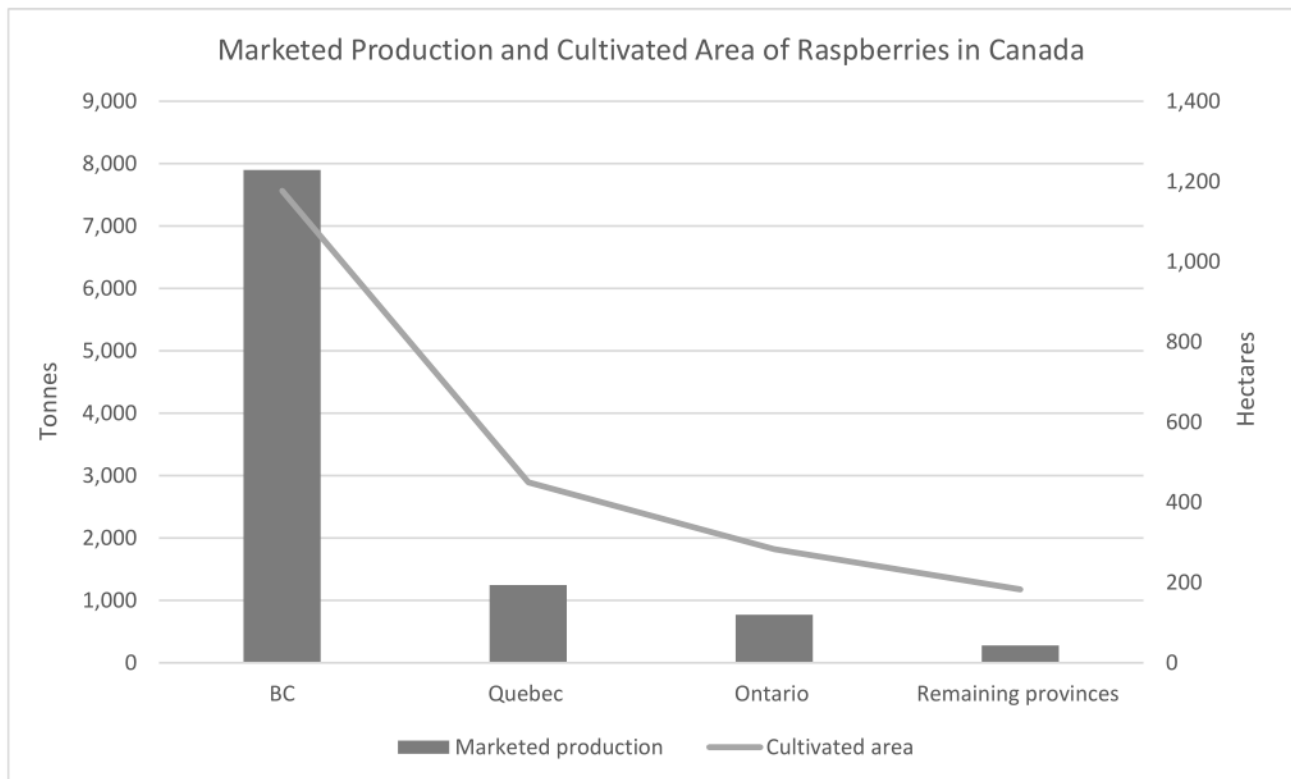
III. RASPBERRIES

A. INDUSTRY PROFILE

Overview of Current Production in British Columbia

Every Canadian province produces raspberries, some to a greater degree than others. BC is the largest region both in terms of planted acreage and production. BC accounts for 56% of the country's acreage and produces a disproportionately high share of the crop with 78% of national production (Figure 11). Quebec and Ontario are the next largest producers with 22% and 14% of national acreage, respectively, but account for only 12% and 8% of national production. The remaining provinces collectively have 9% of the total acreage and 3% of total commercial production. Within BC, crops can be grown in all but the harshest climates. Nonetheless, over 75% of raspberries are produced in the Fraser Valley. Smaller growing regions include Salmon Arm/North Okanagan area and southeastern Vancouver Island.⁸

Figure 11: Distribution of Total Marketed Production and Cultivated Area of Raspberries in Canada in 2018

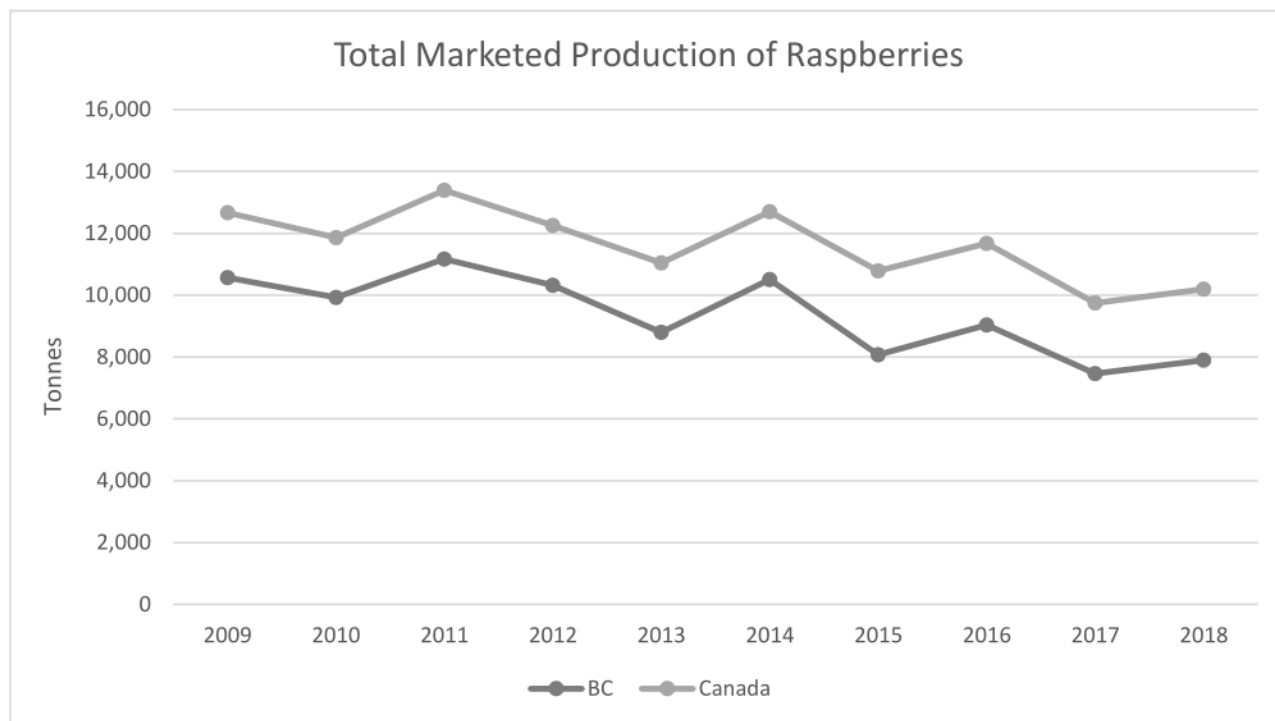


Source: Statistics Canada. Table 32-10-0364-01. Estimates, production and farm gate value of fresh and processed fruits.

While BC remains, the largest raspberry producing province in Canada, production has been steadily dropping since the 1980s when it peaked at 18,000 tonnes that were produced on 6,000 hectares. By way of comparison, in 2018, total provincial production was recorded at 7,899 tonnes on 1,177 hectares: a 56% decline in production volume in the last 30 years. Thus, the BC raspberry industry has experienced significant contraction in recent decades. More recently, in the last ten years, production has been fluctuating considerably consisting of a cycle of production rising one year then falling the next. In this cycle, however, the fall is typically more pronounced than the corresponding

rise and as such the overall trend of production is downwards (Figure 12). As production has declined so too has the number of raspberry growers. At the peak of the industry, there were reportedly about 500 growers. That number now sits at approximately 90. Additionally, none of these 90 or so growers are exclusive raspberry growers further highlighting the challenges of the industry and the need for crop diversification.

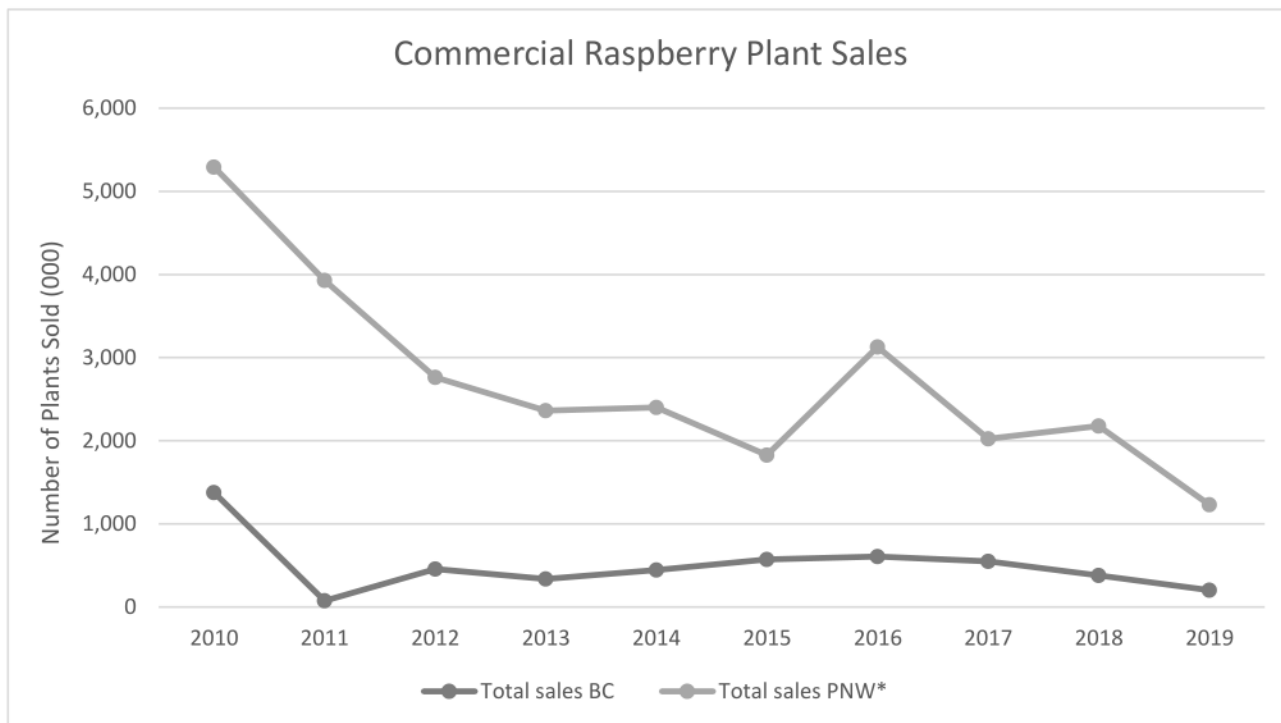
Figure 12: Total Marketed Production of Raspberries in BC and Canada from 2009 to 2018



Source: Statistics Canada. Table 32-10-0364-01. Estimates, production and farm gate value of fresh and processed fruits.

Total commercial plant sales for the province help to provide further insight into provincial production. As Figure 13 highlights, the number of plants sold are down significantly in the last ten years. For BC, they have declined 85% while for the Pacific Northwest region, plant sales are down 77% in the same time frame. With fewer plants sold, it is reasonable to assume production will drop unless plant sales are for a significantly higher yielding variety. This does not seem to be the case in the Pacific Northwest in the last decade.

Figure 13: Commercial Raspberry Plant Sales by Number of Plants Sold in BC and in the Pacific North West 2010-2019^v



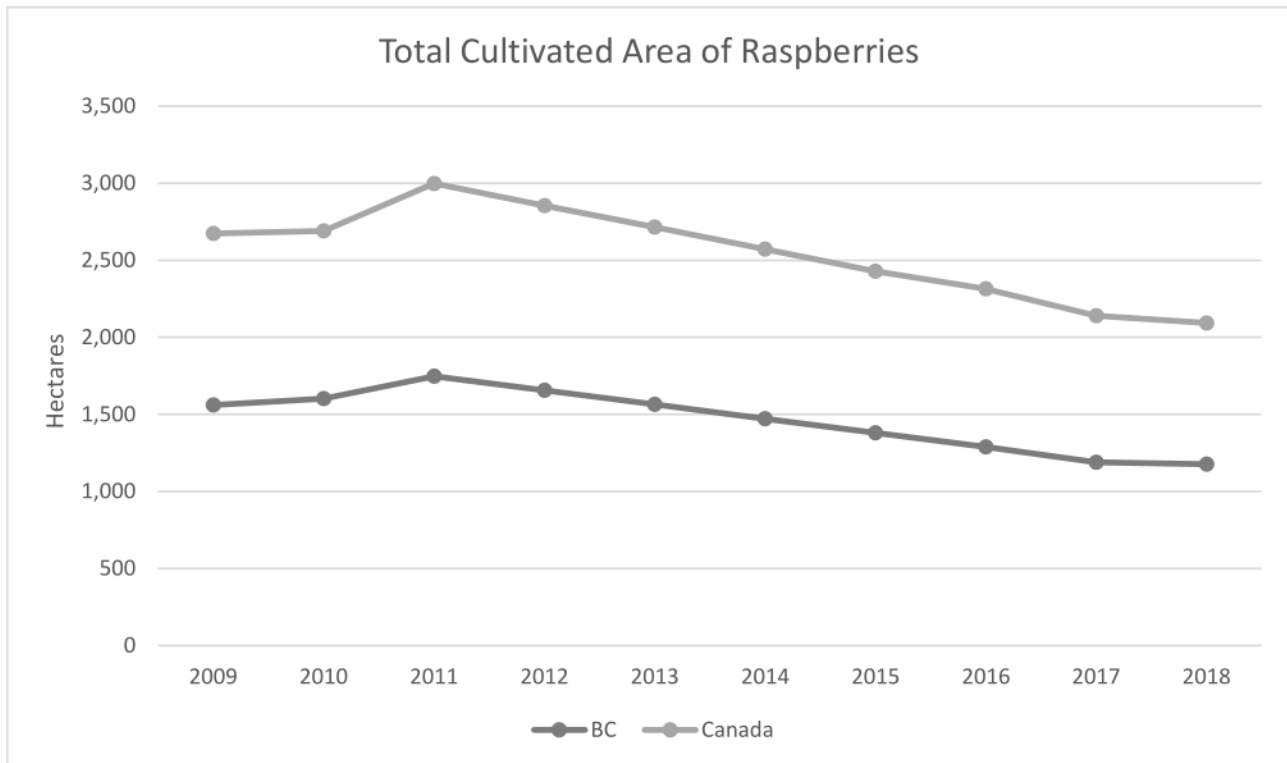
Source: Washington State University, Department of Horticulture.

*PNW: Pacific North West (Oregon, Washington State and BC)

The total cultivated area of raspberries is trending in a similar direction to total marketed production; overall, a downward trajectory. Provincially and nationally, the total cultivated area of raspberries is at a ten-year low both (Figure 14). Acreage for BC in 2018 is down 24% when compared to 2009 while nationally acreage has dropped 22% in the same timeframe. In the 1980's, acreage was as high as 2,428 hectares in BC. It is now less than half of that. Further, acreage isn't expected to increase in any meaningful way in the near future. Rather, forecasts suggest that acreage is likely to continue to decrease as BC farmers move more of their land into the relatively more lucrative blueberry crop. At which point, the industry, if it isn't already, will be in danger of losing its critical mass and its associated benefits such as economies of scale.

^v Totals include reported plant sales from Lassen Canyon Nursery, Norcal Nursery, North American Plants, Northwest Plant Co, Nourse Farms and Spooner Farms.

Figure 14: Total Cultivated Area of Raspberries in BC and Canada 2009-2018



Source: Statistics Canada. Table 32-10-0364-01. Estimates, production and farm gate value of fresh and processed fruits.

As indicated in the Table 13, the average yield of the BC raspberry crop has fluctuated from a low of 6,686 kilograms per hectare in 2013 to a high of 9,040 kilograms per hectare in 2016 signalling that production is variable among producers. Some growers consistently produce more than 10,000 pounds per acre while others routinely produce less than half of that per acre. Field productivity is impacted by field age, cultivar and management practices. The average farm gate value has increased from \$9,979 per hectare in 2013 to \$16,741 per hectare in 2018.

Table 13: Summary of BC's Raspberry Farm Gate Value, Production, Acreage and Yields 2013-2018

Variable	2013	2014	2015	2016	2017	2018	Average 2013-2017	2018 vs. 2017 % change	2018 vs. average % change
Farm gate value (\$'000)	12,737	19,259	17,869	20,739	19,172	19,436	17,955	1.4%	8.25%
Cultivated area (hectares)	1,564	1,472	1,380	1,289	1,189	1,177	1,379	-1.0%	-14.64%
Harvested area (hectares)	1,316	1,262	1,129	1,170	1,165	1,161	1,208	-0.3%	-3.92%
Production (tonnes)	8,799	10,502	8,068	9,040	7,463	7,899	8,774	5.5%	-9.98%
Yield (kg/ha)	6,686	8,322	7,146	9,040	6,406	6,804	7,520	5.8%	-9.52%
Yield (\$/kg)	1.45	1.83	2.21	2.29	2.57	2.46	2.07	-4.4%	18.76%
Farm gate value per harvested hectare (\$/ha)	9,979	15,261	15,827	17,726	16,457	16,741	15,050	1.7%	11.24%

Source: Statistics Canada

Breakdown of Varieties Grown in British Columbia

Although BC grows about ten different varieties of raspberries, the majority are of the Meeker variety with Chemainus the next most popular. Meeker currently accounts for over half of BC's raspberry acreage. However, this may be changing. As highlighted in Table 14 below, Meeker sales comprised 51% of total raspberry plant sales in BC in 2009 whereas in 2019, Meeker account for 21% of total plant sales. In 2019, Chemainus accounted for 30% of total plant sales. Commercial plant sales can be used as an indication of what varieties will appear in future production cycles.

Table 14: Commercial Raspberry Plant Sales in BC for the Years 2009, 2014 and 2019

2009			2014			2019		
Top 5 selling cultivars	Number of plants sold	% of total plants sold	Top 5 selling cultivars	Number of plants sold	% of total plants sold	Top 5 selling cultivars	Number of plants sold	% of total plants sold
1. Meeker	919,800	51%	1. Chemainus	149,150	33%	1. Chemainus	59,975	30%
2. Chemainus	494,000	28%	2. Meeker	136,390	31%	2. Meeker	42,000	21%
3. Sannich	118,212	7%	3. Rudi	35,100	8%	3. Rudi	22,925	11%
4. Tualmeen	84,500	5%	4. Tulameen	24,300	5%	4. Squamish	12,575	6%
5. Malahat	48,025	3%	5. Squamish	14,010	3%	5. Malahat	10,500	5%

The characteristics of the main summer-bearing BC cultivars are described below:

Meeker

Meeker variety is a mid-season variety recommended for the Fraser Valley and Vancouver Island where it is mainly grown for processing. It is suited to both hand and machine picking. Meeker has shown some tolerance to root rot on heavier soils, but it is less winter-hardy than a lot of other varieties. It is immune to crown gall under field conditions. It is very susceptible to raspberry bush dwarf virus and it has proven challenging to IQF with any reliability. It is suitable for IQF when plantings are young and not infected by raspberry bushy dwarf virus.

Chemainus

Chemainus, a mid-season variety, is recommended in all areas. The fruit is attractive, large, dark, glossy and firm. It machine harvests well and is suited for mid-season processing and fresh markets. It has good fruit shape with fine drupelets and some resistance to fruit rot. However, it can be susceptible to raspberry bushy dwarf virus, root rot and to crown gall but resistant to aphids. It is suitable for IQF.

Tulameen

Tulameen produces exceptionally large, firm fruit of excellent colour and quality. It also produces over a long harvest season. Tulameen is not planted in abundance in BC as it is susceptible to root rot, but it is suited for long-can substrate production. It is not suitable for mechanical harvesting.

Cascade Delight

This variety is recommended for the fresh market only. It is a late season variety. The fruit is attractive, firm, glossy with many drupelets and has a well-balanced, traditional raspberry flavour. Yields have been equal to Tulameen. It has good field resistance to root rot but is not suited to machine harvest.

Rudi

Rudi, an early to mid-season variety, is known to produce concentrated high yields of machine harvestable berries that ripen several days earlier than Meeker. Fruit is high quality, good flavour, moderately firm and larger in size than Meeker. It is suited mainly for the processing market. Fruit may be too soft for the fresh market. It is resistant to aphids and has some field tolerance to root rot but is susceptible to raspberry bushy dwarf virus.

Squamish

Produces high yields of attractive, glossy, large, fruit that is suited for fresh and processing markets. It ripens earlier than most other varieties. It is a good potential replacement for the early fresh market. It machine harvests well. It shows good field tolerance to root rot; however, it is susceptible to raspberry bushy dwarf virus and spur blight. It is suitable for IQF.

Cascade Premier

This new variety produces large, firm fruit suitable for both fresh and process markets. It is an early season variety, with similar harvest timing to Squamish and Rudi. Fruit has excellent flavour. This variety machine harvests well and may have potential for IQF.

Cascade Harvest

This new variety produces large, light to medium red-coloured fruit, with good flavour. It is a mid-season variety with yields that are similar to Meeker. This variety machine harvests well and thus may have potential for the IQF market. The fruit colour, however, may be too dull for the fresh market.

Wakehaven

This variety produces firm, light to medium red-coloured berries with good flavour. It is an early to mid-season variety that ripens slightly earlier than Chemainus. It produces high yields and is well suited to machine harvest and processing applications. It has also demonstrated the ability to freeze well for IQF.

Wakefield

This variety produces very firm, medium red-coloured berries with good flavour. It is a late season variety that ripens after Meeker. It is very high yielding and is suited to machine harvesting and processed markets. It is also suited to IQF.

Fruit Quality Traits

The characteristics listed in Table 15 below are crucial fruit quality traits for raspberries destined for both the fresh and processed market, but their relative importance in each market varies. As fresh fruit generally earns a higher price than fruit for processing, the fresh market usually demands more from the factors mentioned below. Fruit quality traits are important as they can affect producer price premiums, positively drive consumer demand and improve machine harvestability, all of which are critical to the economic viability of the commercial production.

Table 15: Raspberry Quality Traits and Description

Trait	Fresh	Processed
Colour	Raspberries for the fresh market should be uniform in colour, reasonably bright while also maintaining a deep red appearance. Pink raspberries are to be avoided	Raspberries should be a deep red in colour. However, the colour may vary depending on the intended use and end product
Flavour	A sweet flavour that is slightly tart with some intensity is desired	A sweet flavour that is slightly tart with is desired
Size	An accepted range from 1-5 g. Usually larger berries are preferred for the fresh market	An accepted range from 1-5 g. Size preference will be dictated by the intended use of the berry
Defects	Free from defects at least any that interfere with appearance and taste profiles	Should not have any obvious external damage
Firmness	Naturally, raspberries are a very fragile, delicate fruit. As such, firmness is all the important for this berry particularly if it is to withstand transport expectations. Over-ripe, mushy berries should be avoided. While not currently available, a variety for the fresh market that could withstand machine harvesting is desired	Firmness for processed berries is important especially for berries that are destined for IQF. They need to be sufficiently firm not to shatter in the IQF tunnel or during repackaging. Raspberries for processing also need to be able to withstand machine harvesting
Shelf life	Shelf life for the fresh market is exceptionally important, perhaps because the current shelf life of a raspberry is so limited (2-3 days). This is due to the perishable nature of the fruit	Shelf life for a standard frozen raspberry is two years after it is packed and held below - 18 degrees Celsius

The appearance of a raspberry is most important for the fresh market and for raspberries that are destined for IQF. This means the size, colour and firmness of a raspberry are all critical purchase points for consumers as are uniform varietal characteristics. Larger berries are typically preferred for the fresh market but ultimately a range of sizes and colours are acceptable to consumers as long as the taste profile is not compromised. The flavour of raspberries is paramount to consumers. Varieties that produce sweet but slightly tart tasting berries are suitable in the fresh and processed market. The more under-ripe the berry is when it is picked the more tart it will be. However, picking a slight under-ripe berry can offer opportunities to extend the shelf life. The riper the raspberry is when it is picked, the sweeter it will taste and the more intense its flavour will be. The taste will also depend on the variety.

Raspberries are one of the most delicate fresh fruits. As such, the firmness of a raspberry is a critical success trait but can be very challenging to achieve. Fresh and IQF raspberries need to be especially firm to ensure the end consumer does not receive a mushy product. The delicate nature of a raspberry can also complicate the freezing process as they can easily break into crumbs during freezing. Overripe berries are more susceptible to damage when frozen while machine harvested berries usually have more injuries which can test freezing efforts. Both fresh and frozen raspberries should be free from defects, bruising and dents.

Raspberries have one of the highest respiration rates of any fruit. This, coupled with their thin skin and sugary interior, makes them among the most perishable of all fruits. Fruit harvested before it is fully ripe will have a much longer shelf life than fully ripe or overripe fruit but will be lower in sugar and anthocyanins. The optimum stage of maturity for the raspberry occurs when the berry first becomes completely red, but before any darker hues develop.

Seasonality

There are two types of raspberries grown in BC; summer-bearing varieties (floricane) and fall-bearing varieties (primocane). Summer-fruited raspberries develop their fruit on last year's growth. They bear one crop per season, often in June or July. Fall-bearing varieties can produce twice each year, in the spring and fall. However, fall-bearing varieties are typically mowed down after harvest so that they will produce a single, larger crop in late summer and early fall. Thus, BC raspberries are typically available from the second week of June to mid-October. For summer-bearing fruit, the potential harvest season lasts four to six weeks (Table 16). The earliest ripening fall-fruited types usually have fruit by the first week in August and can produce fruit until the start of the fall rain. The variety, weather and the harvesting/growing method will often dictate how early or late farmers can extend their growing season. The BC harvest peaks in July but processing activities can quickly be sidelined once the local highbush blueberry is ripe.

By the time raspberry harvesting is underway in BC, BC is entering an already supplied market as Oregon and Washington have a one to three week advantage due to their more southerly location. Adding to the difficulty of the BC seasonal window is the rise in other producing regions. California and Mexico, for example, have become large players in the raspberry market and have achieved or almost achieved year-round production. While Chile doesn't produce in the same window as BC berries, it does produce in its off-season which can hurt the sale of frozen BC berries as Chile can provide fresh berries.

Table 16: Availability Calendar of Raspberries for Major Growing Regions that Compete with the BC Growing Season

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
California												
Oregon												
Washington												
BC												
Chile												
Mexico												

Current Market Channels

BC raspberries are consumed fresh, frozen, or processed in jam, juice, yogurt and wine, among other items. Although fresh raspberries command a higher price, the BC raspberry industry is almost exclusively a processed industry. Every year, approximately 90% of the BC crop is machine harvested with the view to sell to the processed market. Most BC raspberries are frozen and exported mainly to the US market. A small portion of the harvested crop goes to IQF processing. While this channel offers potential in terms of higher profit margins, securing the right variety that will IQF well is a challenge. Beyond IQF, there is limited to no value-added processing of raspberries in the province and thus there are very few raspberry processors remaining in BC. The remaining 10% of the annual crop is hand-picked for the local fresh market. Except for a couple of larger raspberry producers, fresh sales are generally small, local, farm direct sales. Damaged produce is destined for the juice or drying market.

Export Sales

BC exports a small quantity of fresh raspberries, but the bulk of exports are composed of frozen berries (Table 17 and 18). The volume of fresh exports has been declining over the last number of years. In 2018, less than half of what was exported in 2009 left the province. The only export destination was the US. This can be explained by the perishable and fragile nature of BC raspberries which can complicate export ambitions. Thus, exports of frozen raspberries are more common. Nonetheless, the US remains the leading destination as the provincial industry ships 96% of its produce to its southern neighbour. Japan and China comprise most of the small remaining share of exports. Many of the other nations listed below, appear as one-time destinations, particularly in the case of fresh exports.

Table 17: BC's 2009-2019 Exports of Fresh Raspberries, by Country and by Year

Quantity* (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019**	Total
Global	1,065.1	503.7	626.6	889.6	1,410.8	1,589.5	651.0	992.2	960.4	405.0	434.3	9,528.2
US	1,065.1	484.6	602.7	825.2	1,405.4	1,588.0	651.0	992.1	879.4	405.0	434.3	9,332.8
Hong Kong	0.0	0.0	0.0	64.4	5.4	1.5	0.0	0.0	2.0	0.0	0.0	73.3
China	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.9	0.0	0.0	65.9
Japan	0.0	0.0	23.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.8
South Korea	0.0	19.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.1
Taiwan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	0.0	0.0	11.9
Thailand	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	1.2

Source: Statistics Canada

*Fresh export quantities may include small amounts of blackberries, mulberries, and loganberries. Berry quantity is rounded to the nearest tenth of a tonne.

**2019 data reflects exports during the months of Jan.-Nov. only.

Table 18: BC's 2009-2019 Exports of Frozen Raspberries, by Country and by Year

Quantity* (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019**	Total
Global	2,628.6	5,127.3	4,809.7	4,313.0	4,268.7	3,025.5	2,611.8	2,241.9	1,781.4	2,527.5	2,954.9	36,290.3
US	2,554.0	4,931.8	4,483.6	3,948.1	3,937.3	2,662.8	2,128.5	1,883.1	1,662.0	2,424.8	2,734.7	33,350.7
Japan	35.5	38.6	84.1	81.3	163.8	146.3	247.6	165.2	57.3	88.6	65.4	1,173.7
China	0.0	21.1	167.2	122.0	96.6	165.3	186.3	142.3	20.0	0.0	154.4	1,075.2
South Korea	0.0	66.9	36.7	70.0	70.3	20.2	0.0	0.0	0.0	0.0	0.0	264.1
Australia	8.4	0.0	0.0	25.3	0.0	0.0	0.0	45.3	22.0	0.0	0.5	101.5
Germany	0.0	17.9	22.0	44.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	84.5
Chile	0.0	47.9	0.0	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	68.9
Indonesia	8.7	0.0	5.0	0.0	0.0	15.0	3.2	2.4	0.0	14.1	0.0	48.4
New Zealand	21.9	3.0	11.0	0.7	0.6	7.3	0.5	1.6	0.0	0.0	0.0	46.6
Mexico	0.0	0.0	0.0	0.0	0.0	0.0	45.8	0.0	0.0	0.0	0.0	45.8
Serbia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.7	0.0	0.0	19.7

Source: Statistics Canada

*Frozen export quantities may include small amounts of mulberries. Berry quantity is rounded to the nearest tenth of a tonne.

**2019 data reflects exports during the months of Jan.-Nov. only.

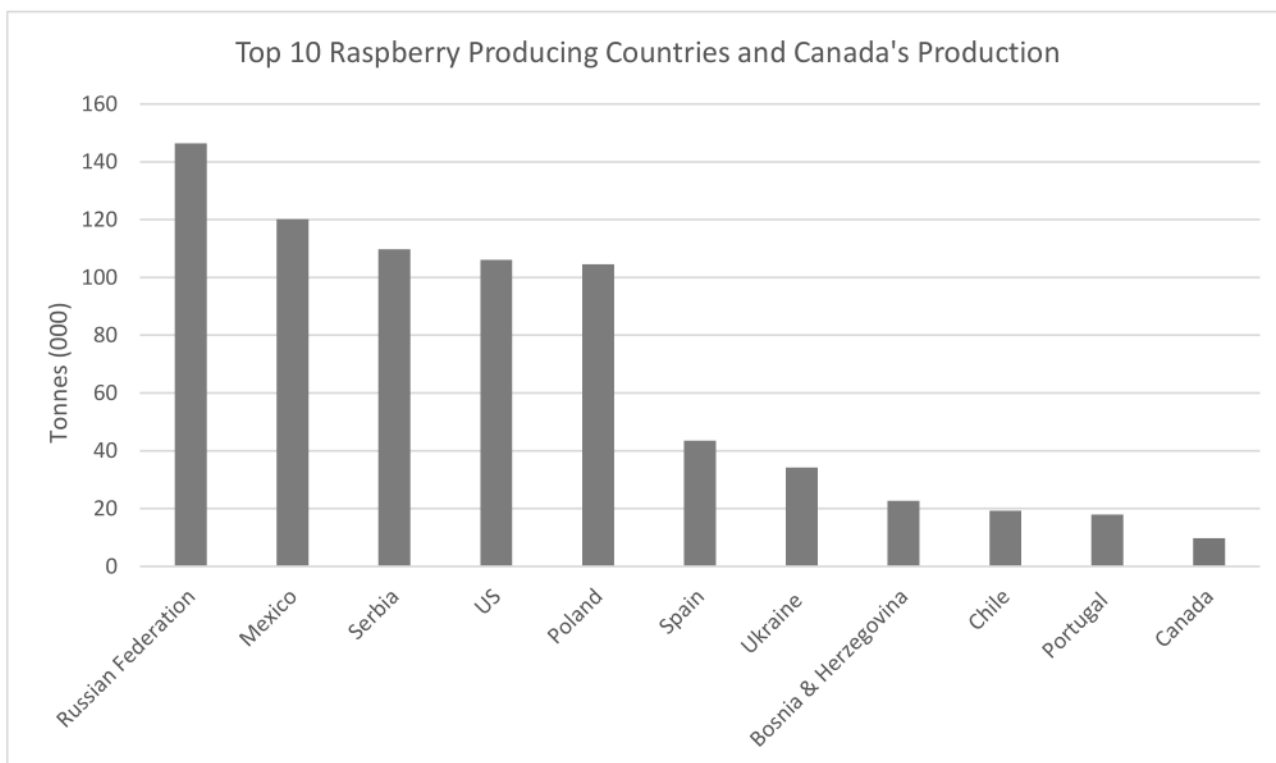
B. MARKET PROFILE

Current Global Raspberry Supply

Canada is a small player in the global raspberry industry accounting for just 1% of total production. Canadian production is so small in a global context that it is a price taker on the global market (Canada could stop producing raspberries and the price on the global market would be unaffected). Canada is not among the top 10 global raspberry producers but for comparison purposes, its data has been included in Figure 15 below. As the raspberry plant is native to Europe, it is perhaps no surprise that European countries accounted for just over two thirds of global production in 2017. However, Europe's share of global production is shrinking as more non-traditional growing regions enter the market.

Figure 15 can be reviewed alongside Table 16 (page 49). Combined these graphics showcase global production volume by the top 10 producing countries against the seasonal supply of raspberries. Globally, the vast majority of raspberries are produced in the northern hemisphere resulting in a dominant season from May to October. Although California has mastered year-round production with Mexico producing for 10 months of the year.

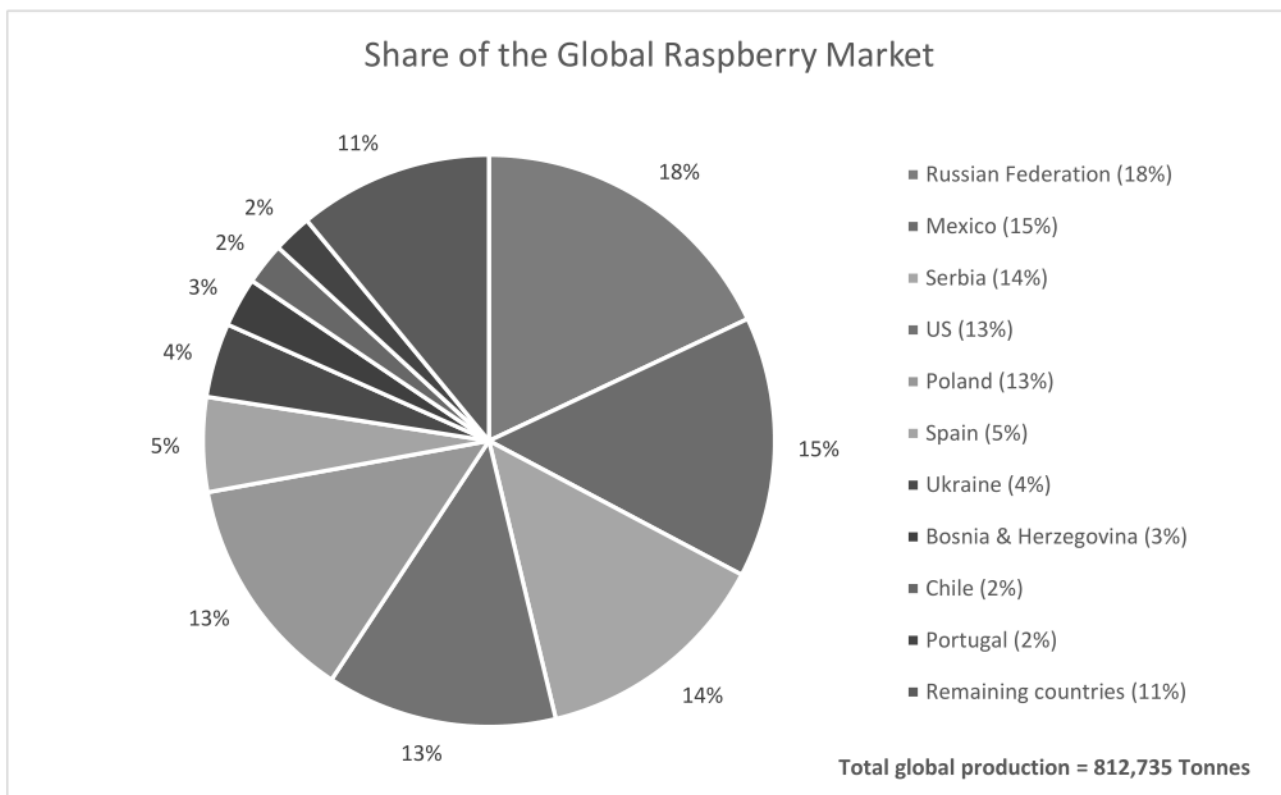
Figure 15: Top 10 Producing Raspberry Nations and Canadian Production Volume – 2017



Source: UN FAOSTAT

Russia is both the largest European and global producer of raspberries accounting for 18% of world production. Mexico, Serbia, the US and Poland are the next largest players, they each account for 13% - 15% share of the market (Figure 16). The remaining top 10 countries each have less than a 5% share of the market. Collectively, the top 10 producing countries account for nearly 90% of global production.

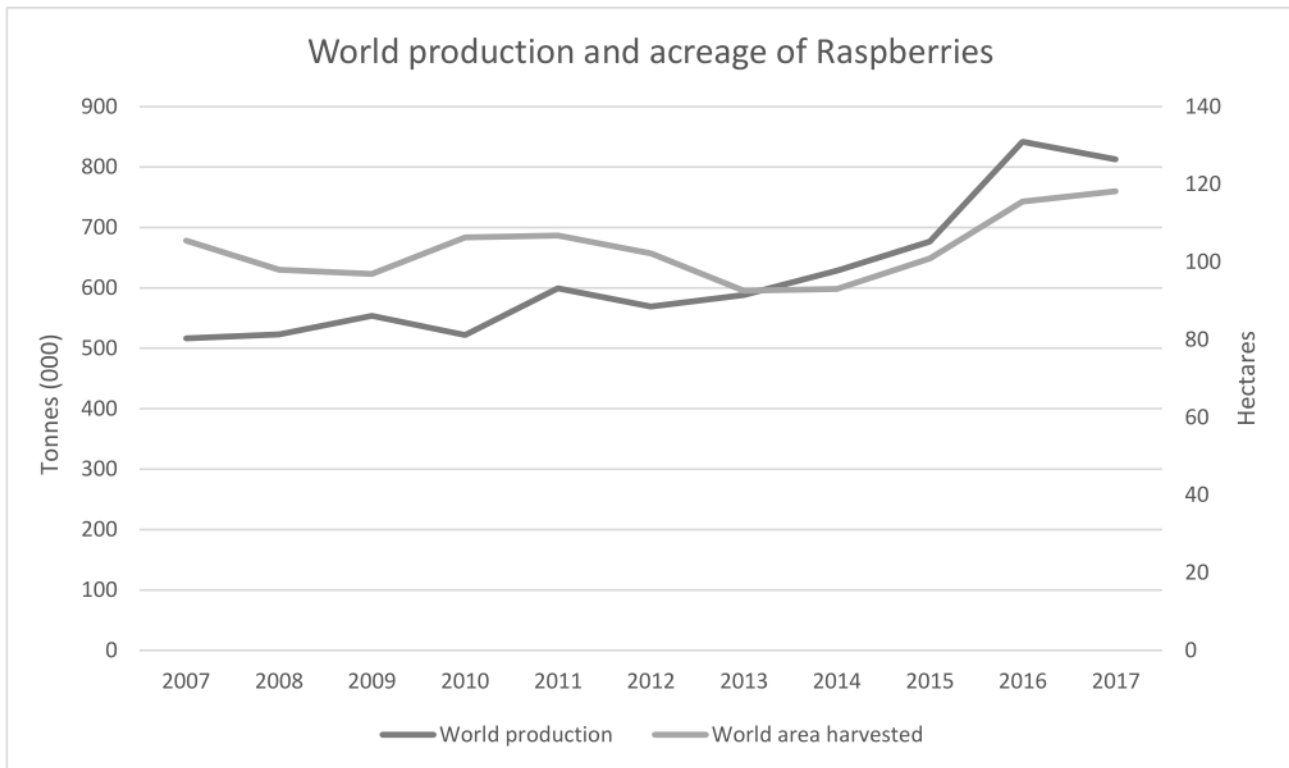
Figure 16: Share of the Global Raspberry Market by Production Volume - 2017



Source: UN FAOSTAT

While Canada's raspberry production has been declining over the last decade, world production has increased by 55% over the same timeframe (Figure 17). In 2017, global production stood at 812,735 tonnes. While global production has experienced some years of decline in this time frame, overall the industry is trending upwards. Global acreage has followed a similar growth trajectory, albeit not as significant with acreage 21% higher in 2017 when compared to 2007. Production and acreage are forecast to continue to increase in the coming years as many countries expand their raspberry production.

Figure 17: World Production and Acreage of Raspberries 2008 – 2017



Source: UN FAOSTAT

Purchasing Trends

- **The many health benefits of raspberries have led to increased consumption.**
 - Raspberries are a good source of fiber and vitamin C. Raspberries are also high in antioxidants and plant compounds that protect against cell damage. Antioxidants may reduce the risk of certain chronic diseases. Consumers are becoming increasingly aware of these facts.
- **Canadians have demonstrated a demand for local food.**
 - As a result of growing concerns about global warming, food security and ethical sourcing, Canadians are increasingly looking for ways to consume more locally produced products.
 - Many Canadian consumers prefer locally grown raspberries due to contamination concerns with their imported counterparts.⁹
 - However, Canadian consumers have also displayed loyalty to the cheapest available product which doesn't always align with produce produced locally.
- **Raspberries have been gaining popularity as a 'fashionable' fruit.**
 - In terms of popularity, raspberries have been gaining strength in recent years, becoming 'fashionable'. Until relatively recently, raspberries were consumed mostly in bakery products, but this trend has been changing in recent years.
 - Fresh consumption has been growing gradually and demand is consequently increasing steadily."¹⁰

- Apart from being flavourful and nutritious, raspberries are considered attractive to the eyes which makes them “instagramable” and shareable on any digital platform, adding to the berry trend, especially among millennials.¹¹
- **With increased awareness about environment-friendly material, consumers are looking for biodegradable packaging for berries.**
 - Generally, berries are sold in plastic ‘clam shell’ packaging. But with an increased awareness about the importance of environment-friendly materials, consumers are being hesitant about purchasing berries sold in plastic packing. As a result, there is an increased demand for biodegradable packaging for raspberries particularly as single use plastics come under further scrutiny.
- **Affluent consumers and women are more likely to buy raspberries.**
 - In the US, raspberries are more popular with affluent consumers and older shoppers. Consumers earning US\$100,000 annually were the most likely to buy raspberries overall.
 - Moreover, women were 12 percentage points more likely to buy the berries than men. Black shoppers and those in the lowest income bracket were the least likely to buy raspberries overall.
 - 12% of buyers said they always selected organic raspberries, while 36% said they bought organic product at least some of the time (Produce market guide, 2018).¹²
- **Product diversification has driven up berry consumption.**
 - Producers of berries are investing in new product development to increase the market for these raspberries. For instance, in May 2018, a vendor launched Braspberries, a new combination of blueberry-stuffed raspberries. The introduction of similarly innovative products is expected to increase in frequency the coming years.
- **Shelf life is an important purchasing factor for raspberry consumers.**
 - Even when stored correctly, raspberries are not known to have a long shelf life. At most, raspberries can last for a couple of days. Therefore, to maintain the quality of raspberries, producers are focusing on factors such as quality, wet strength, and the durability of packaging materials as well as new varieties that produce a berry with a longer shelf life.
 - New packaging techniques for raspberries will be required if the fruit is to remain competitive along side other super fruits.

BC Raspberry Imports by Type

Table 19 and 20 below highlight the largest importing countries of raspberries into the province for the years 2009 through 2019. Following that, Table 21 and 22 outline import volume by calendar month for the year 2019 (Jan-Nov). This distinction enables visibility of both the origin of BC imports over the last decade and the time of year in which berry imports typically arrive.

In 2018, BC imported 10,063 tonnes fresh and frozen raspberries. Imports of both product lines have increased in the last decade suggesting consumption has grown and/or local production has declined. In the case of BC, both instances are likely. The province imports most of its fresh raspberries from the US followed by Mexico, accounting for 70% and 29% in 2018 respectively. Mexico’s contribution has increased significantly since 2009. Chile and the US are the main importers of frozen raspberries, both importing about 2,500 tonnes in 2018. Serbia is a rising

contributor of frozen raspberries, notably increasing its volume in the last ten years. Overall, BC is a net importer of raspberries, importing 10,000 tonnes in 2018 while only exporting 3,000 tonnes.

Table 19: BC's 2009-2019 Imports of Fresh Raspberries, by Country and by Year

Quantity* (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019**	Total
Global	2,138.8	2,485.9	2,506.6	2,632.7	3,435.3	3,915.7	3,568.1	2,483.7	2,906.3	3,915.5	4,984.0	34,972.6
US	1,976.1	2,340.6	2,333.5	2,432.5	2,734.7	3,562.5	2,972.4	1,881.7	1,970.7	2,760.1	3,931.8	28,896.6
Mexico	126.4	145.1	172.9	200.1	700.6	352.5	590.2	598.8	933.0	1,154.0	1,052.2	6,025.8
Chile	36.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	36.7
India	0.0	0.2	0.0	0.0	0.0	0.6	5.5	3.3	2.6	1.2	0.0	13.4
Turkey	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2
Costa Rica	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
China	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1

Source: Statistics Canada

*Fresh import quantities include raspberries and loganberries. Berry quantity is rounded to the nearest tenth of a tonne. Canada imports are excluded.

**2019 data reflects imports during the months of Jan.-Nov. only.

Table 20: BC's 2009-2019 Imports of Frozen Raspberries*, by Country and by Year

Quantity **(tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019***	Total
Global	2,547.3	1,830.9	1,861.8	1,950.9	3,614.6	3,093.6	4,565.6	5,008.6	5,120.9	6,148.8	5,748.4	41,491.4
Chile	1,144.2	697.5	1,154.9	1,069.5	1,746.2	1,629.4	1,938.2	1,932.8	2,183.6	2,440.6	1,559.8	17,496.7
US	1,241.8	975.3	576.6	584.1	1,336.0	652.8	1,140.0	2,124.0	2,056.1	2,505.8	2,922.3	16,114.8
Serbia	18.9	2.3	10.7	13.6	137.6	426.1	629.9	346.4	467.5	837.7	871.3	3,762.0
China	142.4	155.0	117.7	283.8	228.1	135.3	270.8	260.9	343.0	243.8	151.9	2,332.7
Mexico	0.0	0.7	0.0	0.0	126.3	111.0	402.7	286.7	70.5	118.9	203.8	1,320.6
Poland	0.0	0.0	0.0	0.0	0.0	77.8	117.7	20.8	0.0	0.0	0.0	216.3
Bulgaria	0.0	0.0	0.0	0.0	40.4	61.2	66.1	0.0	0.0	0.0	0.0	167.7
Spain	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.4	39.4
Argentina	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.0	0.0	0.0	0.0	19.0
Turkey	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	0.1	0.2	0.0	18.3

Source: Statistics Canada

*Import data for frozen raspberries also includes frozen raspberry pulp imports.

**Berry quantity is rounded to the nearest tenth of a tonne. Canada imports are excluded.

***2019 data reflects imports during the months of Jan.-Nov. only.

BC fresh raspberry imports occur throughout the year. During 2019, excluding December, there was a significant peak in imports in August during the height of BC's own raspberry season (June-October). Throughout the entire period, all BC imports of fresh raspberries were produced in two countries: the US, which accounted for 58% of the total, and Mexico, at 42%. Both countries boast an elongated raspberry growing season (e.g., October through May in Mexico) and competitive pricing due to lower input costs (e.g., labour, land) that can make their raspberries attractive in the BC market despite the province being home to the "Raspberry Capital of Canada", Abbotsford.

Table 21: BC's 2019 Imports of Fresh Raspberries, by Country and by Month

Quantity *(tonne)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	2019 Total**
US	84.2	72.8	95.5	63.2	192.7	454.1	2,519.1	181.4	193.9	161.6	106.8	4,125.3
Mexico	184.9	201.7	261.1	264.6	277.0	141.0	39.8	38.6	50.9	101.6	159.7	1,720.9
Total	269.1	274.5	356.6	327.8	469.7	595.1	2,558.9	220.0	244.8	263.2	266.5	5,846.2

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth. Canada imports are excluded.

**2019 import data is available for Jan.-Nov. only.

BC imports frozen raspberries throughout the year. Of all the berries considered in this study, BC's frozen raspberry imports exhibited the least change in quantity imported throughout the year, as measured by the percentage change between the month with the lowest import quantity to the most. This observation is consistent with the inclusion of frozen raspberries in a variety of common food products consumed throughout the year – for instance, pies, yogurt parfaits, and fruit smoothies. Three countries supplied BC with frozen raspberries throughout 2019: the US (51.2% of the total), Chile (27.3%), and Serbia (15.3%). Mexico and China each also accounted for at least 2% of BC's frozen raspberry imports during this time period and supplied frozen raspberries during at least one month in each season.

Table 22: BC's 2019 Imports of Frozen Raspberries, by Country and by Month

Quantity *(tonne)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	2019 Total**
US	252.8	225.7	321.2	279.0	258.6	329.9	290.8	271.9	170.4	220.3	301.7	2,922.3
Chile	3.9	45.2	78.0	275.5	219.4	216.4	198.4	202.6	194.2	65.7	60.5	1,559.8
Serbia	197.5	21.0	62.2	42.1	164.0	64.1	180.9	40.3	40.9	20.5	37.9	871.4
Mexico	0.0	29.5	47.5	22.0	43.8	17.7	22.0	0.0	14.5	6.8	0.0	203.8
China	23.0	23.0	0.0	23.0	42.9	0.0	19.9	0.0	0.0	0.0	20.0	151.8
Total	477.2	344.4	508.9	641.6	728.7	628.1	712.0	514.8	420.0	313.3	420.1	5,709.1

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth. Canada imports are excluded.

**2019 import data is available for Jan.-Nov. only.

Key Competitors

BC's global competitors in the raspberry market include Russia, Mexico, Serbia, the US and Poland.

Russia

- Very little competitive information is publicly known about Russia's raspberry industry.
- What is known is that Russia is the largest producing raspberry country in the world, supplying nearly one fifth of all global raspberries in 2017.
- Russia has been a large raspberry player for many years now. It reached a production peak in the years 2005 through to 2007 producing 175,000 tonnes per annum. Since then, production has stabilised to produce approximately 140,000 tonnes of raspberries per year.
- Almost all of Russia's raspberries are consumed by the domestic market so the country's influence on the global market is very limited.

Mexico

- In 2017, Mexico was the world's second largest producer of raspberries accounting for 15% of the global supply.
- The majority of Mexican raspberry production is harvested as fresh product. However, reliable figures on the exact division of production are unavailable and thus some information must be inferred. It is known that a small volume of production is processed in Mexico, but the bulk of production is fresh and is shipped to the US market. Once in the US, a portion of this fresh produce is processed in the US while the remaining majority is destined for the fresh market. Of that that is sent to processing, it appears that the majority is probably processed at lower grades such as juice, puree and possible straight packs.
- Mexico has been a rising player in the industry as production has tripled from 2014 to 2017.
- The three main producing states are Jalisco, Baja California and Michoacan; together, these entities account for 99.8% of national production. The total area devoted to the raspberry crop in 2017 was more than 6,000 hectares.
- Most of the production is harvested in the months of March, May, August, October, November, and December.
- In 2016, the country exported fresh raspberries to 17 destinations, generating \$485 million dollars in revenue (32% more than in the previous year). Most of the purchases were made by the US, Saudi Arabia, the UK, Hong Kong, and Canada.

Serbia

- Raspberries are the most commonly grown berries in Serbia, occupying more than half of the total land planted to berries in the country.
- With production reaching 110,000 tonnes in 2017, Serbia ranked third in world raspberry production, following Russia and Mexico.
- Serbian production declined by nearly one third from 2011 to 2014. However, the industry recovered strongly to produce a record crop volume in 2016, exceeding 113,000 tonnes.
- Serbian raspberry farms are small, usually family owned, with average raspberry plots between 0.5 and 1 hectare. Raspberries are mainly grown in West Serbia (55%), central Serbia (35%) and south-west Serbia (10%).
- More than 90% of Serbian raspberry production is destined for the processing market and is kept in frozen storage which is later exported. The remainder is used in the fruit processing industry or sold on the domestic market in stores and open green markets.

United States

- Dramatic growth in raspberry production has been documented over the last 50 years, and most notably since the 1980s. Factors influencing this growth include innovations in agricultural practices and heightened consumer demand.
- In 2017, the US was the world's fourth-largest producer of raspberries, producing slightly more (2%) than Poland and slightly less (3%) than Serbia.
- Although production occurs across much of the country, most is concentrated in Washington, California and Oregon. Collectively, these states produced 78,471 tonnes in 2014.¹³
- Washington and Oregon are significant processing hubs.
- There are over 8,000 raspberry farms in the US with total acreage amounting to 9,349 hectares.
- Most raspberries produced in the US are sold domestically. The remainder are predominantly exported to Canada.

- While the raspberry industry has been very successful in recent decades, it now faces new challenges, such as invasive pests and the phase out of the soil fumigant methyl bromide.
- In recent years, the US, particularly California, has been faced with challenges associated with Mexico's rise in the industry.

Poland

- Poland is the second largest producer of raspberries in Europe and the fifth in the world. Depending on weather conditions, Poland can produce from between 105,000 tonnes up to 129,000 tonnes each year.
- Raspberries are the third most commonly grown type of berry in Poland in terms of area and annual production.
- Raspberries are mainly grown in the Lublin province, south-west Poland, where about 70% of all plantations are located.
- A large portion of the Polish crop is harvest is exported. In 2018, Poland exported 49,000 tonnes of raspberries, mainly in frozen form. Frozen raspberries were mainly exported to Germany, Belgium, the UK and France.

Chile

- The main markets for Chilean raspberries are North America (59%), Latin America (36%) and Europe (5%). From 2012 to 2016, raspberry exports from Chile experienced an annual growth rate of 24%.
- In 2017, Chile produced 19,000 tonnes of raspberries. Just over 2,000 tonnes of frozen raspberries were shipped to BC.
- In 2016, 99% of Chile's raspberry production was assigned to frozen/processed with only 1% destined for the fresh market.
- Chilean raspberries are typically available January through June.
- The most important raspberry variety in Chile is Heritage, which accounts for 79% of the planted area for raspberries in Chile.
- Chile has recently introduced new varieties of raspberries including the Santa Catalina, Santa Clara and Santa Teresa.
- Most of the raspberry harvesting is done manually (98% of the total production) in Chile since many of the raspberry farms are owned by small farmers.

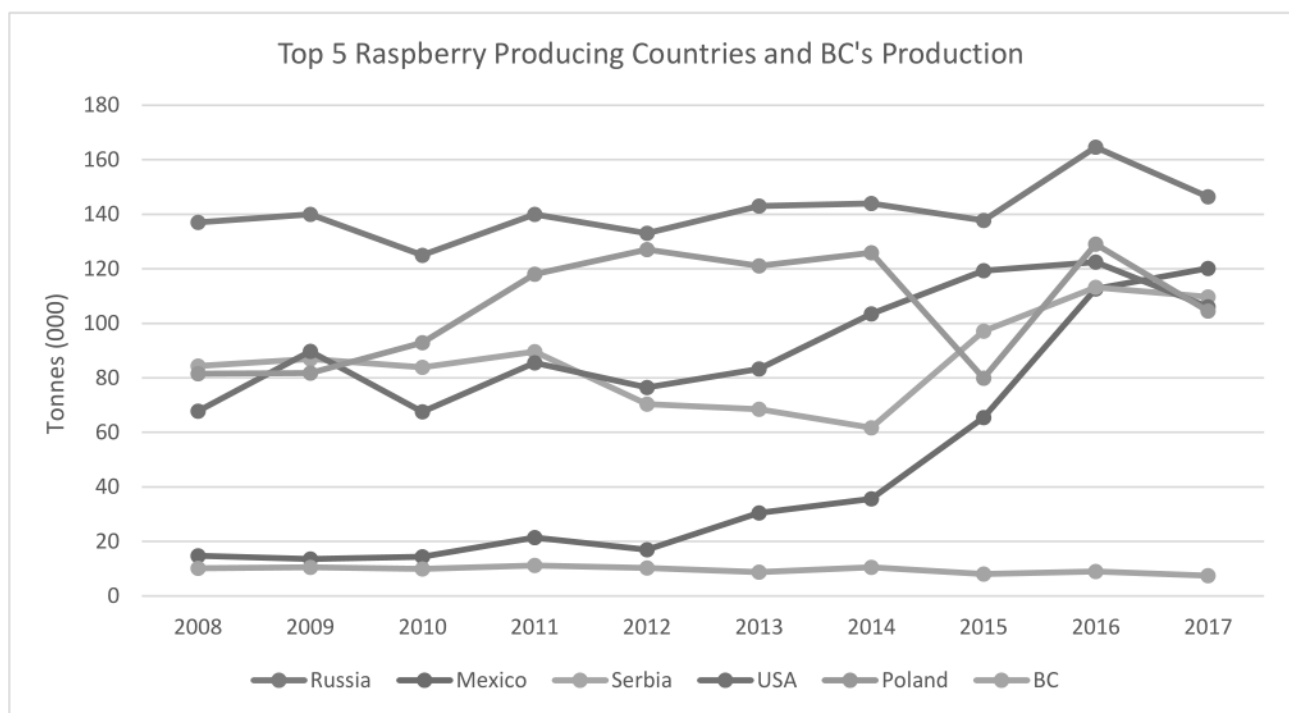
China

- The raspberry industry is distributed over a wide area of China. The main production areas are in Yunnan, Jiangsu, Jilin, Liaoning, and Qinghai.
- There are four main areas of raspberry product development in China: fresh fruit, processed fruit juice, refrigerated fruit, and jams or wines. The largest volume of production is exported frozen, and lesser amounts are used for juice and wine, and less again for fresh market sales.
- Major challenges exist with the management, quality control and harvesting processes on raspberry farms in China. These challenges are restricting China's ability to grow the high quality berries that are required by cake and pastry processors in neighbouring countries.
- As China's capacity to process frozen raspberries continues to grow, it is expected that the demand for higher-quality raspberries coming from outside the country will likely increase.

C. BENCHMARK ANALYSIS OF BC RASPBERRIES' PERFORMANCE VERSUS COMPETITORS

Figure 18 below tracks the market share of the world's five largest raspberry producing countries over the last ten years. For comparative purposes, BC's production volume has also been included. The BC raspberry industry, although the major contributor to Canadian production, is a minor player in the global marketplace accounting for just 1% of global production in 2017 (Table 23). Moreover, the small share which BC does have of global production has been decreasing in the last ten years. This can be explained by the significant rise in global production (63% increase) coupled with a decline in BC volume (26% reduction) all amounting to a less competitive provincial position. Mexico appears to be the most threatening competitor given their exponential growth in a few years and their proximity to the US market.

Figure 18: Largest Producing Raspberry Countries and BC's Production 2008-2017



Source: UN FAOSTAT and Statistic Canada

Table 23: BC's Percentage Share of World Raspberry Production by Volume 2008-2017

Quantity (tonne)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
World	516,374	523,198	553,638	522,062	599,483	569,351	588,114	628,163	676,447	841,899
BC	10,111	10,565	9,929	11,170	10,319	8,799	10,502	8,068	9,040	7,463
BC's % share	2%	2%	2%	2%	2%	2%	2%	1%	1%	1%

Source: UN FAOSTAT and Statistic Canada

D. SWOT ANALYSIS

It can be expected that global demand for raspberries will continue to grow, but most growth will likely come from processors looking for fruits to use in value-added products alongside more expensive superfruits.

A SWOT analysis was conducted to determine the key strengths, weaknesses, opportunities and threats (SWOT) facing BC's raspberry industry (Table 24). SWOT analyses are often used to inform strategic planning by outlining the conditions that affect the economic and broader development potential of a region or industry. For this study, the SWOT was used to summarize the market development potential in BC raspberry industry. Data from this SWOT has been used to develop strategies and actions to expand the sector.

For the purposes of this report, the SWOT is characterized in the following terms:

- **Strengths (Positive, Internal):** The capabilities, resources, or attributes of BC's raspberry sector that provide a competitive advantage to the industry and that can serve as an important foundation for market development.
- **Weaknesses (Negative, Internal):** The capabilities, resources, or attributes of BC's raspberry sector that need improvement and that may limit current or future market development.
- **Opportunities (Positive, External):** The circumstances that, if capitalized on, could contribute positively to market development growth in BC's raspberry sector.
- **Threats (Negative, External):** The circumstances that do or could have a negative impact on market development growth prospects of BC's raspberry sector.

The data for this analysis was gathered from over 58 key informant interviews as well as the literature and document review.

Table 24: SWOT Analysis for Raspberries

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ○ Raspberries have a number of positive attributes <ul style="list-style-type: none"> • Raspberry's many health benefits are well documented. • Raspberries are a well known berry and are an increasingly popular consumer choice. • BC berries are known to taste well and have a strong red colour which is in demand. ○ The Canadian brand and perception are strong internationally <ul style="list-style-type: none"> • Growers and processors can leverage this when selling. ○ BC has a good climate and growing conditions for berries <ul style="list-style-type: none"> • Parts of BC have a mild climate without severe winter conditions. This is especially true in the agriculturally rich Fraser Valley and Vancouver Island. • Favourable soil conditions for growing raspberries. ○ Raspberry production within BC is well located <ul style="list-style-type: none"> • The Fraser Valley is located close to the US border for trade. • BC neighbours the one of the largest consumer markets, the US. • International air and seaport access are nearby. • Located on the Pacific Rim, BC has easy access to Asian markets. • BC has plenty of irrigation water compared to other growing areas such as California. ○ The global raspberry industry is forecast to grow as demand rises <ul style="list-style-type: none"> • The associated health benefits of raspberries are expected to contribute to rising demand. ○ BC is a high productivity region <ul style="list-style-type: none"> • Despite total production falling, productivity remains high for the growing region given the number of planted acres. ○ BC currently produces raspberries for multiple market channels 	<ul style="list-style-type: none"> ○ Raspberries also have some attributes which make global production problematic <ul style="list-style-type: none"> • Raspberries are a very fragile crop which creates complications when machine harvesting and transporting. • The shelf life of raspberries is short as it is a perishable crop. • The BC raspberry season is short when compared with other regions who produce year-round. • BC varieties typically need renovating every 6-8 years. ○ There has been a low uptake rate of new production methods <ul style="list-style-type: none"> • BC is one of the last regions to adopt and invest in new production methods and technology which could extend their growing season. Examples of new methods used successfully elsewhere include substrate, tunnels, greenhouses, etc. • Regular crop rotation has also been a challenge for BC farmers as barriers are high. Barriers include a limited land base in Abbotsford, high cost of land and extensive plantings of blueberries. ○ Raspberries require a relatively intense harvest <ul style="list-style-type: none"> • Harvesting raspberries is very labour intensive. The fresh market crop needs to be hand-picked and needs to be picked frequently (every 2-3 days). Compare this to the blueberry crop which only needs to be harvested every 7-14 days. ○ Competition has intensified as the raspberry industry is now a global marketplace <ul style="list-style-type: none"> • BC farmers sell their berries on the global market, competing with growers from countries where labour is cheap. At current world prices, it's difficult for BC farmers, who face significantly higher land and labour costs, to turn a profit, even with the benefit of better technology.

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • There are a variety of products produced in BC which include fresh pack, frozen IQF, frozen bulk pack, raspberry juice, and frozen puree. ○ BC has a long history of growing raspberries <ul style="list-style-type: none"> • This has giving rise to a dedicated and qualified workforce with a wealth of production knowledge. ○ Current low interest rates are helping those in the industry during what is otherwise a challenging time ○ Favourable US exchange rate <ul style="list-style-type: none"> • The current exchange rate with the US\$ is favourable for Canadian exports. This is significant as the industry sends the majority of its crop to the US. 	<ul style="list-style-type: none"> ○ The lack of sustainable packaging is a growing concern among the consumer base ○ Low economies of scale exist and there is a lack of critical mass <ul style="list-style-type: none"> • Once the blueberry harvest reaches its peak, raspberries are no longer prioritised resulting in a lack of cold storage, IQF processing capacity and an insufficient number of cold trucks for fresh raspberries transport. • Many of the farms and other members of the value chain are small and unable to enjoy economies of scale. Their small size also makes it problematic to respond to the demands from the large consolidated retailers. The trend is to large consolidated companies with the ability to influence price and product decisions of producers. The large companies prefer to deal with single source suppliers, which puts pressure on producers and wholesalers. A lack of economies of scale reduces margins and is a disincentive to investors. ○ BC faces higher costs than competing regions, specifically land and production costs <ul style="list-style-type: none"> • Agricultural land costs in BC are some of the highest in North America. One acre of land in the Fraser Valley can be 6 times the price of an acre of land across the border in Washington. • Production input costs, such as fertilizer, pesticides and freezer space, are higher in BC than competing regions. • The cost of bees and access to them for pollination is a concern. The charger for a hive in BC is \$125 compared to \$25 in the US. ○ Retailer practices don't always promote local <ul style="list-style-type: none"> • Some large retailers buy based on price, as opposed to the growing location of the raspberries • The year-round supply from large multinational companies can hurt local efforts. ○ Access to and the cost of labour is prohibitive <ul style="list-style-type: none"> • There is a shortage of local labour during the harvest especially for hand picking.

STRENGTHS	WEAKNESSES
	<ul style="list-style-type: none"> • The industry faces high costs and an administrative burden of importing foreign labour annually. • The aging farming population has no obvious replacements as younger generations show little interest in farming. • Labour expenses are exacerbated by the rising minimum wage, changes to piece rate work and MSP charges. <ul style="list-style-type: none"> ○ Government regulations, policies and processes are many and costly <ul style="list-style-type: none"> • Government policies are reportedly hurting berry growers and processors. Policies such as MSP premiums, increase in the minimum wage, elimination of piece rate options, carbon taxes and the requirement to register water wells/usage have been mentioned. ○ ALR restrictions <ul style="list-style-type: none"> • ALC regulations concerning on-farm processing puts a size limit for processing operations on ALR land. This encourages farmers to build smaller individual freezing units where a larger co-operative unit may be more efficient. ○ Price volatility is common within the industry <ul style="list-style-type: none"> • As raspberries are traded as a commodity product, the price regularly fluctuates with buyers/processors having limited visibility on pricing.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ○ Replanting can extend the growing season and produce higher yields <ul style="list-style-type: none"> • This is particularly true as a large volume of the BC crop is dominated by two varieties. The ability to produce outside of the current harvest window with other varieties offers the potential of higher prices. • More generally, renovating with different varieties that can extend the season and produce greater yields offers potential. 	<ul style="list-style-type: none"> ○ The rise and strength of vertically integrated companies poses a challenge for small, local producers <ul style="list-style-type: none"> • Large multinational companies can supply consistent product year-round and retailers get used to this, as do consumers. ○ Climate change will bring unpredictable and more extreme weather patterns to the province

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Varieties that are firmer, that can be effectively machine harvested and that are suited to IQF should be prioritised. ○ New production methods have the potential to extend the growing season <ul style="list-style-type: none"> • Substrate production and the use of tunnels and glasshouses have become important competitive growing systems in new and existing growing regions. BC has been a late adopter of these new systems. ○ Exhaust the domestic and North American market <ul style="list-style-type: none"> • The US and Canada import raspberries during their production months. Efforts should be made to match domestic consumption with domestic production. • Additional opportunities with fast food and serving public institutions exist. • Like Buy BC, Quebec and Ontario have successful programs promoting local foods and some ideas could be learned from these programs. • Suggestion to shutout large vertically integrated US companies during BC's production months. ○ There is potential for a high-end IQF product in the market <ul style="list-style-type: none"> • Opportunities exist for the provision of IQF raspberries. However, sufficient sales volume would be a pre-requisite as establishing an IQF operation would be an expensive endeavour. ○ Well-funded breeding programs and associated research offer long-term opportunities <ul style="list-style-type: none"> • Among other factors, new varieties are needed to extend the growing season and increase yields. Varieties that can be hand and machine picked will be in high demand. ○ Increase demand by through greater promotion of raspberries 	<ul style="list-style-type: none"> • Seasonal variability in weather will put pressure nearly all aspects of the industry from growing to harvesting to breeding. ○ Further changes to government regulations, policies and processes are areas of concern for the industry <ul style="list-style-type: none"> • Regulatory uncertainty and related complications and costs are constant considerations which are beyond the control of growers and processors. ○ Securing sufficient and reliable labour is an annual concern for the industry <ul style="list-style-type: none"> • Accessing labour is increasingly difficult with no guarantee that circumstances will improve in the future. Without the current Temporary Foreign Worker Program, the industry would cease to exist, highlighting how finely balanced the supply of labour is for this industry. ○ Unstable health and viability of the honeybee industry is problematic <ul style="list-style-type: none"> • Pollination is an important aspect of raspberry production. Insecticide selection to avoid harming pollinators and the control of natural insect predators is critical in growing raspberries. ○ As costs are lower, Washington State is attracting a number of larger BC growers <ul style="list-style-type: none"> • This has the potential for vast volumes of production that would otherwise have been grown in BC to migrate south of the border. ○ Other berries and other fruits produce in the market at the same time which heightens competition <ul style="list-style-type: none"> • Global availability of fruit has led to a variety of produce selections being available year-round • Raspberries must compete with other superfruits. ○ The increase of production from other countries is a serious threat to prices and markets for BC raspberries

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> Relative to blueberries, raspberries have been under-promoted. Therefore, opportunities exist to increase promotion, particularly the health messaging of raspberries, to drive consumption. Increase market coordination among the various industry groups. Focus on differentiating BC berries, the BC season and buying local through marketing and labelling schemes. Increase consumer experiences with BC raspberries to increase demand. <ul style="list-style-type: none"> ○ Currently, BC exports can benefit from a strong US dollar for international sales <ul style="list-style-type: none"> This is a time limited opportunity while the US dollar is strong for Canadian exporters. There is potential to capitalise on other markets where the US dollar is currently favourable. 	<ul style="list-style-type: none"> Many growing regions will continue to increase their supply which will negatively affect the price. Price instability and international competition could seriously damage the BC industry. Companies are able and beginning to supply berries 12 months of the year while many growers around the world extend their growing seasons. <ul style="list-style-type: none"> ○ The threat of new competitors being added to an already crowded market <ul style="list-style-type: none"> The forecasted increase in global supply will come not only from currently producing countries but also new countries entering the market. ○ BC faces a generational transfer issues (viability, financing) <ul style="list-style-type: none"> With an aging labour pool and with little indication that the younger age group want to succeed their parents, the future of the industry is at risk.

E. KEY OPPORTUNITIES AND ACTION PLAN

1. Maximize Domestic Market Sales with an Emphasis on Retail

In 2019 (Jan-Nov), BC imported 5,846 tonnes of fresh and 5,748 tonnes of frozen raspberries. Moreover, 62% of the fresh and 51%^{vi} of the frozen raspberries were shipped into the province during BC's main production window (June-Sept). The two countries that shipped fresh raspberries into BC in 2019 were the US and Mexico while the US and Chile accounted for most of the frozen raspberries imported during the summer months.

Canada echoes similar trade patterns, importing 38,896 tonnes of fresh produce and 12,102 tonnes of frozen raspberries in 2019 (Jan-Nov). This import data suggests there is significant domestic consumption, particularly in the summer months, which is not currently met by the local industry. The consumption gap represents an opportunity for local growers and processors to expand domestic sales channels. As BC accounts for nearly 80% of Canadian raspberry production, there is a significant opportunity for BC to position itself as the main supplying region for Western Canada if it can provide a consistent supply and with sufficient quantity. The shortage and cost of labour for hand picking to supply the fresh market will affect the uptake of this opportunity.

Producers and government alike should capitalise on the strong business case for maximising sales to the domestic market as buying local can strengthen regional economies, support family farms, provide delicious, "fresh-from-the-field" foods for consumers, preserve the local landscape, and foster a sense of community. Farmers' markets, community supported agriculture, local food within grocery stores and food co-ops are among some of successful initiatives of Canada. Other similar initiatives include restaurant and chef initiatives, culinary tourism and regional cuisine initiatives, food security or policy groups, food box programs (door to door delivery) and regional value chains. However, there are a number of barriers to the development of localized food systems. These include lack of financing, a limited growing season and a lack of local processing infrastructure.

Potential strategies to develop a local food system include promotional programs focused on local consumers, institutional purchasing programs that create direct links between local growers and local institutions and low interest small loan programs for young farmers. Establishing a cost share program may also help farmers transition to local food production. Other important steps include increased processing capacity, increased market access, improved links between local producers and area distributors, increased private sector involvement and improved agriculture education.

Governments can play a very important role in the development of local food systems by providing system-wide support for food grown using sustainable methods and appropriate technology for small-scale farms, improving labeling laws and supporting research and extension programs to disseminate information and research findings.

The following elements have been identified as requirements for those looking to maximise sales to the domestic market:

- **Fruit quality:** Canadians have come to expect and know that the quality of raspberries from BC is high. Producers must continue to at least match and strive to exceed this expectation.

^{vi} Percentages are likely to be fractionally less than the figures quoted as the numbers referenced are based on 11 months of consumption, excluding December.

- **Berry traits:** Primary market research indicates that BC raspberries must be firmer. This can be tricky as raspberries are a particularly fragile fruit, but firmness is a very important trait especially when it comes to transporting raspberries. The shelf life of raspberries is another important quality. Raspberries are known to be extremely perishable and thus have a short shelf life. If producers have expectations to sell raspberries beyond their immediate region, they will need to prioritise varieties that produce berries with a longer shelf life. This endeavour cannot comprise the taste profile. BC raspberries are well known for their flavour profile and this has become a key purchasing point for customers and consumers.
- **Seasonality:** Producers can seek to maximise domestic market sales year-round, but particular opportunity exists to sell fresh produce during the summer months (June-Sept) when BC imports more than 10,000 tonnes of fresh and frozen raspberries.
- **Packaging:** The ubiquitous plastic clam shell packaging is coming under increasing scrutiny from consumers as environmental considerations are rising in importance. Producers also face an apparent conflict as some consumers would prefer no packaging at all, but simultaneously they also do not want other handling their fruit in the supermarket. Striking this balance is important. Consumers also want to be able to see their fruit which is one reason why the transparent clam shell has been successful. Any packaging must also hold up to transportation expectations and protect the raspberry. Cardboard packaging has been trialed by some but to no avail as it traps heat and retains moisture. Some are also experimenting with a bamboo based packaging. A solution to the long accepted industry standard, the clam shell, is still evolving.
- **Consistency of supply, quality and price:** In order to maximise sales to the domestic market, producers will need to focus on providing a consistent supply of high quality raspberries at a stable price. This is inherently difficult to achieve as there are many factors beyond the control of a local producer such as the weather. Those that can supply their buyers for many months will likely have an advantage.

Actions to maximize sales in the domestic market

In order to maximize sales in the domestic market, activities at the industry level should complement the market development endeavours of growers and processors. Industry activity should drive increased consumption while grower/processors should focus on sales development capitalising on the increased demand for consumption driven by industry (Figure 19).

Figure 19: Domestic Market Opportunities for the BC Raspberry Industry



Industry level activity to increase consumption

1. The industry as a whole should jointly be responsible for the industry wide promotion of raspberries. The industry should design and implement a professional, multi-pronged promotional campaign proportional to the volume of fresh berries available that would run when BC fresh berries were in the market. The campaign should also highlight the health benefits of raspberries and use empirical research and evidence to support this message. Any messaging should emphasize Buy BC and extoll the flavour of BC raspberries. And while the promotion would be designed with local berries in mind unfortunately there is a chance it will also benefit imported raspberries. As such, promotional messaging will have to be very targeted in order to keep costs down and to avoid promoting imports inadvertently.
2. To increase consumption by individual consumers, the following strategies should be considered: online advertising; the use of social media influencers; turning consumers into promoters; and the continuous promotion of raspberries, with particular emphasis on health benefits, in various media channels. The aim of the messaging should be to increase the use of raspberries on menus and in products, keep raspberries in the media and continue the health halo in the media.
3. For their foodservice audience, the strategies recommended include inspiring chefs to cook with raspberries through extensive outreach programs, engaging the skills and online platforms of celebrity status chefs, editorial partnerships with cookbook authors, driving awareness of the berry's versatility on menus in schools, hospitals, restaurants and commercial canteens and attend local foodservice events to promote the use of raspberries.
4. For the health professional audience, some suggested strategies include establishing partnerships with health professionals who believe in the value of raspberries and who are willing to circulate information on the health benefits of raspberries with their audiences while also highlighting the positive health implication of raspberries to consumers.
5. For the ingredient audience, strategies include hosting a raspberry event to encourage the uptake of raspberries into recipes, recipe contests, recipe design, recipe sharing, trade shows, blogs, vlogs media coverage, and aiding ingredient companies where possible.
6. The industry association could apply for funding from the Investment Agriculture Foundation and other federal and provincial government programs to develop this material.

Growers/processors activity to drive domestic sales

Retail

1. Consumer preferences for local products is an opportunity for BC raspberries. BC raspberry producers should emphasis and differentiate their product offering on the basis of a superior taste profile and on their local production. To maximise these qualities, BC raspberry producers should target retail outlets and chains that also prioritise great taste and locally produced food.
2. When approaching retailers, producers should be quick to highlight the alignment between their differentiating product qualities and the priorities of the retail store. Where necessary, producers should gather supporting research on the importance of locally produced food to BC consumers and evidence for the superior taste profile of BC raspberries. This could be in the form of market statistics, customer testimonials, taste tests and through the provision of product samples. Additionally, BC producers may consider highlighting the carbon footprint associated with imports and the increased freshness provided by locally produced berries, assuming these are important factors for the retailer.
3. To begin, BC raspberry producers should consider talking to independent specialty food stores or local store managers of a food chain and selling directly to the store. Smaller, more regional stores may be easier to initially penetrate as might not have centralized purchasing in place.

This approach also allows familiarization of working with a retailer and getting product into local stores.

4. Raspberry producers should ensure they identify the right buyer for their product. Retail buyers typically have key responsibilities – specific product lines for which they are responsible. For example, if producers are interested in selling fresh raspberries they will likely need to contact the fresh produce manager.
5. Once established, raspberry producers might consider approaching the larger national and international retail chains. With a proven track record of supply and quality, penetrating the larger stores may be somewhat more straightforward. This progression from targeting small to large retailer allows producers to gain experience, learn how to play the game, and build production and delivery capacities.
6. Another key method to penetrate the retail market is to drive demand from the end consumer. If there is a demand driven business case for retailers to stock local produce, they are unlikely to need significant persuasion. As such, producers can also focus resources on driving demand from the end consumer. This can include activities such as online advertising, the use of social media influencers, selling at farmers markets, festivals, summer events and at culinary and agri-tourism initiatives.
7. Irrespective of how producers choose to enter the retail space, once their product is on the shelf, producers will need to provide a consistent supply of their product and assure its quality. BC raspberry producers should work to build and establish a reputation for providing a superior product and service in the retail market.
8. Local retailers that could be considered include but are not limited to Stongs, Choices Market, Nesters Market, Meinhardt Fine Foods, Quality Foods, Kin's Farm Market, Fairway Market, Country Grocer and Red Barn.
9. Obstacles to growing the retail market include the ability to reliably supply all the stores in a retail chain and to consistently provide a quality berry.
10. The key to successfully supplying the retail grocery industry in season is reliable supply, firm berries and good shelf life. However, consumers that buy raspberries year-round become accustomed to regular labels and often do not read the origin of the product. This brand loyalty may be difficult to overturn.
11. The following guide, prepared by the BC Ministry of Agriculture, outlines information on [how to sell to retailers](#) and should be distributed to local growers/processors while Appendix 2 provides a list of the major food retailers in BC.
12. BC producers and processors can also avail of the [Buy BC](#) program which seeks to help local producers and processors market their products by re-establishing a strong, recognizable Buy BC brand and supporting industry-led Buy BC marketing activities. The Buy BC program offers [cost-shared funding](#) to applicants to undertake sector/product specific marketing and promotional activities to increase consumer demand and sales of their BC berries within the province. The program can also link producers and processors to a Buy BC retail partner and can offer the opportunity to participate in promotional events.

Case study: The Quebec Strawberry and Raspberry Producers Association

- Quebec has a very strong buy local program and loyalty to it is high when it comes to the sale of strawberries and raspberries. Among other factors, contributing to its strength is the organisation of a special group known as the 'Coordination Chamber' (translated from French). The chamber is comprised of strawberry and raspberry growers and the main distributors and retailers. The group meets between 3-4 times a year to discuss the production calendar, distribution and format. Price is deliberately not reviewed at the meetings, but the quarterly gathering allows growers to establish relationships and foundations for future sales. Those close

to the chamber attribute a significant portion of the buy local program success for these two berries to the proximity of growers, distributors and retailers and the subtle accountability they have to each other. Outside of the chamber, local Québécois also drive demand for local produce as Quebec is well known for its support for provincial produce. And while BC does not currently have as high a level of support for local compared to Quebec meaning exact replication of this Chamber might be initially challenging or require some tweaking, it is likely that there are some learnings for BC when looking at Quebec.

Ingredients

1. There are many BC companies incorporating fresh and/or frozen raspberries in their products including bakeries, confectionaries, beverage manufacturers, wineries and those making pie fillings, jams, dairy products, sauces, condiments and pet food. All of the companies in BC and else where that use raspberries as ingredients cannot be listed here. An example, however, is Sandel Foods, the only company in BC manufacturing fillings, syrups, glazes and sauces. Besides price, consistency of supply and quality will be the determinants in securing the ingredient market from imports.

On-farm selling

1. Growers and processors can further maximize domestic sales through on-farm selling. On-farm activities include roadside stands, farm markets/shops, pick-your-own operations and community-supported agriculture. This would require producers to allocate more of their production to the fresh market.
2. BC companies should consider if any of the on-farm selling activities aligns to their business model and if they can capitalise on further sales channels.
3. When engaging in on-farm selling, it is important for companies to familiarise themselves with land use regulation, food safety, labelling, insurance, signage requirements and taxation among other things.
4. If on-farm selling isn't feasible, perhaps off-farm activities such as being a vendor at one or several farmers' markets or selling through online sales and direct delivery might be more suitable.
5. For companies looking to establish an Agri-tourism operation, the following guide, prepared by the BC Ministry of Agriculture, outlines key points to consider.

2. High-end Individually Quick Frozen (IQF) Production

Primary market research indicates that there is a market opportunity for well produced, high-end individually quick frozen (IQF) raspberries. Those interested in this opportunity would need to produce high quality fruit with varieties that were suitable for freezing and that wouldn't crumble in the IQF tunnel which isn't uncommon among raspberry varieties. High-end IQF raspberries are in demand year-round but are particularly popular when fresh raspberries are out of season. Due to the short shelf life of fresh raspberries and their challenges with national and international transportation, IQF raspberries are still required during the summer months. IQF raspberries yield a better return than bulk frozen, juice or puree.

The following elements have been identified as requirements for those looking to enter the IQF market or expand their existing IQF operations:

- Fruit quality: The quality of any IQF raspberry must be high as there are expectations that the defrosted berry would reasonably resemble a fresh berry. Furthermore, this specific opportunity

has identified a market for high-end IQF raspberries from BC. Thus, the quality of raspberries required to capitalise on this growth area must be especially high quality.

- Berry traits: Raspberries selected for IQF must be firm to ensure the berry does not shatter in the IQF tunnel. Due to the fragile nature of raspberries, this can be challenging to achieve. Further, the current varieties that do withstand freezing better, can be somewhat less disease resistant. Ideally, fruit traits would not advance at the expense of other traits. A firmer raspberry also results in less damage when harvested by machine. An absence of defects is important as the appearance of the fruit will be held to high standards. The water content and cohesion impact the IQF suitability of raspberries. Size is important as it contributes to yield for growers.

Actions to implement new production methods

1. Companies that do not currently have an IQF tunnel but are interested in the benefits of this opportunity must first establish if investing in the required infrastructure is economically worth it. To do this, companies should conduct a feasibility study. Feasibility studies are used to discern the pros and cons of undertaking a project before a significant investment of time and money is made. Some of the elements to consider during the feasibility study include:
 - Product description (type of product (tunnel, substrate))
 - Economic feasibility (cost/benefit analysis)
 - Identification of the specific market (prevailing market, consumer demand, future market growth, competitors, potential customers, price point, projection of sales)
 - Technical capability (site analysis, existing technology, transportation, manpower)
 - Organizational feasibility (expansion or contraction, succession planning)
 - Financial projections (cost of equipment, working capital, access to finance, (banks, investors, venture capitalist), ROI, etc.)
2. Upon completion of the feasibility study, companies will need to make a 'go/no-go' decision based on the analysis and information. The investment analysis should account for the price changes, knowing that prices might not always be as high as they were or are right now. Individuals must judge whether the commitment is worth the time, effort and money and whether it is aligned with the organization's strategic goals and long-term aspirations.
3. If the investment decision is positive companies should develop a business plan for the new investment and implement it.
4. Those that already have an IQF tunnel who are interested in this opportunity might need to invest in a second tunnel if blueberries occupy most of their tunnel. Alternatively, they will need to prioritise raspberries in their tunnel during the blueberries harvest.
5. There are a number of obstacles when it comes to capitalising on the IQF market. Firstly, for those without an IQF tunnel, it is very expensive to install and invest the equipment. Secondly, there is insatiable demand for IQF and freezer space in the province once the blueberries harvest reaches its peak in July and August. This typically results in raspberries not being prioritised for IQF production. For those interested in capitalising on the opportunity for IQF raspberries, they would have to commit to doing so even in the face of competition from the blueberry sector. Finally, selecting the right varieties is critical.

3. Adoption of Progressive Growing and Production Methods

Protected cropping, substrate and hydroponic techniques should be incorporated into the BC growing landscape with the view to enhance the cultivation and production of raspberry crops to

capitalise on increasing global demand and to provide a financially viable, sustainable and profitable operation for commercial berry farmers.

While these progressive techniques have taken off in other parts of the world, most BC farmers have continued to employ traditional methods. However, the globalisation of the market is requiring established growing regions such as BC to professionalize as the crop moves from its niche position to that of a commodity in demand year-round. Advances in growing systems offer many benefits that could help offset some of the challenges faced by BC growers. Impediments to success include significant capital costs and the scarcity of labour for hand picking.

Much of the world's raspberry supply is now produced in simple controlled environment structures such as high tunnels. High tunnels protect the crops from the vagaries of the outdoor weather and the very fragile fruits are also protected from moisture (rain, dew, fog) which greatly extends their shelf life after harvest. In addition, high tunnels reduce the incidence of crop diseases and reduce wind damage. Yields can be much higher in tunnels compared to open field production, in part because the growing season is greatly extended by high tunnels and growth is enhanced under reduced wind speeds and warmer temperatures.

Actions to implement new production methods

1. Companies that are interested in the benefits of new production methods must first establish if investing in the required infrastructure is economically worth it.

To do this, companies should conduct a feasibility study. Feasibility studies are used to discern the pros and cons of undertaking a project before a significant invest of time and money is made. Some of the elements to consider during the feasibility study include:

- Product description (type of product (tunnel, substrate))
 - Economic feasibility (cost/benefit analysis)
 - Identification of the specific market (prevailing market, consumer demand, future market growth, competitors, potential customers, price point, projection of sales)
 - Technical capability (site analysis, existing technology, transportation, manpower)
 - Organizational feasibility (expansion or contraction, succession planning)
 - Financial projections (cost of equipment, working capital, access to finance, (banks, investors, venture capitalist), ROI, etc.)
2. Upon completion of the feasibility study, companies will need to make a 'go/no-go' decision based on the analysis and information. The investment analysis should account for the price changes, knowing that prices might not always be as high as they were or are right now. Individuals must judge whether the commitment is worth the time, effort and money and whether it is aligned with the organization's strategic goals and long-term aspirations. BC farmers must continuously track whether the demand for raspberries will absorb the increasing global supply.
 3. If the investment decision is positive companies should develop a business plan for the new investment and implement it. The major obstacle to adopting new methodologies is the cost associated with the infrastructure, since "the better the structure, the more investment required".
 4. As these new production techniques would largely be implemented with the view to increase fresh market production, access to labour needs to be considered. Among other factors, the opportunity to expand the sale of fresh raspberries is limited by the availability of labour for hand picking. As such, BC should prioritise developing or buying varieties that could successfully

machine picked for the fresh market. Until such a time, there may be a unique opportunity to avail of seasonal workers from Eastern Europe who may no longer have access to previous reliable agricultural work in the UK.

Given the recent departure of the UK from the EU, free movement of people has come to an end which is forecast to have significant implications for seasonal agricultural workers. The UK has typically attracted between 60-70,000 seasonal workers per year to help with the agricultural harvest from April to November but under recent immigration reforms by the UK government only 10,000 places are due to be allocated for seasonal workers in the years to come. Thus, there is a very strong possibility that thousands of Eastern European workers will no longer have access to seasonal work in the UK. For BC growers, this represents an opportunity to source much needed additional labour. While air travel to BC is more expensive from Eastern Europe compared to Mexico and BC growers would invariably need to compete with other European countries such as Germany and Spain in order to attract labour, this cohort of Europeans offer an opportunity to access an already skilled group of workers.

4. Replanting New Varieties Offers Opportunities to Growers

BC has been losing raspberry acreage since the 1980's. The general consensus among key informants is that raspberry acreage will continue to decline until the industry has been reduced to only small-scale fresh market or direct farm market operations. It is assumed that once the raspberry acreage is gone, it will not return. Thus, in the interest of maintaining BC and the majority of Canadian raspberry acreage and production, the replanting of new varieties is required.

The BC raspberry industry is dominated by two varieties. Many of the plants that are currently in the ground are very old and haven't been replaced in some time. Replanting with new varieties could extend the season when prices are higher. Replanting with higher yielding varieties that can withstand machine harvesting would also benefit the industry. New varieties should also have good freezing traits.

Actions to capitalise on replanting

1. Growers should identify varieties that have the best characteristics including season lengthening, machine harvestable, higher yielding, firmer and a longer shelf life. As there is no one variety that meets every criterion, growers will need to prioritise varieties that align to their future growth and market plans.
2. While growing (and thus selecting varieties) for the fresh market typically yields higher prices, it is not without obstacles which include, among other things, labour availability for hand picking and its associated costs and shelf life and transportation.
3. IQF raspberries demand a higher market price than bulk freezing. Choosing varieties for the IQF market requires a variety that can withstand machine harvest, has strong freezing traits and high yields. If companies choose to produce more IQF product it will have to address the conflict of the raspberry crop peaking at the same time as blueberries leading to a lack of IQF capacity. To realize the potential of IQF, raspberries will require additional freezing capacity, which is an individual investment decision.
4. Primary market research indicates that the cost of replanting an acre of raspberries costs approximately \$10-11,000. This does not include the loss of income while the land is returning to yield. With this in mind, financial assistance for replanting should be explored.
5. Growers should gradually replant their raspberry acreage. This will reduce the effects of income loss.

5. A Well-Funded Breeding Program Offers Long-Term Opportunities

In recent years, the global industry has witnessed a shift in plant breeding activity from the public to the private sector as a result of intellectual property protection, globalisation and pressure on public budgets. Some of the very best genetics of the different berry varieties around the world are controlled by a few very strong and powerful companies which are shaping the future of the industry. However, developing new cultivars will be critical to the long-term success of the provincial industry. As the global raspberry market changes, consumer tastes evolve, growing seasons lengthen and machine harvest is increasingly prioritised, creating new varieties to meet these ever-moving goal posts will be required. Thus, to remain competitive, the BC industry must continue to invest in breeding programs. With the move to proprietary and controlled genetics in fresh raspberries accelerating, driven by an industry-wide shift from a supply focus to a quality and value proposition focus and royalties typically attached to proprietary varieties, publicly funded programs are ever more important. A successful cultivar must be appealing to consumers' taste buds, economical to produce commercially with a high yield, harvestable by machine and, ideally, widely adapted to environmental stresses and tolerant of pests. While a breeding program offers limited immediate opportunities, as it can take at least 10 years to bring a variety to market, it is imperative that breeding programs continue to receive investment as the future of the industry relies on it.

Action for breeding opportunities

1. Government, industry and the growing community should continue to fund and prioritise breeding programs to develop new varieties that can extend the growing season, improve yields and better withstand machine harvesting. Opportunities to collaborate or partner with academia and/or private investors should be explored.
2. There is a danger that the funding community grow tired of investing before the benefits of the investment come to fruition. Government, industry and the growing community must avoid this pitfall and remain committed to the long-term funding of breeding programs.

IV. STRAWBERRIES

A. INDUSTRY PROFILE

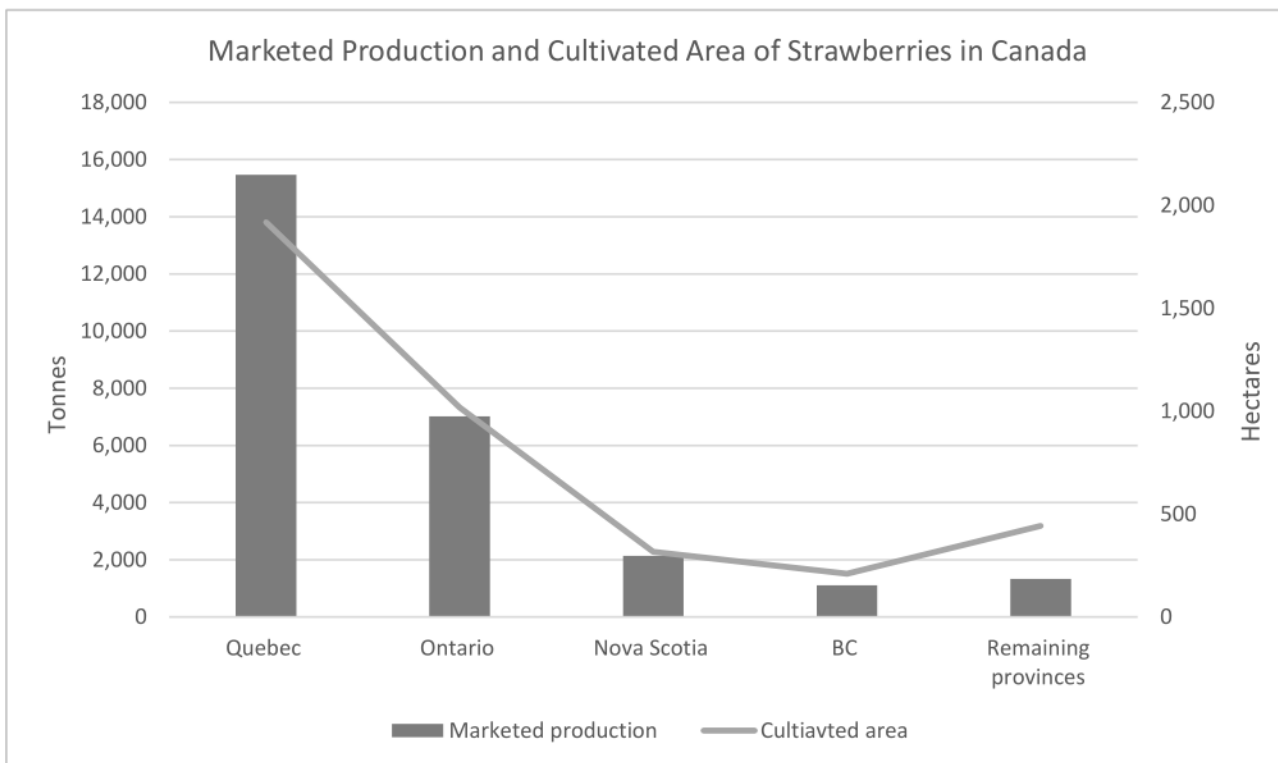
Overview of Current Production in British Columbia

Strawberries have been grown in North America for fruit production since about 1835. Today, strawberries are one of the most popular fruits in the world, and per capita consumption is increasing annually.

While strawberries are produced by every Canadian province, Quebec and Ontario account for the greatest share of both marketed production and cultivated hectares. Quebec is the largest region, producing more than 15,000 tonnes in 2018 on 1,918 hectares. This is nearly twice the volume as the next largest producing province, Ontario. Other regions with significant production include Nova Scotia, with 8% of total national production and BC with 4%. The remaining provinces, collectively, account for the balance of production and acreage, approximately 5% and 11%, respectively (Figure 20).

Within BC, strawberries can be grown from the Peace River area to southern BC. Most commercial growers are located in the Fraser Valley and Vancouver Island but there are also centres of commercial production in Salmon Arm and North Okanagan. There are estimated to be approximately 48 strawberry growers in BC. Few, if any, of these growers exclusively grow strawberries. Typically, strawberry farmers have evolved to diversify their crop portfolio.

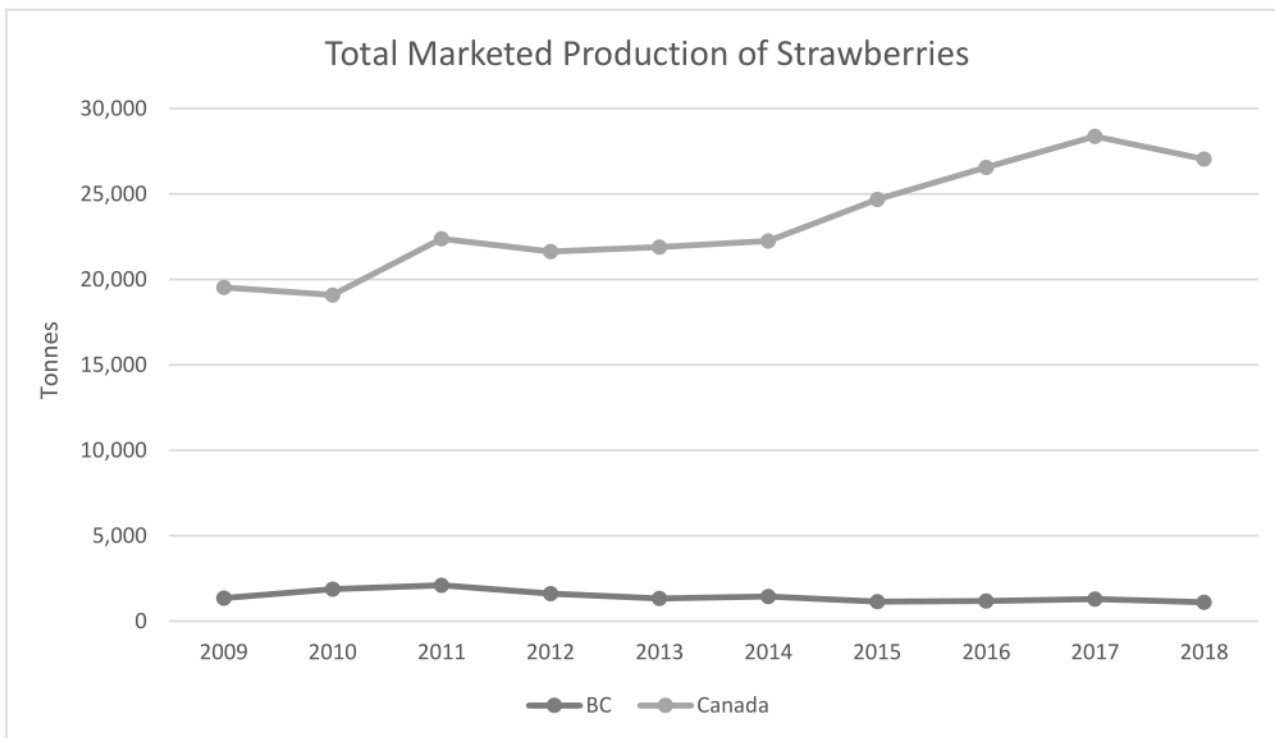
Figure 20: Distribution of Total Marketed Production and Cultivated Area of Strawberries In Canada 2018



Source: Statistics Canada. Table 32-10-0364-01. Estimates, production and farm gate value of fresh and processed fruits.

The total marketed production of Canadian strawberries has increased by 39% from 2009. However, BC production in 2018 was down 18% when compared to 2009 figures. The local industry has been contracting for many years now since California and Mexico entered the market and subsequently became dominant players. At its peak, BC produced approximately 10,000 tonnes of strawberries annually. Production in 2018 was about 1,100 tonnes (Figure 21).

Figure 21: Total Marketed Production of Strawberries in BC and Canada 2009-2018

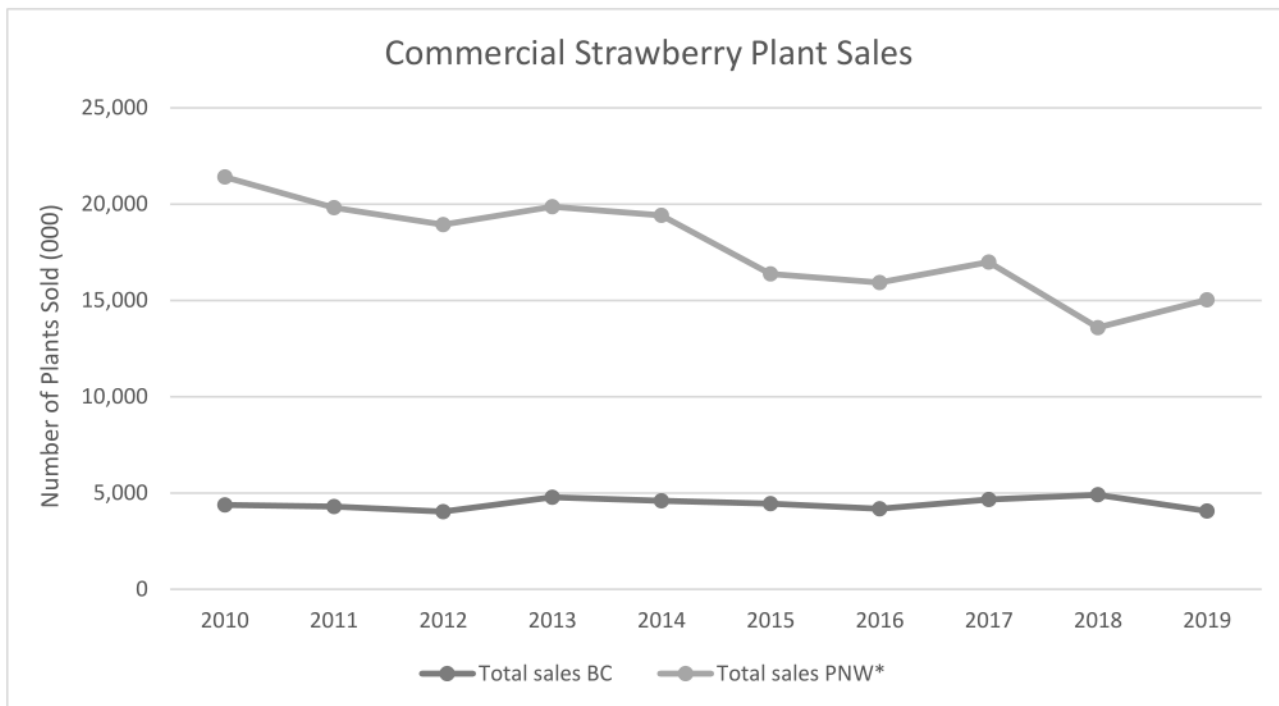


Source: Statistics Canada. Table 32-10-0364-01. Estimates, production and farm gate value of fresh and processed fruits.

Figure 22 below examines commercial plant sales of strawberries for BC and for the Pacific Northwest. Strawberry plant sales for the region are down by roughly one quarter when compared to 2009. BC sales haven't dropped quite as much but are down 7% in the same time frame. With fewer plants sales, it is reasonable to assume production will decline unless plant sales are for a significantly higher yielding variety. This could partially explain the case in BC as more day neutral varieties have been planted in recent years which are reported to provide a higher yield than their June-bearing counterparts which historically were the most frequently planted variety in BC.

It is important to note, however, that while total strawberry plant sales in BC have declined somewhat day neutral varieties comprise a larger portion of total plant sales in 2019 when compared to 2009. In 2019, day neutral varieties accounted for 46% of total strawberry plant sales. This has increased from 37% since 2009. Day neutral varieties are planted at twice the density of June-bearing varieties, which helps partially explain why acreage has decreased.

Figure 22: Commercial Strawberry Plant Sales by Number of Plants Sold in BC and in the Pacific Northwest 2010-2019^{vii}



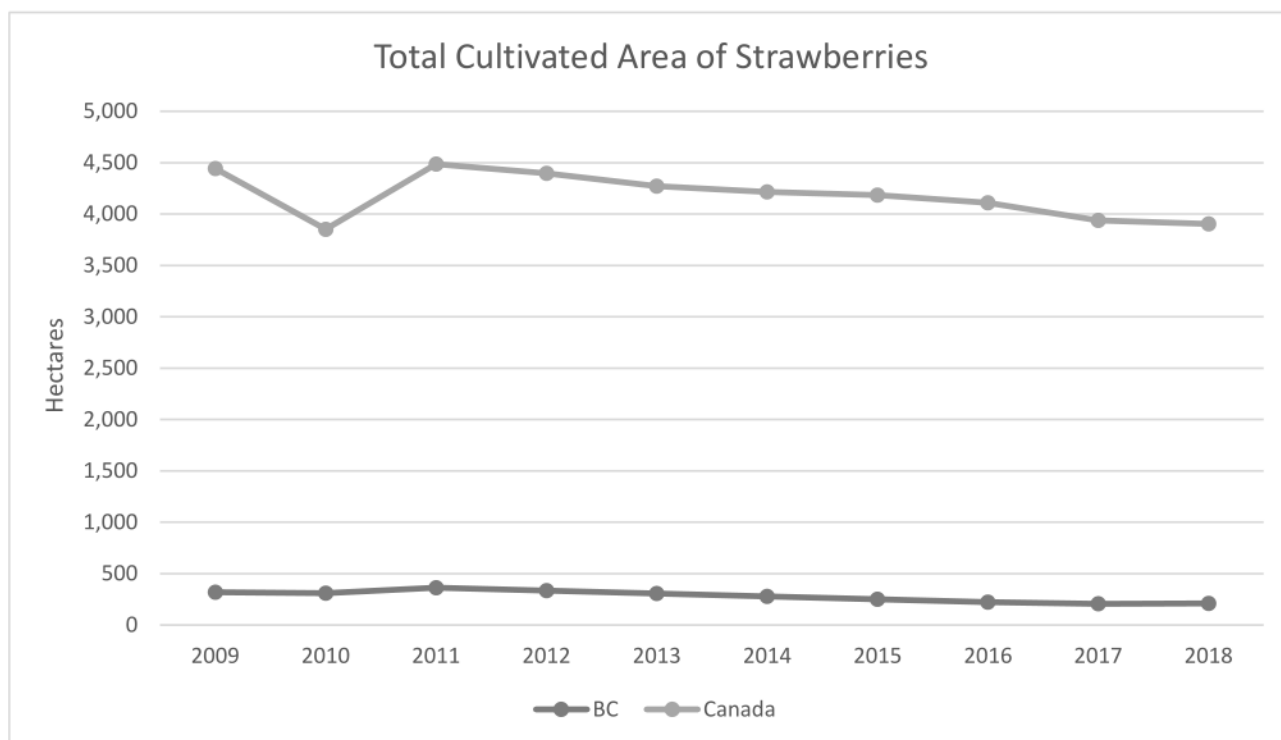
Source: Washington State University, Department of Horticulture.

*PNW: Pacific North West (includes sales for Oregon, Washington and BC)

Despite rising production, national acreage has been decreasing for the last number of years (Figure 23). This corresponds to the rise in the day neutral varieties which have been known to produce a higher yield than their June-bearing counterparts. Provincially, strawberry acreage has also been contracting because the land dedicated to strawberries has dropped by approximately one third since 2011.

^{vii} Totals include reported plant sales from Lassen Canyon Nursery, Norcal Nursery, North American Plants, Northwest Plant Co, Nourse Farms and Spooner Farms.

Figure 23: Total Cultivated Area of Strawberries in BC and Canada 2009-2018



Source: Statistics Canada. Table 32-10-0364-01. Estimates, production and farm gate value of fresh and processed fruits.

As shown in Table 25 below, the average yield of BC strawberry crops has fluctuated from a low of 5,701 kilograms per hectare in 2013 to a peak of 6,910 kilograms per hectare in 2017. The average farm gate value per hectare has increased from \$21,467 in 2013 to \$29,209 in 2018.

Table 25: Summary of BC's Strawberry Farm Gate Value, Production, Acreage and Yields 2013-2018

Variable	2013	2014	2015	2016	2017	2018	Average 2013-2017	2018 vs. 2017 % change	2018 vs. average % change
Farm gate value (\$'000)	5,028	5,595	5,295	5,572	6,397	5,579	5,578	-12.8%	0.02%
Cultivated area (hectares)	306	278	249	221	206	210	245	1.9%	-14.3%
Harvested area (hectares)	234	227	215	217	188	191	212	1.6%	-9.9%
Production (tonnes)	1,334	1,442	1,137	1,184	1,299	1,108	1,251	-14.7%	-11.4%
Yield (kg/ha)	5,701	6,325	5,288	5,456	6,910	5,801	5,936	-16.0%	-2.3%
Yield (\$/kg)	3.77	3.88	4.66	4.71	4.92	5.04	4.39	-2.2%	14.8%
Farm gate value per harvested hectare (\$/ha)	21,487	24,648	24,628	25,677	34,027	29,209	26,093	-14.2%	11.1%

Source: Statistics Canada.

Breakdown of Varieties Grown in British Columbia

Historically in BC, strawberries were mostly of the June-bearing type. Today, however, acreage is split evenly between June-bearing varieties and day neutral varieties. There are numerous types of June-bearing cultivars planted in BC, but the Albion variety accounts for almost all the day neutral acreage in the province. Table 26 below highlights the most frequently purchased strawberry varieties by those in BC in the last ten years at five-year intervals. Albion has been the most consistently bought cultivar in 2009, 2014 and again in 2019 accounting for 43% of the total provincial purchases in 2019.

Table 26: Commercial Strawberry Plant Sales in BC for the Years 2009, 2014 and 2019

2009			2014			2019		
Top 5 selling cultivars	Number of Plants Sold	% of total plants sold	Top 5 selling cultivars	Number of Plants Sold	% of total plants sold	Top 5 selling cultivars	Number of Plants Sold	% of total plants sold
1. Albion	920,500	20%	1. Albion	1,699,325	37%	1. Albion	1,751,200	43%
2. Puget reliance	791,000	17%	2. Puget reliance	568,000	12%	2. Rainier	403,000	10%
3. Rainier	634,000	14%	3. Rainier	509,525	11%	3. Seascope	327,200	8%
4. Tristar	408,800	9%	4. Seascope	405,850	9%	4. Tristar	221,500	5%
5. Seascope	394,600	8%	5. Tristar	345,000	8%	5. Puget reliance	219,500	5%

Growers in BC can choose from a wide range of strawberry varieties, based on production types, fruit quality, disease or insect resistance, harvest time and suitability for fresh and frozen markets. The characteristics of the main BC cultivars are described in the following paragraphs.

June-Bearing Varieties

Rainier

This variety is a mid to late season variety. It produces moderately firm fruit and has medium to large fruit. It is suited to the fresh or processing markets. The fruit flavour is excellent, but it is softer and somewhat susceptible to fruit rot.

Puget Reliance

Puget Reliance is an early to mid-season variety known to produce high yields of large, good quality fruit. It is suited to fresh or processing.

Honeoye

Honeoye is a New York variety which has performed well in the Okanagan Valley. However, it is not recommended for the Fraser Valley as it is very susceptible to virus and red stele. It is a vigorous, high yielding plant which produces early, large attractive fruit suitable for the fresh market.

Day Neutral Varieties

Albion

Albion is a Californian variety which produces high yields of firm, medium to large, attractive, glossy fruit with an excellent flavour. This variety has the potential to produce throughout the summer but in BC the main harvest is during the month of August.

Seascope

Seascope is another Californian variety which produces high yields of large fruit but is not as firm as other cultivars. It appears to perform best on Vancouver Island. Peak fruiting occurs between August and Early September.

Tristar

This ever-bearing variety produces large, glossy red berries throughout the summer, into fall. It is vigorous, winter hardy, and shows good disease resistance. The berries have a sweet taste and a firm texture.

Fruit Quality Traits

The characteristics listed in Table 27 below are crucial fruit quality traits for strawberries destined for both the fresh and processed market, but their relative importance in each market varies. As fresh fruit generally earns a higher price than fruit for processing, the fresh market usually demands more from the factors mentioned below. Fruit quality traits are important as they can affect producer price premiums, positively drive consumer demand and improve machine harvestability, all of which are critical to the economic viability of the commercial production.

Table 27: Strawberry Quality Traits and Description

Trait	Description
Flavour	Strawberry flavour is related to degree of ripeness. Fruit that is harvested at full ripeness will have the highest sugar content and flavour. However, fruit is often harvested prior to full ripeness so that it is firm enough to be shipped. Flavour also varies depending on the variety.
Colour	Strawberries are bright coloured at harvest with healthy green calyxes. Water loss will cause the fruit to become wilted and dull. Consumers prefer bright red berries. This is especially important after the strawberry has been processed into products.
Size	Berry size and shape is largely due to the number of seeds on the surface of the berry. Strawberries range in size by variety and as the season progresses. Many new varieties produce very large fruit that are over 2 inches long and more than an inch in diameter.
Defects and disease	Viral diseases, herbicide injury, poor soil quality and cold injury are all significant concerns for BC strawberry growers. Specifically, Botrytis, Anthracnose, Black root rot and Nematodes are of particular concern.
Shelf life	It is important to remove field heat as soon as possible to prevent water loss. Most shippers will use forced air cooling to achieve temperatures of 0 degrees Celsius. A shelf life of 5-7 days can be expected if these temperatures are maintained and at 90-95% humidity.
Health properties	In addition to being low in calories and saturated fat, strawberries contain plenty of antioxidants and vitamin C. They're also a good source of dietary fiber.
Firmness	Fruit firmness is one of the most important post-harvest characteristics. Firmer fruits have a higher potential of withstanding transport and are less likely to decay. Fruit firmness is affected by plant genetics and growing conditions.

Seasonality

As a result of planting both June-bearing and day neutral varieties, BC has two main production windows. As the name suggests, the June-bearing varieties come into season in the month of June (or sometimes as early as late May) until early July (Table 28). The harvest season is short lived and by July there is a dip in production until early August when the market is once again flooded with strawberries, this time with day neutral varieties. Day neutrals can also produce a crop in late May and June, but their main yield comes in August until September.

Due to the large volume of Albion planted in recent years, a glut of strawberries arrives in early August. This glut has created challenged for growers and processors as they struggle to deal with large quantities in a short time frame. Further complicating efforts, this production window also overlaps with the peak blueberry harvest in BC when freezer capacity is at a premium.

In July, production typically dips so significantly that BC often has to rely on imported strawberries for a number of weeks before the August harvest. BC also relies on imports from October until early May. Imports for strawberries are particularly high in the wintertime which has created an interest among local growers in tunnels and greenhouses which would expand the BC growing season to meet this winter demand for strawberries.

By the time strawberry harvesting is underway in BC, local production is entering an already supplied market as Oregon and Washington have a one to three week advantage due to their more southerly location. Adding to the difficulty of the BC seasonal window is the rise in other producing regions, particularly California which is now able to supply fresh berries for 12 months of the year. Additionally, with the benefits of economies of scale, efficient growing conditions and cheaper labour, California can compete with BC on price during BC's high season. This can help explain why, at the height of the strawberry season in BC, supermarkets are selling heavily discounted fruit from California.¹⁴

Table 28: Availability Calendar of Strawberries for Major Growing Regions that Compete with the BC Growing Season

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
California												
Mexico												
Florida												
Washington												
Oregon												
BC												

Current Market Channels

The BC strawberry industry has become an industry that predominately services the local, fresh market. Most sales are now almost exclusively small, local, farm direct sales including some u-picks. Historically, the industry was a processing (frozen) based industry. However, as California and Mexico began to supply the fresh market (and doing so year-round in the case of California), the lower grades destined for the processing market were more cost-competitive than what BC could offer thus BC's processing market has contracted in recent decades. This shift from a primarily

processing industry to a predominately fresh market can help explain the growing popularity of the day neutral varieties. Typically, the June-bearing varieties were processed as they had a poor fresh shelf life. With little to no processing remaining in BC, and the desire to expand the fresh season there has been a distinct rise in the day neutral variety.

Export Sales

BC's exports of fresh and frozen strawberries are minimal (Table 29 and 30). Collectively, the province exported less than 600 tonnes of strawberries in 2018. Most exports were frozen strawberries. In fact, in 2018 and 2019 BC exported fresh produce to only one country, Japan. The US is the main destination for frozen strawberries accounting for 99% of exports in 2018.

Table 29: BC's 2009-2019 Exports of Fresh Strawberries, by Country and by Year

Quantity* (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019**	Total
Global	0.0	0.0	0.0	0.0	0.7	83.2	269.6	13.6	24.0	37.7	37.7	466.5
US	0.0	0.0	0.0	0.0	0.7	83.2	269.6	13.6	0.0	0.0	0.0	367.1
Japan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.7	37.7	75.4
Indonesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.0	0.0	0.0	24.0

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth of a tonne.

**2019 data reflects exports during the months of Jan.-Nov. only.

Table 30: BC's 2009-2019 Exports of Frozen Strawberries, by Country and by Year

Quantity* (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019**	Total
Global	127.5	153.5	71.5	56.1	24.6	259.4	172.0	207.8	129.0	549.3	183.9	1,934.6
US	5.6	153.2	68.1	56.1	24.6	257.6	172.0	179.6	128.5	541.1	83.4	1,669.8
Chile	122.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	122.0
Turkey	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	90.6	90.6
Indonesia	0.0	0.0	1.4	0.0	0.0	0.0	0.0	28.2	0.0	8.2	0.0	37.8
Taiwan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	7.8
Japan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.1
New Zealand	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
India	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	1.8
China	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.4
Madagascar	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth of a tonne.

**2019 data reflects exports during the months of Jan.-Nov. only.

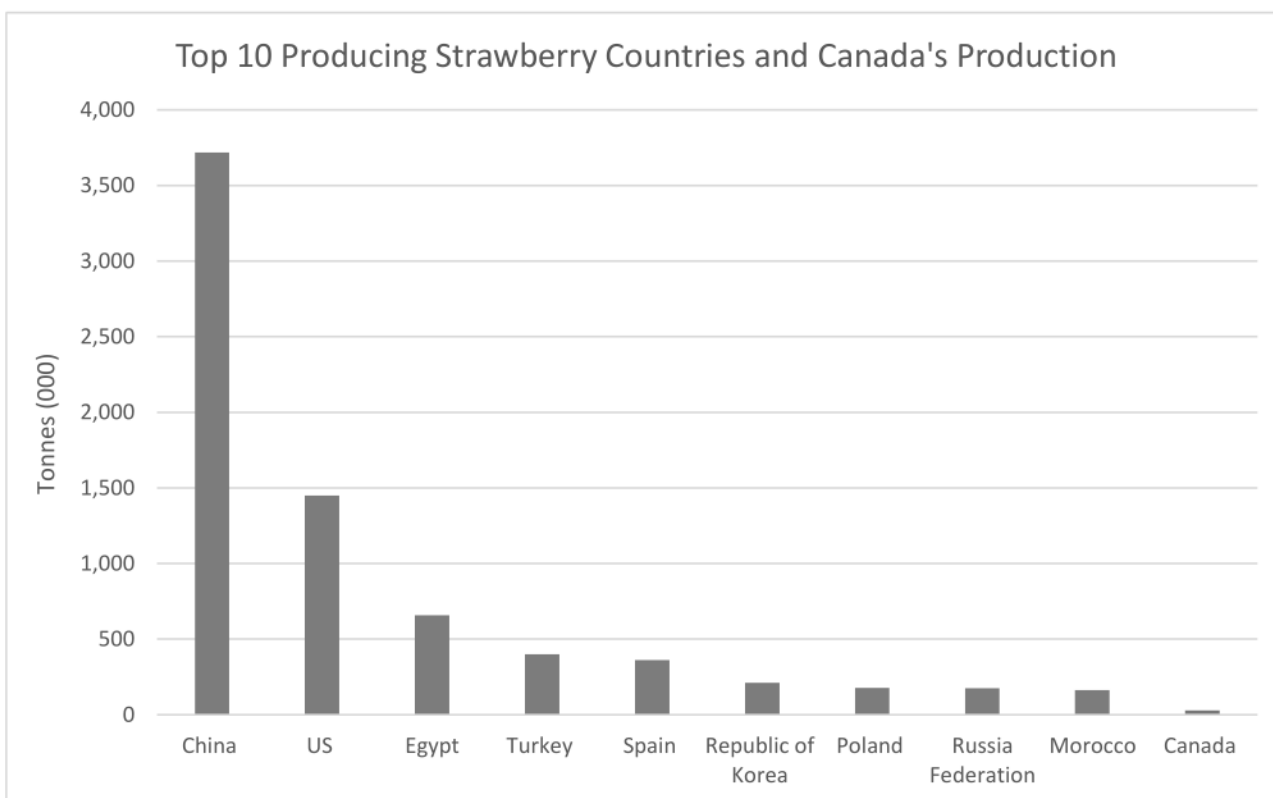
B. MARKET PROFILE

Current Global Strawberry Supply

Global strawberry production is highly fragmented. In 2017, 80 countries reported producing strawberries. By way of comparison, only 45 countries reported producing raspberries in the same year and only 30 produce blueberries. Asia accounts for half of all global strawberry production, although China is responsible for most of this volume. The Americas are responsible for a quarter of global production with the US the largest producer in this region. Collectively, China and the US count for more than 50% of global production. Europe is the third largest region accounting for 18%.

China has become, by far, the largest player in the market accounting for 40% of production (Figure 24). The US is a distant second producing nearly 1.5 million tonnes in 2017. California produces nearly half of the US berry with Florida in second place. Egypt is the next largest player accounting for 7% of total production. The remaining countries all have a share of less than 5%, further highlighting the splintered nature of strawberry production globally. As highlighted in Figure 24, Canada is a very small player on the global stage, producing just 28,372 tonnes which is 0.3% of the global share of strawberry production. Figure 24 can be reviewed alongside Table 28 (page 81). Combined these graphics showcase global production volume by the top 10 producing countries against the seasonal supply of strawberries from regions that compete with the BC season.

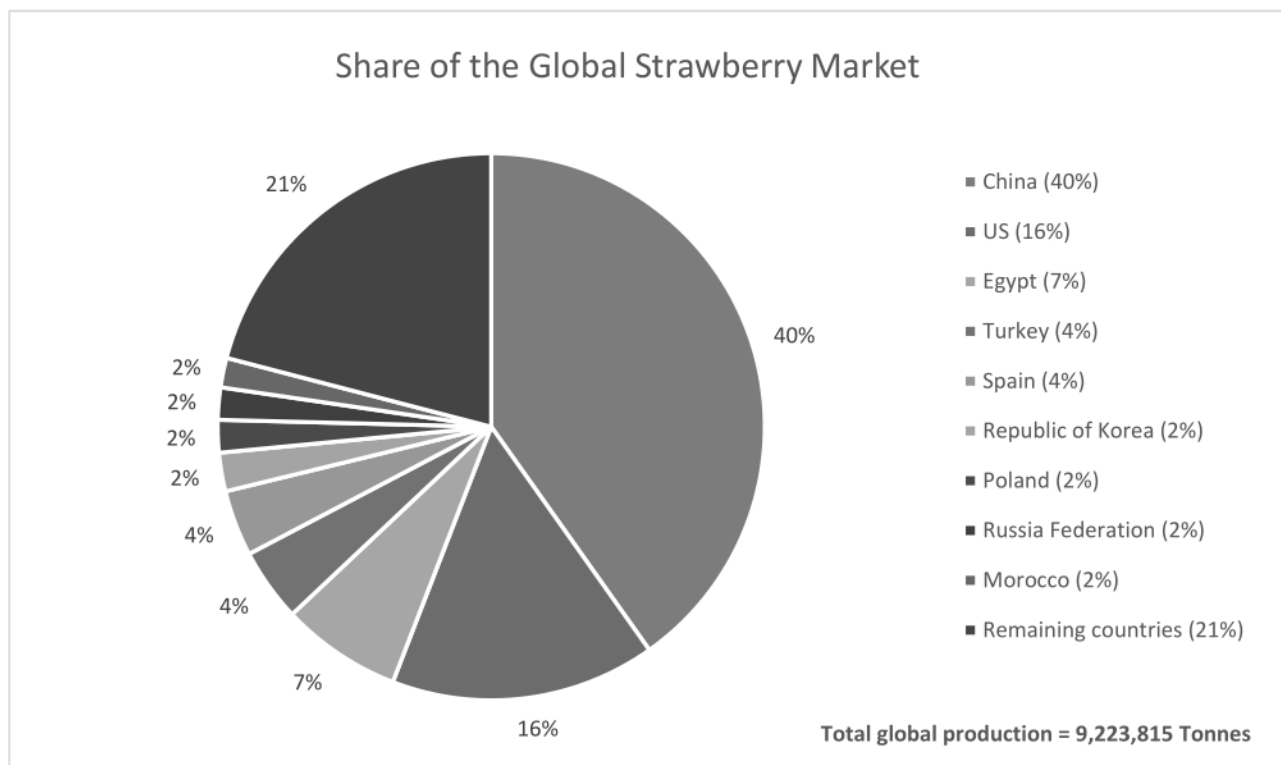
Figure 24: Top 10 Producing Strawberry Nations and Canadian Production Volume in 2017



Source: UN FAOST

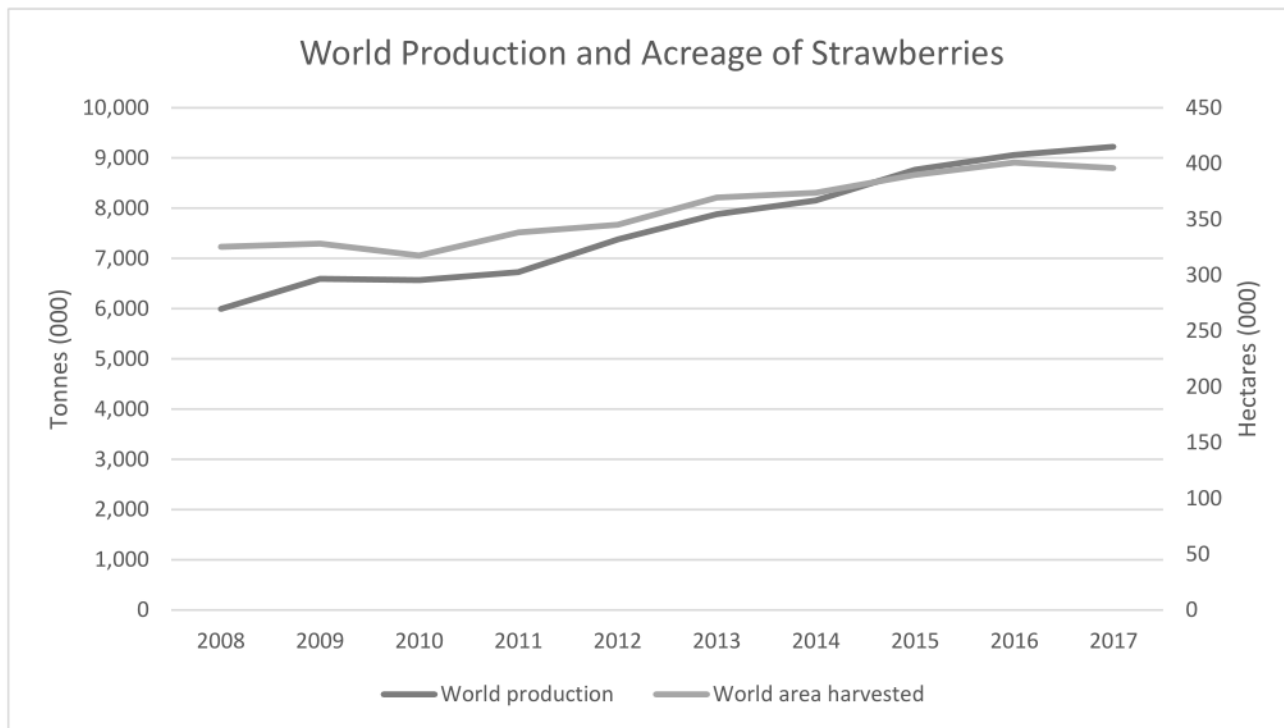
Global strawberry production has been steadily increasing since the early 90's when production was just over 3 million tonnes. In 2017, production exceeded 9 million tonnes (Figure 25). In nearly 25 years, production has increased three-fold and world acreage has also almost doubled with acreage now just short of 400,000 hectares (Figure 26).

Figure 25: Share of the Global Strawberry Market by Production Volume - 2017



Source: UN FAOSTAT

Figure 26: World Production and Acreage of Strawberries 2008 – 2017



Source: UN FAOSTAT

Purchasing Trends

- **Strawberries are consumed by all age groups.**
 - In a survey conducted in the US, 45% of the participants indicated that they eat fresh strawberries less than 2–3 times a month, and more than half eat strawberries more frequently.
 - Most participants purchase strawberries in conventional grocery stores and from warehouse retailers, followed by farmers' markets, natural food stores, food co-operatives, and direct sales.
- **Shelf life is an important purchasing factor for strawberry consumers.**
 - The shelf life of fresh strawberries is around a week if stored properly. Therefore, to maintain the quality of strawberries, vendors are focusing on factors such as quality, wet strength, and the durability of packaging materials. Consumers find that these products are highly convenient for consumption and hence, prefer these products.¹⁵
 - New packaging techniques for strawberries like sliced berries and individual quick frozen are available and are becoming more popular because they are easy store and have an extended shelf life.¹⁶
- **Strawberries are increasingly used as a snacking option.**

- Research shows that berries are usually used for breakfast and snacking, especially in the case of the young demographics. The “snacking trend” is everywhere, and the frozen berries segment is not an exception.
- **Numerous health benefits of strawberries and increasing awareness about these benefits is driving consumption.**
 - Strawberries are an excellent source of vitamin C and manganese. Strawberries are rich in antioxidants and plant compounds, which may have benefits for heart health and blood sugar control. As such, consumers are increasingly buying strawberries.
- **Flavour is becoming increasingly important as is the appearance of the fruit.**
 - Consumers are prepared to pay a premium price for high quality, tasty strawberries. Taste and sweetness are a common argument for buying local strawberries.
- **Demand for organic strawberries is increasing.**
 - The increased attention to health and the environment is generating more interest in organic produce.
 - Millennials are continually driving the consumption of organic berries, purchasing them at a rate twice as fast as other generations.
- **With increased awareness about environment-friendly material, consumers are looking for biodegradable packaging for berries.**
 - Generally, berries are sold in plastic packaging. But with an increased awareness about importance of environment-friendly materials, consumers are hesitant about purchasing berries sold in plastic packing. As a result, there is an increased demand for biodegradable packaging for berries.
 - Also important to consumers are the production and processing methods used. Consumers are interested in sustainable production and consider, among other things, the use of pesticides and inefficient air freight when purchasing.

BC Strawberry Imports by Type

Table 31 and 32 below highlight the largest suppliers of strawberries to BC for the years 2009 through 2019. Following that, Table 33 and 34 outline import volume by calendar month for the year 2019 (Jan-Nov). This distinction enables visibility of both the origin of BC imports over the last decade and the time of year in which berry imports typically arrive.

BC is a significant net importer of strawberries, both fresh and frozen. In 2018, the province imported 17,300 tonnes of fresh and more than 12,000 tonnes of frozen strawberries. Imports of fresh strawberries have increased slightly in the last ten years but largely imports have ebbed and flowed in the range of 15-20,000 tonnes a year. Strawberries produced in the US comprise 91% of total imports in 2018. Mexico accounts for much of the balance. The majority of frozen imports originate from four main countries. Mexico’s contribution has grown significantly in the last decade, eclipsing the US as the leading supplier while Chile and Peru have become reliable sources for frozen strawberries.

Table 31: BC's 2009-2019 Imports of Fresh Strawberries, by Country and by Year

Quantity* (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019**	Total
Global	15,913.8	16,164.1	18,769.8	20,346.5	17,687.8	16,835.5	14,186.7	14,100.8	15,337.2	17,300.7	13,850.6	180,493.5
US	14,786.2	14,745.1	16,301.3	18,161.0	16,151.4	14,279.4	13,721.2	13,167.8	13,171.8	15,738.3	12,562.0	162,785.5
Mexico	1,122.4	1,401.1	2,463.1	2,172.3	1,536.5	2,533.2	432.2	918.5	2,148.1	1,506.3	1,264.1	17,497.8
New Zealand	5.2	17.9	4.9	13.3	0.0	22.8	31.4	0.0	0.0	10.2	0.0	105.7
South Korea	0.0	0.0	0.0	0.0	0.0	0.0	1.9	8.9	17.3	44.6	24.5	97.2
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	0.0	0.0	0.0	5.6
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.8
Japan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.5
Argentina	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Costa Rica	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
Fiji	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth of a tonne. Canada imports are excluded.

**2019 data reflects imports during the months of Jan.-Nov. only.

Table 32: BC's 2009-2019 Imports of Frozen Strawberries, by Country and by Year

Quantity** (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019***	Total
Global	3,615.4	3,876.9	5,219.6	5,288.6	6,339.9	5,973.3	7,660.8	9,484.5	9,218.0	12,215.5	10,561.1	79,453.6
Mexico	629.6	622.8	946.7	970.3	1,624.3	2,521.0	3,503.2	3,512.9	4,429.5	4,816.9	3,696.9	27,274.1
US	2,073.1	2,304.6	3,015.9	2,656.5	3,635.5	2,190.2	1,173.3	1,654.3	1,452.0	3,609.0	2,749.4	26,513.8
Chile	548.9	533.9	508.3	674.2	385.0	345.3	322.8	1,252.3	1,440.3	1,088.9	1,745.7	8,845.6
Peru	22.6	25.0	193.5	248.1	228.7	371.4	1,132.3	1,393.0	901.7	1,444.7	1,303.4	7,264.4
China	224.6	390.7	514.2	721.9	433.3	545.5	737.1	608.7	684.1	409.5	348.7	5,618.3
Turkey	0.0	0.0	0.0	0.0	0.0	0.0	506.9	984.3	253.4	742.1	670.3	3,157.0
Argentina	96.7	0.0	41.0	17.5	0.0	0.0	125.3	32.2	52.6	92.9	43.6	501.8
Spain	0.0	0.0	0.0	0.0	33.0	0.0	144.0	0.0	0.0	0.0	0.0	177.0
Netherlands	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.0	1.3	0.0	0.0	47.3
Morocco	0.0	0.0	0.0	0.0	0.0	0.0	15.9	0.0	0.0	0.0	0.0	15.9

Source: Statistics Canada

*Import data for frozen strawberries also includes frozen strawberry pulp imports.

*Berry quantity is rounded to the nearest tenth of a tonne. Canada imports are excluded.

**2019 data reflects imports during the months of Jan.-Nov. only.

Of all berries considered in this study, fresh strawberries were BC's most imported berry by quantity in 2019, excluding December. Over 90% of this supply was produced in the US and over two thirds (68.8%) was imported between the months of April and August. In addition to the US, BC imported fresh strawberries from Mexico in all months. However, in only one of those months (February) was Mexico the primary source of imported strawberries. Advancements in strawberry cultivation throughout the 20th century are a key factor that enable sustained year-round fresh strawberry imports from the US, unlike other berries that have a climate-restricted production window in North

America. Finally, a small quantity of fresh strawberries was also imported from South Korea during the winter, comprising less than 1% of BC's total for 2019, excluding December.

Table 33: BC's 2019 Imports of Fresh Strawberries, by Country and by Month

Quantity *(tonne)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	2019 Total**
US	226.1	182.7	516.1	1,429.6	2,331.8	2,851.1	1,266.6	1,274.2	909.8	912.3	661.6	12,561.9
Mexico	187.6	371.7	277.0	184.7	86.3	52.0	21.2	29.4	12.7	8.7	32.7	1,264.0
South Korea	19.0	5.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.5
Total	432.7	559.9	793.1	1,614.3	2,418.1	2,903.1	1,287.8	1,303.6	922.5	921.0	694.3	13,850.4

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth. Canada imports are excluded.

**2019 import data is available for Jan.-Nov. only.

Frozen strawberries are the only fresh or frozen berry variety considered in this study for which BC did not import the greatest quantity of berries from the US during 2019, excluding December. As Mexico was in fact the primary contributor to BC frozen strawberry imports during this time period, at 36.4% of the total, followed by the US (27.0%), Chile (17.2%), Peru (12.8%), and Turkey (6.6%). While BC sustained frozen strawberry imports throughout the year from most of these countries, there was a notable jump in imports in March through August. This increase generally coincides with increased strawberry production in spring and summer months and the corresponding practice of freezing surplus yields to avoid spoiled product.

Table 34: BC's 2019 Imports of Frozen Strawberries, by Country and by Month

Quantity *(tonne)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	2019 Total**
Mexico	257.5	219.3	656.2	552.3	628.4	236.3	346.1	266.9	239.3	117.2	177.5	3,697.0
US	143.1	236.2	98.2	130.3	100.3	391.1	419.5	575.3	369.2	191.0	95.3	2,749.5
Chile	62.5	24.0	48.1	194.0	267.2	23.2	446.8	293.3	181.9	131.9	72.9	1,745.8
Peru	127.2	184.2	116.9	126.9	117.8	98.1	63.2	72.0	24.0	72.0	301.1	1,303.4
Turkey	56.7	39.2	251.1	136.4	114.8	72.0	0.0	0.0	0.0	0.0	0.0	670.2
Total	647.0	702.9	1,170.5	1,139.9	1,228.5	820.7	1,275.6	1,207.5	814.4	512.1	646.8	10,165.9

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth. Canada imports are excluded.

**2019 import data is available for Jan.-Nov. only.

Key Competitors

As the strawberry industry is highly fragmented, competition is intensifying from all producing regions. Nonetheless, BC's main competitors include China, US, Mexico, Chile, Peru, Egypt and Turkey.

China

- China was the largest strawberry producing country, with an output of nearly 3.8 million tonnes in 2017, which accounted for 40% of the global output.

- Strawberries are produced in many different provinces in China. The majority of China's strawberry growers are smallscale family farmers who grow a variety of crops. The average grower cultivates less than 0.7 acres in total, and most growers do not hire labour.
- In China, roughly 80% of the strawberries are produced in plastic-covered greenhouses.
- Generally, strawberry varieties planted in China mostly originated elsewhere. Japan and the US are the most important sources, although some varieties have been obtained from Europe.
- As urban incomes have increased, and as consumers' consumption patterns have changed, the domestic demand for fresh strawberries has taken off. About 80% of China's production is consumed domestically as fresh strawberries.

United States

- In 2017, the US produced nearly 1.5 million tonnes of strawberries, valued at nearly \$3.5 billion. Fresh market strawberries accounted for 82% of the total strawberry production.
- California and Florida are the top two strawberry producing states in the US with California producing over 91% of the entire strawberry crop in 2015. Florida, however, produces the majority of the domestic winter strawberry crop.
- In 2017, the US harvested strawberries from 52,700 hectares located in ten states: 15,458 hectares in California, 4,330 hectares in Florida, and the remaining 1,573 hectares from Oregon, North Carolina, Washington, New York, Michigan, Pennsylvania, Wisconsin, and Ohio.
- The large range in yields per state is due to climate differences. California has a temperate climate, therefore allowing a 12 month growing season, and producing a higher yield per acre than other states. The climates of other states limit the growing season to an average of five months, with some areas having a growing season as short as three weeks.
- Canada is the major export destination of US strawberries. Demand from Canada has shown remarkable growth in the last ten years and remained strong in recent years.

Mexico

- Mexican strawberry production is experiencing rapid growth. In 2017, Mexico's strawberry production reached 658,436 tonnes which is more than three times the amount produced in 2007.
- Mexico has two major production areas: Baja California and Central Mexico. Due to geographic distance, the two areas have different production seasons.
- Strawberry production in Central Mexico, accounts for about 65% of total Mexican strawberry volume.
- Due to the growing US demand for winter strawberries, Mexican acreage has expanded rapidly.
- High tunnels account for about 90% of the acreage in Central Mexico.
- Although Mexico's production only accounted for 2% of world production in 2017, it is the largest exporter to the US market.
- Mexican strawberry production has a major advantage in labor cost and labor supply.
- By 2030, it is estimated that production of strawberries in Mexico will reach 592,030 tonnes. In 2016, Mexico produced 468,250 tonnes of strawberries, of which about 160,000 tonnes were exported.¹⁷

Egypt

- In 2017, Egypt produced 407,240 tonnes of strawberries. This accounted for approximately 7% of global production, positioning Egypt as the third largest strawberry producing country in the world.
- Egypt's national strawberry production and acreage has been increasing steadily since 2003.
- Egyptian production is a mixture of top quality export grade, predominantly to Europe and the Middle East, as well as industrial use such a confectionary, jams and general processing.
- In Egypt, the strawberry season runs from November to January and Egyptian strawberries are considered to be price competitive in the global market thanks to subsidised fuel.
- The Egyptian market is complemented by growers and investors from Spain.
- The Egyptian industry has made significant progress in recent decades with investments in potted plants with artificial chilling hours; early varieties and new test varieties in an experimental plot; growing strawberries in coir and grow bags with high density plantation; soil solarization; building greenhouses and IPM and biological control for plant protection.

Turkey

- In recent years, Turkey has become one of the major strawberry producers in the world. In 2017, it accounted for 4% of global production.
- In Turkey, strawberry production targets both local and foreign markets and relies on high fruit quality during the whole year.
- American strawberry cultivars are mainly used for commercial growth in Turkey.
- Turkey exports strawberries to eastern European countries like Russia, followed by Serbia and Macedonia.
- Although strawberries can be grown in almost all parts of Turkey, the leading strawberry producing regions are the Mediterranean, Aegean and Marmara regions.

Chile

- In 2017, Chile exported 24,000 tonnes of strawberries with approximately 1,500 tonnes of frozen strawberries destined for BC. Chilean volume into BC increased by 500 tonnes in the last two years.
- From 2012 to 2016, strawberry exports from Chile experienced an annual growth rate of 43%.
- Chile has ideal soil and climate conditions for strawberry production, which has encouraged Chile's growers to take advantage of strong international demand for strawberries.
- In Chile, strawberries are mainly produced in the Metropolitan and Maule regions. The main varieties of strawberries grown in Chile are Camarosa and Chandler.
- About 65% of Chilean strawberries are used for domestic consumption and the rest are exported. Of the exports, 53% corresponds to fresh strawberries, 38% to frozen strawberries and 9% to processed or preserved strawberries.
- The main markets for Chilean strawberries are Japan and the US. Given the country's distance from its main destination markets, Chile prioritizes frozen strawberries.

Peru

- In 2017, Peru produced 24,000 tonnes of strawberries with about 1,000 tonnes of frozen strawberries arriving in BC. Peruvian volume into BC has been increasing since then.
- Strawberry production in Peru is on the rise, and due to both the country's climate as well as the increasing popularity of frozen berries.

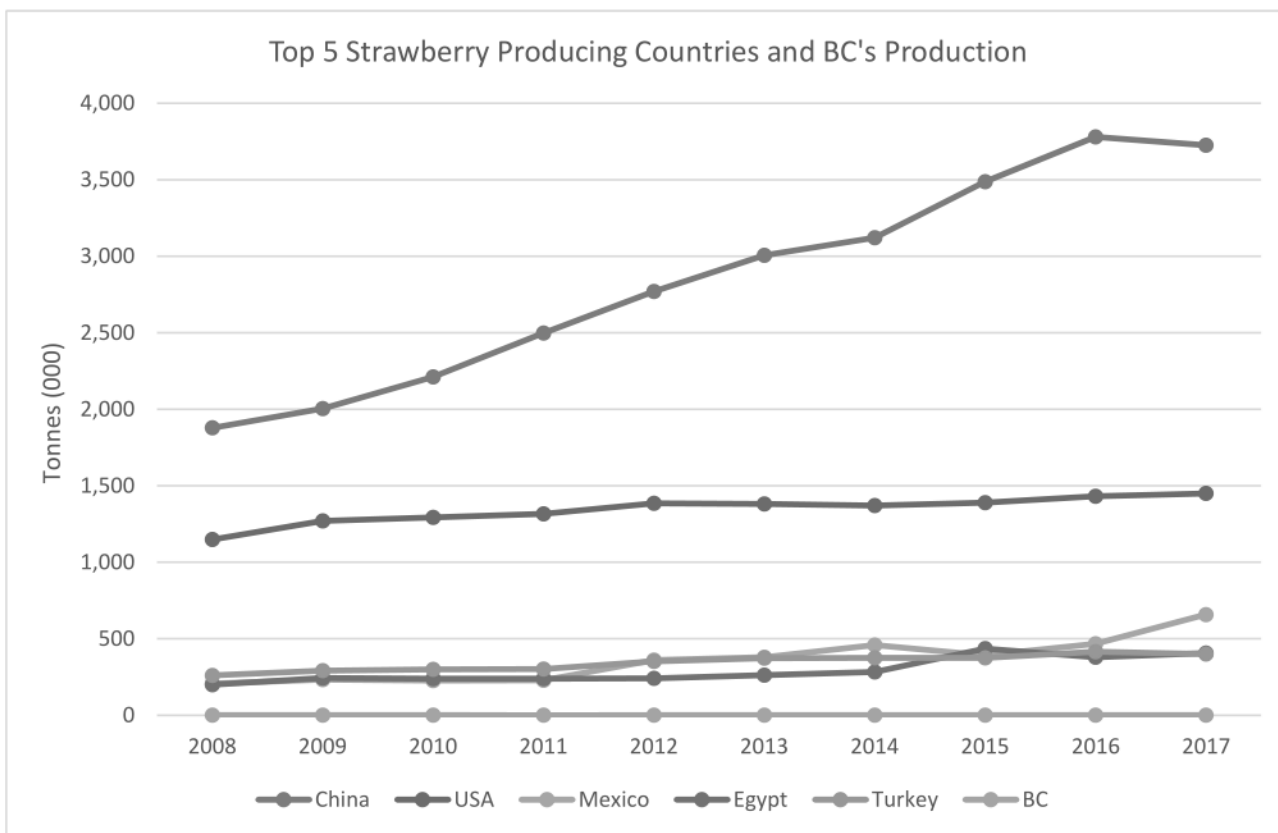
- Peru exports frozen strawberries to markets in North America, Asia, and Europe, but there are also quite large volumes sold in the domestic market.
- The strawberries in Peru are grown using either a gravity system, or a technified irrigation system. Peru strawberry growers are also planning to start using Macro Tunnel design to increase their production in coming years.

C. BENCHMARK ANALYSIS OF BC STRAWBERRIES' PERFORMANCE VERSUS COMPETITORS

Figure 27 tracks the market share of the world's five largest strawberry producing countries over the last ten years. For comparative purposes, BC's production volume has also been included. This allows the performance of BC strawberries to be compared to its competitors and the market leaders.

Of the four markets profiled in this study, the global strawberry market is the largest. The BC strawberry industry is also the smallest of the four berry industries. As such, the BC strawberry industry is not a large competitive player on the global market. BC is a price taker in the global market which means that the province could cease production and the global price for strawberries would be unaffected because BC's share of the global market is minuscule (0.01%) (Table 35). Moreover, the small share that it does have has decreased in the last decade. This can be attributed to the rise in global strawberry production (increasing 54% in the last ten years) and BC's falling production activity (a drop of 26%). China's increased production has been the main contributor to increased global production, rising from 1.8 million tonnes in 2008 to 3.7 million tonnes in 2017.

Figure 27: Largest Producing Strawberry Countries and BC's Production 2008-2017



Source: UN FAOSTAT and Statistics Canada

Table 35: BC's Percentage Share of World Strawberry Production by Volume 2008-2017

Quantity (tonne)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
World	5,994,407	6,591,490	6,566,541	6,727,930	7,380,601	7,879,108	8,154,169	8,765,242	9,059,557	9,223,815
BC	1,562	1,353	1,871	2,103	1,609	1,334	1,442	1,137	1,184	1,299
BC's % share	0.03%	0.02%	0.03%	0.03%	0.02%	0.02%	0.02%	0.01%	0.01%	0.01%

Source: UN FAOSTAT and Statistics Canada

D. SWOT ANALYSIS

A SWOT analysis was conducted to determine the key strengths, weaknesses, opportunities and threats (SWOT) facing BC's strawberry industry (Table 36). SWOT analyses are often used to inform strategic planning by outlining the conditions that affect the economic and broader development potential of a region or industry. For this study, the SWOT was used to summarize the market development potential in BC strawberry industry. Data from this SWOT will be utilized to influence strategies and actions to expand the sector now and in the future.

For the purposes of this report, the SWOT is characterized in the following terms:

- **Strengths (Positive, Internal):** The capabilities, resources, or attributes of BC's strawberry sector that provide a competitive advantage to the industry and that can serve as an important foundation for market development.
- **Weaknesses (Negative, Internal):** The capabilities, resources, or attributes of BC's strawberry sector that need improvement and that may limit current or future market development.
- **Opportunities (Positive, External):** The circumstances that, if capitalized on, could contribute positively to market development growth in BC's strawberry sector.
- **Threats (Negative, External):** The circumstances that do or could have a negative impact on market development growth prospects of BC's strawberry sector.

The data for this analysis was gathered from over 58 key informant interviews as well as the literature and document review.

Table 36: SWOT Analysis for Strawberries

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ○ Strawberries have many positive attributes <ul style="list-style-type: none"> • Strawberries are exceptionally well known and are very popular among consumers. • BC strawberries, particularly the June-bearing varieties, are known to taste well and have a strong red colour which is prioritised by purchasers. ○ Strawberry production within BC is well located <ul style="list-style-type: none"> • The Fraser Valley is located close to the US border for trade. • BC neighbours the largest strawberry consumer market, the US. • International air and seaport access are nearby. • Growers' access to water for irrigation is advantageous. ○ The Canadian brand and perception are strong internationally <ul style="list-style-type: none"> • Growers and processors can leverage this when selling. ○ BC has a good climate and growing conditions for berries <ul style="list-style-type: none"> • Parts of BC have a mild climate without severe winter conditions. This is especially true in the agriculturally rich Fraser Valley and Vancouver Island. ○ The strawberry market is large and growing <ul style="list-style-type: none"> • Strawberries are the third most frequently sold fruit in US and sales are rising. • Strawberries continue to be a featured ingredient in new product development, and various processing technologies have been applied and improved for producing high quality products. 	<ul style="list-style-type: none"> ○ Strawberries have some attributes which complicate production for a global market <ul style="list-style-type: none"> • Strawberries need to be hulled which is an exceptionally time-consuming activity. Alternatively, a machine can de-hull the berry. Depending on output the machine costs anywhere between \$60,000-\$340,000. • Strawberries need to be hand-picked from the ground making it more labour intensive. • The June-bearing berries have a poor shelf life (2-3 days). ○ The supply glut of the Albion variety during the month of August creates resourcing problems and places downward pressure on pricing. ○ BC does not have sufficient or reliable access to labour <ul style="list-style-type: none"> • Strawberry growers and processors have limited access to local labour. • The industry faces high costs and an administrative burden of importing foreign labour annually. • The aging farming population has no obvious replacements as younger generations show little interest in farming. • Labour expenses are exacerbated by the rising minimum wage, changes to piece rate work and MSP charges. ○ There has been a low uptake rate of new production methods and technology <ul style="list-style-type: none"> • BC is one of the last regions to adopt and invest in new production methods and technology which could extend their growing season. Examples of new methods used successfully elsewhere include substrate, tunnels, greenhouses, etc. ○ The provincial industry now operates in a global marketplace <ul style="list-style-type: none"> • A lot of countries are producing strawberries in the world.

STRENGTHS	WEAKNESSES
	<ul style="list-style-type: none"> • Globalisation has had an impact. BC has been forced into competition with non-traditional growing regions. • At current world prices, it's difficult for BC farmers, who face significantly higher land and labour costs, to turn a profit, even with the benefit of better technology. <ul style="list-style-type: none"> ○ Government regulations, policies and processes are many and costly <ul style="list-style-type: none"> • Government policies are reportedly hurting berry growers and processors. Policies such as MSP premiums, increasing the minimum wage, proposed elimination of piece rate options, carbon taxes and the requirement to register water wells/usage have all been referenced. ○ ALR restrictions <ul style="list-style-type: none"> • ALC regulations concerning on-farm processing puts a size limit for processing operations on ALR land. This encourages farmers to build smaller individual freezing units where a larger co-operative unit may be more efficient. ○ Price volatility is common within the industry <ul style="list-style-type: none"> • As strawberries are traded as a commodity product, the price regularly fluctuates with buyers/processors having limited visibility of pricing. ○ Retailer practices don't always prioritise local <ul style="list-style-type: none"> • Some large retailers buy based on price, as opposed to the growing location of the strawberries which can hurt local BC producers. • Very little retail advertising is done to promote local berries. ○ Low economies of scale exist and there is a lack of critical mass <ul style="list-style-type: none"> • During the peak August blueberry harvest, strawberries are no longer prioritised. Due to the volume of blueberries arriving all at once there is a lack of cold storage dedicated to strawberries and

STRENGTHS	WEAKNESSES
	<p>an insufficient number of cold trucks to transport fresh strawberries.</p> <ul style="list-style-type: none"> Many of the farms and other members of the value chain are small and unable to enjoy economies of scale. Their small size also makes it problematic to respond to the demands from the large consolidated retailers. The trend is to large consolidated companies with the ability to influence price and product decisions of producers. The large companies prefer to deal with single source suppliers which puts pressure on producers and wholesalers. A lack of economies of scale reduces margins and is a disincentive to investors. <ul style="list-style-type: none"> BC faces higher costs than competing regions, particularly land and production costs <ul style="list-style-type: none"> Agricultural land costs in BC are some of the highest in North America. One acre of land in the Fraser Valley can be 6 times the price of an acre of land across the border in Washington. Production and input costs, such as fertilizer, pesticides and freezer space, are higher in BC than competing regions.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> New production methods have the potential to extend the growing season <ul style="list-style-type: none"> Substrate production and the use of tunnels and glasshouses have become important competitive growing systems in new and existing growing regions. BC has been a late adopter of these new systems. The local fresh market offers growth potential <ul style="list-style-type: none"> Canada consumes far more strawberries than it produces. The bulk of fresh imports come from California and Mexico, with processed imports originating from Mexico, Chile, the US and Peru. There is a demand for local strawberries which market can't supply right now. 	<ul style="list-style-type: none"> The increase of production from other countries is a serious threat to prices and markets for BC strawberries <ul style="list-style-type: none"> Many growing regions will continue to increase their supply which will negatively affect the price. Price instability and international competition could seriously damage the BC industry. US based companies are supplying berries 12 months of the year while many growers around the world extend their growing seasons. The rise and strength of vertically integrated companies poses a challenge for small, local producers <ul style="list-style-type: none"> Large multinational companies can supply consistent product year-round and retailers get used to this, as do consumers.

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> Like Buy BC, Quebec and Ontario have successful programs promoting local foods and some ideas could be learned from these programs. ○ Education and marketing can increase consumption and drive sales <ul style="list-style-type: none"> Utilize research done on behalf of the industry on health benefits, promotional info and campaigns. Increase market coordination among the various industry groups. Focus on differentiating BC berries, the BC season and buying local. Increase consumer experiences with BC strawberries to increase the demand. ○ Currently, BC exports can benefit from a strong US dollar for international sales <ul style="list-style-type: none"> This is a time limited opportunity while the US dollar is strong for Canadian exporters. There is potential to also try and capitalise on other markets where the US dollar is currently favourable. ○ Well-funded breeding programs and associated research offer long-term opportunities <ul style="list-style-type: none"> Among other factors, new varieties are needed to extend the growing season and increase yields. 	<ul style="list-style-type: none"> ○ The threat of new competitors being added to an already crowded market <ul style="list-style-type: none"> The forecasted increase in global supply will come not only from currently producing countries but also new countries entering the market. ○ Other berries and other fruits produce in the market at the same time which heightens competition <ul style="list-style-type: none"> Global availability of fruit has led to a variety of produce selections being available year-round. Strawberries must compete with other superfruits. ○ BC faces a generational transfer issues (viability, financing) <ul style="list-style-type: none"> With an aging labour pool and with little indication that the younger age group willing to pick berries the future of the industry is that risk. ○ Consumers generally can't differentiate between varieties <ul style="list-style-type: none"> Growers may want to differentiate by growing proprietary varieties, but if consumers do not recognize the difference in taste or quality, demand will not be generated. ○ Climate change will bring unpredictable and more extreme weather patterns to the province <ul style="list-style-type: none"> Seasonal variability in weather will put pressure nearly all aspects of the industry from growing to harvesting to breeding. ○ Further changes to government regulations, policies and processes present as areas of concern for the industry <ul style="list-style-type: none"> Regulatory uncertainty and related complications and costs are constant considerations which are beyond the control of growers and processors. ○ Securing sufficient and reliable labour is an annual concern for the industry

OPPORTUNITIES	THREATS
	<ul style="list-style-type: none"> • Accessing labour is increasingly difficult with no guarantee that circumstances will improve in future. Without the current Temporary Foreign Worker Program, the industry would cease to exist, highlighting how finely balanced the supply of labour is for this industry. ○ Unstable health and viability of the honeybee industry <ul style="list-style-type: none"> • Pollination is an important aspect of strawberry production. Insecticide selection to avoid harming pollinators and natural insect predators, which are essential to lower production costs, is critical in growing berries.

E. KEY OPPORTUNITIES AND ACTION PLAN

1. Maximize Domestic Market Sales

In 2019 (Jan-Nov), BC imported 13,950 tonnes of fresh and 10,561 tonnes of frozen strawberries. Moreover, 43% of the fresh and 41%^{viii} of the frozen strawberries were shipped into the province during BC's main production window (June-Sept). The main importers of both fresh and frozen strawberries during BC's summer are the US and Mexico.

Canada echoes similar trade patterns, importing 93,281 tonnes of fresh produce and 28,227 tonnes of frozen strawberries in 2019 (Jan-Nov). This import data suggests there is significant domestic consumption, particularly in the summer months, which is not currently met by the local industry. The consumption gap represents an opportunity for local growers and processors to further develop domestic sales channels.

Producers and government alike should capitalise on the strong business case for maximising sales to the domestic market as buying local can strengthen regional economies, support family farms, provide delicious, "fresh-from-the-field" foods for consumers, preserve the local landscape, and foster a sense of community. Farmers' markets, community supported agriculture, local food within grocery stores and food co-ops are among some of successful initiatives of Canada. Other similar initiatives include restaurant and chef initiatives, culinary tourism and regional cuisine initiatives, food security or policy groups, food box programs (door to door delivery) and regional value chains. However, there are a number of barriers to the development of localized food systems. These include lack of financing, a limited growing season and a lack local processing infrastructure.

Potential strategies to develop a local food system include promotional programs focused on local consumers, institutional purchasing programs that create direct links between local growers and local institutions and low interest small loan programs for young farmers. Establishing a cost share program may also help farmers transition to local food production. Other important steps include increased processing capacity, increased market access, improved links between local producers and area distributors, increased private sector involvement and improved agriculture education.

Governments can play a very important role in the development of local food systems by providing system-wide support for food grown using sustainable methods and appropriate technology for small-scale farms, improving labeling laws and supporting research and extension programs to disseminate information and research findings.

The following elements should be considered by those looking to maximise sales to the domestic market:

- **Fruit quality:** Canadians have come to expect and know that the quality of strawberries from BC is high and usually far superior to any imports. Producers must continue to at least match and strive to exceed this expectation.
- **Berry traits:** The BC strawberry industry must continue to prioritise their flavour profile as this is their main differentiating quality. As the BC strawberry market is no longer based on processing, varieties need to be selected that serve the fresh market.

^{viii} Percentages are likely to be fractionally lower than the figures quoted as the numbers referenced are based on 11 months of consumption, excluding December.

- **Packaging:** The ubiquitous plastic clam shell packaging is coming under increasing scrutiny from consumers as environmental factors are rising in importance. Some consumers would prefer no packaging at all, but they also don't want people handling their food. Striking this balance is important. Consumers also want to be able to see their fruit which is one reason why the transparent clam shell has been successful. Any packaging must also hold up to transportation expectations and protect the strawberry. Cardboard packaging has been trialed by some but to no avail as it trapped heat and retained moisture. Some are also experimenting with a bamboo based packaging. A solution to the long accepted industry standard, the clam shell, is still evolving.
- **Consistency of supply, quality and price.** In order to maximise sales to the domestic market, producers will need to focus on providing a consistent supply of high quality strawberries at a stable price. This is inherently difficult to achieve as there are many factors beyond the control of a local producer such as the weather.

Actions for growers and processors to increase sales in the domestic market

Retail

1. BC strawberry producers should emphasis and differentiate their product offering on the basis of a superior taste profile and on their local production. To maximise these qualities, BC strawberry producers should target retail outlets and chains that also prioritise great taste and locally produced food.
2. When approaching retailers, strawberry producers should be quick to highlight the alignment between their differentiating product qualities and the priorities of the retail store. Where necessary, producers should gather supporting research on the importance of locally produced food to BC consumers and evidence for the superior taste profile of BC strawberries. This could be in the form of market statistics, customer testimonials, taste tests and through the provision of product samples. Additionally, BC producers may consider highlighting the carbon footprint associated with imports and the increased freshness provided by locally produced berries, assuming these are important factors for the retailer.
3. BC strawberry producers should target smaller retail chains that they can effectively supply all stores or, where possible, sell directly to the store. Most BC strawberry operations are too small to consider supplying large retail chains with the volume and shelf life quality they require.
4. Producers should ensure they identify the right buyer for their product. Retail buyers typically have key responsibilities – specific product lines for which they are responsible. In the case of BC strawberries, producers need to contact the fresh produce manager.
5. Another key method to penetrate the retail market is to drive demand from the end consumer. If there is a demand driven business case for retailers to stock local produce, they are unlikely to need significant persuasion. As such, producers can also focus resources on driving demand from the end consumer. This can include activities such as online advertising, the use of social media influencers, selling at farmers markets, festivals, summer events and at culinary and agri-tourism initiatives.
6. Irrespective of how producers choose to enter the retail space, once their product is on the shelf, producers will need to provide a consistent supply of their product and assure its quality. BC strawberry producers should work to build and establish a reputation for providing a superior product and service in the retail market.
7. Smaller local retailers that could be considered include but are not limited to Stongs, Choices Market, Nesters Market, Meinhardt Fine Foods, Quality Foods, Kin's Farm Market, Fairway Market, Country Grocer and Red Barn.
8. Obstacles include the ability to reliably and consistently supply the retailers and whether growers have sufficient volume to maintain retail contracts.

9. The following guide, prepared by the BC Ministry of Agriculture, outlines information on how to sell to retailers and should be distributed to local growers/processors.
10. BC producers and processors can also avail of the Buy BC program which seeks to help local producers and processors market their products by re-establishing a strong, recognizable Buy BC brand and supporting industry-led Buy BC marketing activities. The Buy BC program offers cost-shared funding to applicants to undertake sector/product specific marketing and promotional activities to increase consumer demand and sales of their BC berries within the province. The program can also link producers and processors to a Buy BC retail partner and can offer the opportunity to participate in promotional events.

Case study: The Quebec Strawberry and Raspberry Producers Association

- Quebec has a very strong buy local program and loyalty to it is high when it comes to the sale of strawberries and raspberries. Among other factors, contributing to its strength is the organisation of a special group known as the 'Coordination Chamber' (translated). The chamber is comprised of strawberry and raspberry growers and the main distributors and retailers. The group meets between 3-4 times a year to discuss the production calendar, distribution and format. Price is deliberately not reviewed at the meetings, but the quarterly gathering allows growers to establish relationships and foundations for future sales. Those close to the chamber attribute a significant portion of the buy local program success for these two berries to the proximity of growers, distributors and retailers and the subtle accountability they have to each other. Outside of the chamber, local Québécois also drive demand for local produce as Quebec is well known for its support for provincial produce. And while BC does not currently have as high a level of support for local compared to Quebec meaning exact replication of this Chamber might be initially challenging or require some tweaking, it is likely that there are some learnings for BC when looking at Quebec.

Foodservice

1. With more Canadians eating outside of the home each year, supplying strawberries to foodservice is a growing opportunity. Companies should seek to develop relationships with the foodservice industry to get more strawberries onto menus.
2. The foodservice industry includes restaurants, hotels, hospitals, prisons and recreational facilities. This industry is also comprised of food distributors. Distributors range from niche specialty distributors that focus on a few unique product lines, to national broadline distributors that aim to be a one-stop-shop for foodservice operators.
3. When approaching the foodservice market, BC strawberry producers should emphasis and differentiate their product on the basis of a superior taste profile and on their local production. To maximise these qualities, BC strawberry producers should target restaurants and hospitality outlets that also prioritise great taste and locally produced food.
4. Strawberry producers should be quick to highlight the alignment between their differentiating product qualities and the priorities of the foodservice entity. Where necessary, producers should gather supporting research on the importance of locally produced food to BC consumers and evidence for the superior taste profile of BC strawberries. This could be in the form of market statistics, customer testimonials, taste tests and through the provision of product samples. Additionally, BC producers may consider highlighting the carbon footprint associated with imports and the increased freshness provided by locally produced berries, assuming these are important factors for the buyer.
5. To begin, small farmers and processors can start selling into foodservice by talking to the owners or managers of independent restaurants and smaller hospitality businesses and selling to them directly. Regional foodservice operations and distributors may be easier to initially penetrate as they and might not have centralized purchasing in place. Examples of regional distributors include FreshPoint, Sevco Foods and Yen Bros. Food Service.

6. Where possible, BC strawberry producers should target restaurants and hospitality outlets that prioritise local, seasonal food. Farm to table restaurants and those that change their menu seasonally are attractive options. A number of restaurants in BC that prioritise local include Edible Canada, Forage, Acorn, Fable, West, Mission Hill Winery, The Wolf in the Frog, Vineyard Terrance Restaurant, Krafty Kitchen, Restaurant 62 and the Farmers Table.
7. Another methodology to secure sales to a foodservice distributor is to generate demand from the end user. If a chef likes your product he/she will want to be able to order it from his/her distributor. As such, producers can also focus resources on driving demand from the end consumer. This can include activities such as engaging and encouraging chefs to use their strawberries including celebrity chefs, editorial partnerships with cookbook authors and promoting the health benefits of strawberries to schools and hospitals.
8. Once the producer has built demand for their product both the producer and the end user can approach a foodservice distributor with demonstrated sales, increasing the likelihood of the product being listed by the food distributor.
9. Irrespective of what approach producers choose to enter target foodservice companies, once their product is listed, producers will need to reliably provide a consistent supply of their product and assure its quality. BC strawberry producers should work to build and establish a reputation in the market of providing a superior product and service.

Healthcare Market

The BC healthcare market consists of hospitals, retirement homes and residential care facilities overseen by five regional health authorities and the provincial health services authority.

1. Producers should know that decision making about menu planning and purchasing happens at the health authority level. Dedicated dietitians for each authority play a leading role in selecting menu items. As such, producers should meet with the designated dietitians and/or the respective health authority to encourage the use of local strawberries and to increase the use of strawberries on health menus. Health menus are planned in multi-week cycles and are designed many weeks/months ahead of time.
2. In the case, where strawberries are already used by the health authorities, producers should turn their attention to achieve a listing with broadline distributors as most food is purchased through them. These companies include Compass Group, Sodexo, Health Pro and Aramark. Some health units may have more flexibility to use smaller contracts than others.
3. Under the [Feed BC](#) initiative, health authorities are required to use at least 30% locally produced food on menus. As strawberries are locally produced and many other items are not grown in the province, this represents a distinct opportunity for BC growers.
4. The top 20 BC food opportunities in BC healthcare are listed [here](#) and features frozen berries.
5. The following guide, prepared by the BC Ministry of Agriculture, outlines information on [how to sell to the food service industry](#) and should be distributed widely to local producers.
6. Other resources include:
 - [Selling BC food to BC's government-supported facilities](#)
 - [Study on BC Food Procurement in B.C.'s Public Post-Secondary Sector](#)
 - [Okanagan Bioregion Institutional Procurement Study](#)
 - [BC Government Healthcare Market Development Strategy](#)
 - [Top 20 B.C. Food Opportunities in B.C. Healthcare](#)

On-farm selling

1. Growers and processors can further maximize domestic sales through on-farm selling. On-farm activities include roadside stands, farm markets/shops, pick-your-own operations and community-supported agriculture.

2. BC companies should consider if any of the on-farm selling activities aligns to their business model and if they can capitalise on further sales channels.
3. When engaging in on-farm selling it is important for companies to familiarise themselves with land use regulation, food safety, labelling, insurance, signage requirements and taxation among other things.
4. If on-farm selling isn't feasible, perhaps off-farm activities such as being a vendor at one or several farmers' markets or selling through online sales and direct delivery might be more suitable.
5. For companies looking to establish an Agri-tourism operation, the following guide, prepared by the BC Ministry of Agriculture, outlines key points to consider.

Barriers to domestic expansion include the entrenched position of large, global companies in the retail market and whether the local industry can provide a consistent and reliable product on contract to buyers.

2. Adoption of Progressive Growing and Production Methods

Protected cropping, substrate and hydroponic techniques should be incorporated into the BC growing landscape with the view to enhance the cultivation and production of strawberry crops to capitalise on increasing global demand and to provide a financially viable, sustainable and profitable operation for commercial berry farmers.

While these progressive techniques have taken off in other parts of the world, most BC farmers have continued to employ traditional methods. However, the globalisation of the market is requiring established growing regions such as BC to professionalize. Advances in growing systems offer many benefits that could help offset some of the challenges faced by BC growers.

The opportunities which are most immediately available to BC strawberry growers include the use of hoop houses, high tunnels and substrate growing. If investment allows, the next round of systems include glasshouse, hydroponic and tabletop production. Due to BC's late uptake of these techniques, there are quick gains to be made. Many of these systems allow for season extension and higher yielding crops. However, growers must first invest in the knowledge in this area, and do the necessary calculations, cash flow projections and market research.

Actions to implement new production methods

1. Companies that are interested in the benefits of new production methods must first establish if investing in the required infrastructure is economically worth it.

To do this strawberry companies should conduct a feasibility study. Feasibility studies are used to discern the pros and cons of undertaking a project before a significant invest of time and money is made. The elements to consider during the feasibility study include:

- Product description (type of product (tunnel, substrate))
- Economic feasibility (cost/benefit analysis)
- Identification of the specific market (prevailing market, consumer demand, future market growth, competitors, potential customers, price point, projection of sales)
- Technical capability (site analysis, existing technology, transportation, manpower)
- Organizational feasibility (expansion or contraction, succession planning)

- Financial projections (cost of equipment, working capital, access to finance, (banks, investors, venture capitalist), ROI,)
2. Upon completion of the feasibility study, companies will need to make a 'go/no-go' decision based on the analysis and information. The investment analysis should account for the price changes, knowing that prices might not always be as high as they were or are right now. Individuals must judge whether the commitment is worth the time, effort and money and whether it is aligned with the organization's strategic goals and long-term aspirations. BC farmers must continuously track whether the demand for strawberries will absorb the increasing global supply.
 3. If the investment decision is positive companies can develop a business plan for the new investment and implement it. The major obstacle to adopting new methodologies is the cost associated with the infrastructure, with "the better the structure, the more investment required".

V. CRANBERRIES

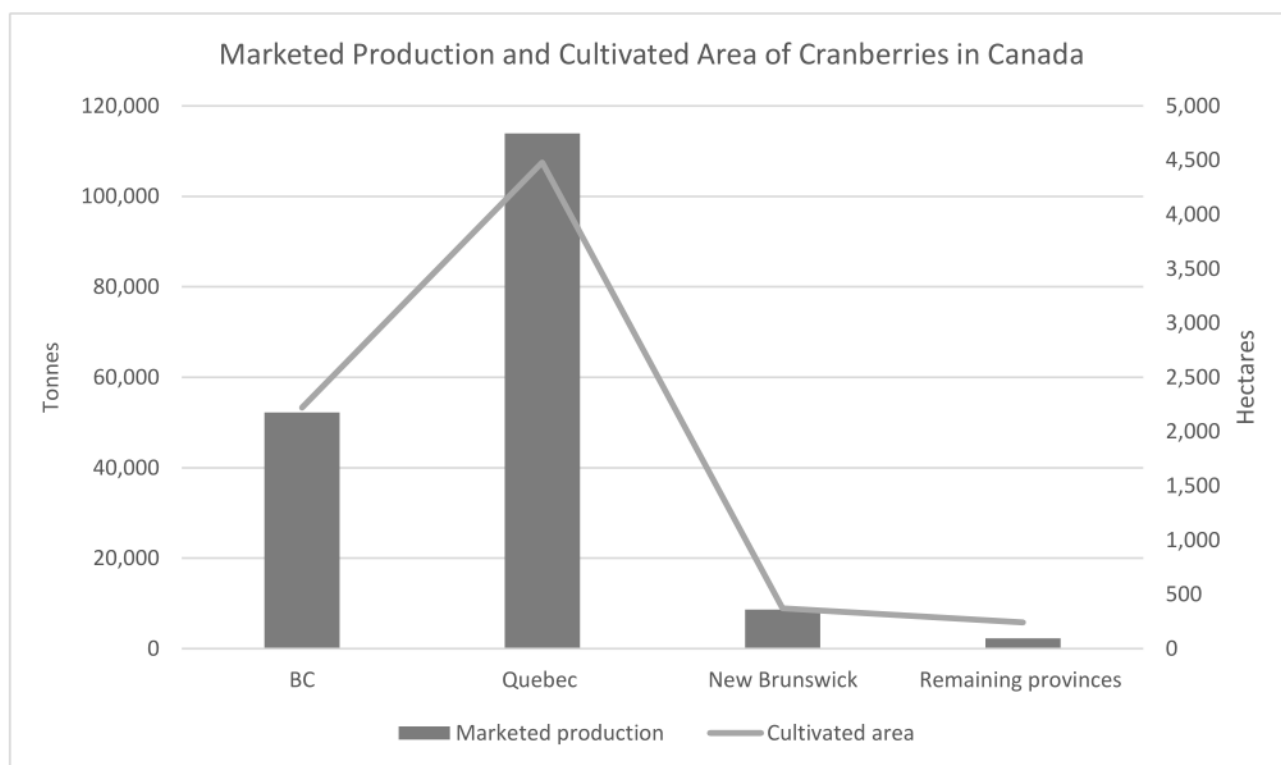
Please note that unless stated otherwise, all production and acreage data in this report are provided in metric tonnes and hectares, respectively. Although not reflected in this report, it should also be noted that within the cranberry industry production volume is calculated in barrels with the conversion of 1 barrel equalling 100 pounds.

A. INDUSTRY PROFILE

Overview of Current Production in British Columbia

First grown on the Queen Charlotte Islands in the 1920s, today, almost all of the cranberry bogs in BC are in the Lower Fraser Valley, Richmond, Pitt Meadows and Fort Langley. There are also a few bogs on Vancouver Island and in Pemberton. BC, home to over 80 cranberry farmers, grows about 30% of the cranberries produced in Canada on approximately 2,220 hectares. BC's share of national production used to be higher but in recent years Quebec has doubled their production making it the largest cranberry region in terms of both production and acreage. In 2018, Quebec accounted for 64% of total Canadian production and 61% of cultivated hectares. Quebec is also responsible for most of Canada's organic production of cranberries. In fact, the province is the number one producer of organic cranberries worldwide, dedicating 30% of cultivated area to organic production. After Quebec and BC, New Brunswick produces a small portion (5%) of the commercial crop while the remaining provinces account for the balance of production (1%). The distribution of cranberry production in Canada is presented in Figure 28 below.

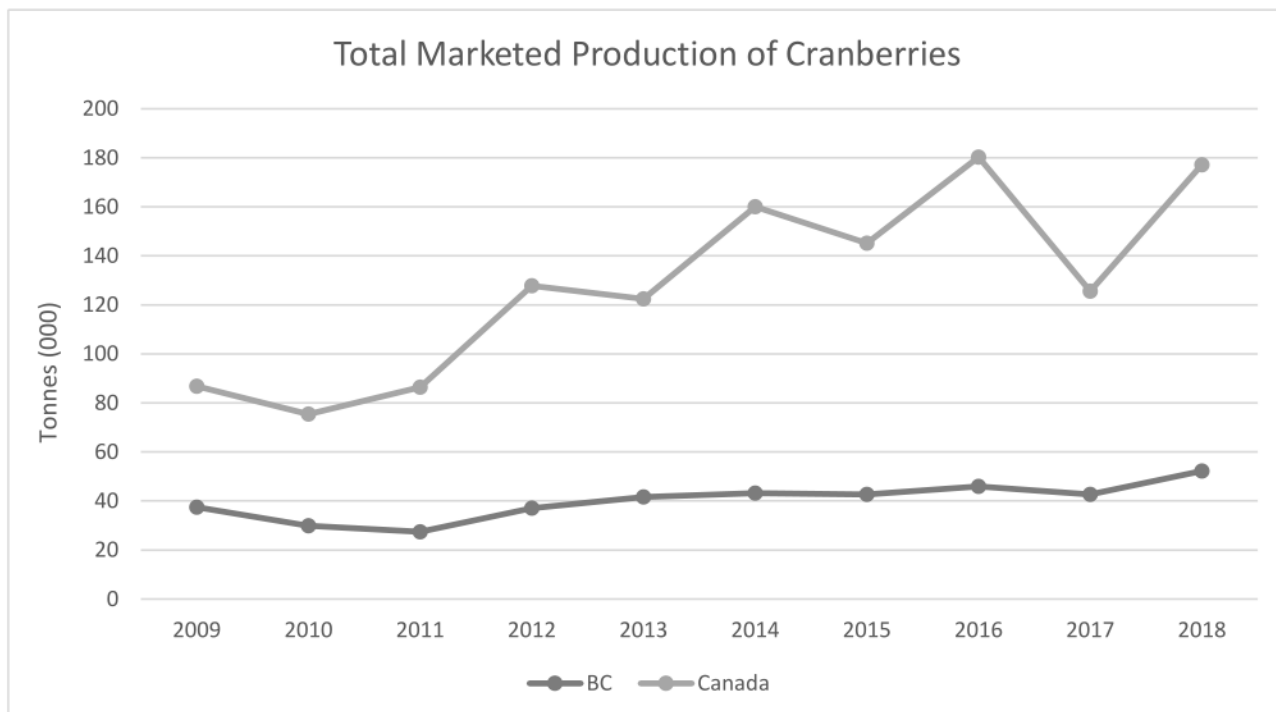
Figure 28: Distribution of Total Marketed Production and Cultivated Area of Cranberries in Canada 2018



Source: Statistics Canada. Table 32-10-0364-01. Estimates, production and farm gate value of fresh and processed fruits.

For the last eight years, national production of cranberries has fluctuated approximately every two years with a year of growth followed by a year of contraction (Figure 29). Production in BC has not followed a similar pattern. Instead production has largely remained consistent hovering at about 40,000 tonnes a year. The stability can be attributed to the high capital investment required for start-up, the specialized infrastructure and skillset required, and the historic low price to growers for cranberries sold independently outside of Ocean Spray. For the first time in a number of years, cranberry production in BC increased significantly in 2018, reaching 52,000 tonnes when production in the previous five years averaged approximately 43,000 tonnes. This represents an increase of 21% when compared to production in 2017 and a 40% increase in the last decade. At the annual meeting of the BC Cranberry Marketing Commission the following was reported for 2019: 631,045 barrels (63,104,500 pounds), 75 growers licensed, 6 producer-vendors, 3 agencies. National production, driven by Quebec, is forecast to continue to grow while BC's growth is considered to largely be at the discretion of Ocean Spray. The long-term forecast is for BC cranberry production to increase as renovated acres with higher yielding varieties come into full production.

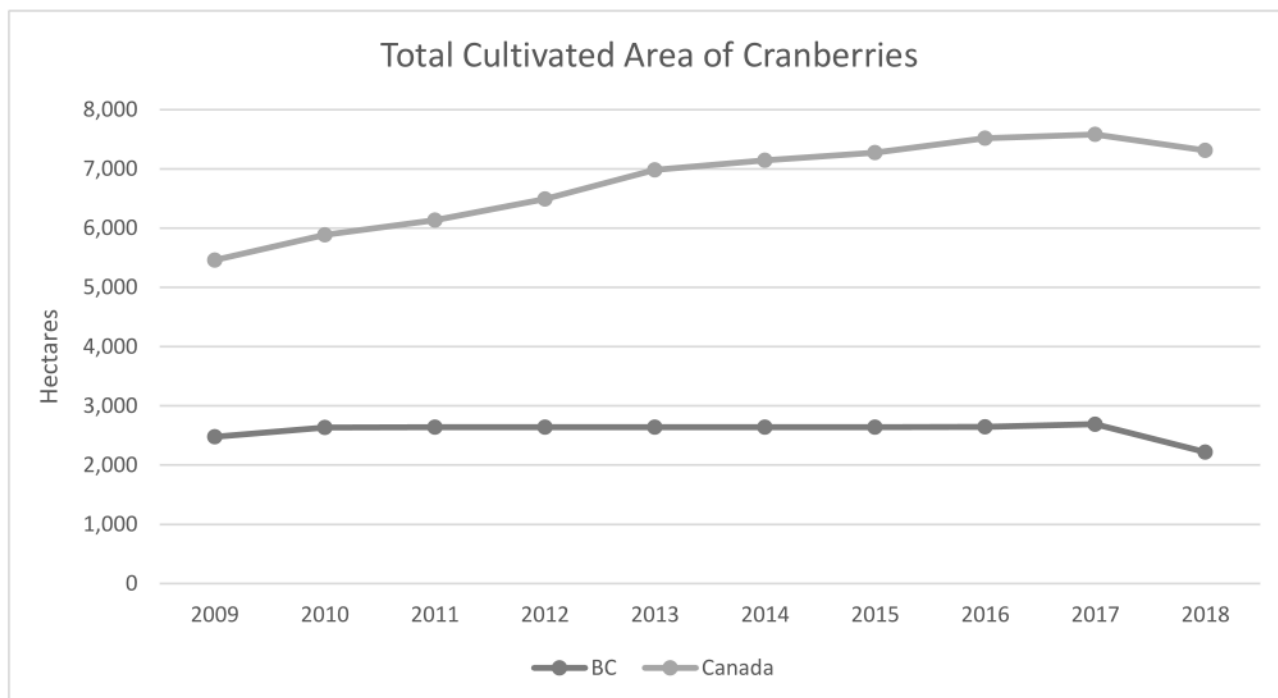
Figure 29: Total Marketed Production of Cranberries in BC and in Canada 2009-2018



Source: Statistics Canada. Table 32-10-0364-01. Estimates, production and farm gate value of fresh and processed fruits.

In 2018, there were 7,315 hectares of land devoted to growing cranberries in Canada (Figure 30). Although national acreage declined slightly in 2018, total acreage dedicated to growing cranberries has increased by 34% in the last ten years. The vast majority of this growth has been beyond the boundaries of BC as BC acreage has remained constant from the year 2010 through to 2016. In fact, acreage in BC increased by just one hectare each year in this time. Again, this stability can be attributed to the high capital investment required for start-up, the specialized infrastructure and skillset required, and the historic low price to growers for cranberries sold independently outside of Ocean Spray. In 2017, provincial acreage increased by 48 hectares only to drop by 471 hectares in 2018. Depending on the year, BC accounts for between 30-45% of national acreage. In 2018, BC's portion was 30%.

Figure 30: Total Cultivated Area of Cranberries in BC and Canada 2009-2018



Source: Statistics Canada. Table 32-10-0364-01. Estimates, production and farm gate value of fresh and processed fruits.

The following table (Table 37) indicates that the average yield per acre of cranberry production in BC has varied from a low of 16,529 kilograms per hectare in 2015 to a peak of 27,189 kilograms per hectare in 2018. The average farm gate value of cranberry production has increased from \$20,989 per hectare in 2013 to \$22,686 in 2018.

Table 37: Summary of BC's Cranberry Farm Gate Value, Production, Acreage and Yields 2013-2018

Variable	2013	2014	2015	2016	2017	2018	Average 2013-2017	2018 vs. 2017 % change	2018 vs. average % change
Farm gate value (\$'000)	48,485	40,477	42,944	46,675	43,086	43,580	44,333	1.1%	-1.7%
Cultivated area (hectares)	2,640	2,641	2,642	2,643	2,691	2,220	2,651	-17.5%	-16.3%
Harvested area (hectares)	2,310	2,371	2,584	2,553	2,602	1,921	2,484	-26.2%	-22.7%
Production (tonnes)	41,571	43,258	42,711	45,904	42,628	52,230	43,214	22.5%	20.9%
Yield (kg/ha)	17,996	18,245	16,529	17,980	16,383	27,189	17,427	66.0%	56.0%
Yield (\$/kg)	1.17	0.94	1.01	1.02	1.01	0.83	1.03	-17.4%	-18.7%
Farm gate value per harvested hectare (\$/ha)	20,989	17,072	16,619	18,282	16,559	22,686	17,904	37.0%	26.7%

Source: Statistics Canada

Ocean Spray

The BC cranberry market cannot be examined without looking at the dominant position Ocean Spray occupies in the provincial market. Ocean Spray is a farmer-owned co-operative, located throughout cranberry-growing areas in Canada and the US. It currently has over 600 cranberry growing members. In BC, Ocean Spray has two receiving stations where berries are cleaned. From there they are sent to a plant in Washington State for processing and freezing freezers in the US for processing. BC cranberry growers almost exclusively deal and sell to Ocean Spray resulting in Ocean Spray accounting for upwards of 95% of the provincial crop.

In the coming years, Ocean Spray are forecast to limit the number of acres a co-operative grower can renovate. This is because in recent years other cranberry regions have been replanting (faster than BC) with new higher yielding varieties. Approximately 1,000 acres per year have been renovated across all Ocean Spray growers. As these new fields come into production, Ocean Spray will have an increase in volume, potentially from 7.1 million barrels to 8 million barrels. BC growers that have not already renovated a significant portion of their acreage may be undermined by this supply control mechanism.

There are a small number of entrepreneurial BC cranberry growers who retain a small portion of their crop to further process the berry themselves or to sell them to the fresh market. Ocean Spray markets nearly all of the cranberries grown in North America and is estimated to have a market share of 70% or greater in North America. Ocean Spray does not have a significant presence in the Quebec and thus cranberries from Quebec are marketed independently by producers and processors. Government subsidies for agricultural products in Quebec, including cranberries, have limited growers' scope to join the co-operative. More recently, Ocean Spray have been expanding beyond North America and are responsible for some of the recent growth reported in Chile. The co-operative's strategic move into Chile has allowed Ocean Spray to avail of a number of Chilean free trade agreements that Americans do not have access to. Additionally, it is thought the reason behind Ocean Spray's recent purchase of Atoka in Quebec is to allow them to access to the world price for sugar which is lower than what US companies currently have access to. By purchasing this former Canadian company, Ocean Spray can circumnavigate US trade limitations. It would not be unexpected if Ocean Spray replicate this initiative in other regions that have attractive trade offerings.

Breakdown of Varieties Grown in British Columbia

While there are over 30 different varieties of cranberries grown, the varieties listed below are those which are most commonly planted in BC. New varieties are continuously evaluated at the cranberry research farm in Delta which is significant as there are some older vines in BC which are declining in yield. New varieties offer potential opportunities for growers. The characteristics of the main BC cultivars are described below:

Crimson Queen

This is an early maturing variety with good colour and large fruit size. It has the potential to be high yielding.

Demoranville

This is an early maturing variety with large fruit size and high quality. It has the potential to be high yielding. If harvested late, colour may be too dark for sweetened dried processing.

BG

This is a mid-season variety producing fruit that has later colour development than other varieties.

Haines

This is a mid-season variety with uniform colour and large round fruit. It is less susceptible to fruit rot than Stevens.

Mullica Queen

This is an early maturing variety with good colour and large fruit size. It has the potential to be high yielding.

Stevens

This cultivar has been the industry standard in BC. It is typically harvested in September to mid-October in BC. Stevens produces large berries with a deep red colour. It is resistant to fruit softening. The plant is vigorous, producing many coarse, strong vines.

Valley King

This is an early maturing variety with very large, firm fruit. It has the potential to be high yielding.

Welker

This is an early to mid-season variety. If harvested late, colour may be too dark for sweetened dried processing. Welker is recommended specifically for 'oceanic climate' regions such as Oregon, Washington, and British Columbia. The early flowering period of Welker will likely require early fungicide applications for fruit rot control.

Fruit Quality Traits

The characteristics listed in Table 38 below are crucial fruit quality traits for cranberries destined for both the fresh and processed market, but their relative importance in each market varies. Fruit quality traits are important as they can affect producer price premiums and positively drive consumer demand both of which are critical to the economic viability of the commercial production.

Table 38: Cranberry Quality Traits and Description

Trait	Fresh	Processed
Colour	Typical uniform cranberry red	Uniform red color. For SDC a midrange total TAc of 35–50 mg /100 g fresh weight
Flavour	Fresh cranberries are known for their tart taste	Cranberries are sweetened and generally dried to provide a tart and tangy taste.
Size	An accepted range from 1-5 g. Usually larger berries are preferred for the fresh market	SDC market requires fruit with a diameter >1/2 inches
Defects	Free from defects at least any that interfere with appearance and taste profiles	Should not have any obvious external damage
Firmness	Firmness is important to ensure the berry withstands washing and transportation	Firmness for processed cranberries, particularly for SDC's, is important. They need to be sufficiently firm to withstand the multiple stages of the sweet and dried process

Globally, 95% of cranberries are processed with only 5% sold to the fresh market. Raw cranberries are especially tart due to their low sugar content and high acidity. For this reason, cranberry products have sugars added to make them palatable. In the last 25 to 30 years, cranberry products have gone through continuous diversification. Until 2010, cranberry juice cocktail products constituted the largest market share. However, after 2010, sweetened and dried cranberries (SDC) became the most popular processing product. A study of breeding trait priorities of the cranberry industry in the US and Canada conducted in 2018, signaled that, in general, the most important trait cluster in BC

was fruit quality, particularly firmness, size and anthocyanin content due to the emergence and higher profitability of the SDC market.

SDC products require specific quality characteristics of individual fruit to maximize the end product quality and production efficiency. Fruit firmness, size, and anthocyanin content contribute to the manufacturing efficiency of SDC products. The SDC market requires fruit with a diameter >1/2 inches; uniform red color and midrange total anthocyanin (TAcy) of 35–50 mg/100 g fresh weight; round shape; and firm fruit with >450 g/mm with a good flesh integrity. Anthocyanin content is traditionally expressed as TAcy, mg of anthocyanin /100 g fresh fruit and is measured using a spectrophotometer.

Fruit firmness is a relatively new quality trait for the cranberry industry. Firmness depicts the level of resistance or tolerance to compression forces, a critical characteristic to reduce the risk that the cranberry fruit will break during the SDC processing, which involves multiple handling steps. Despite the importance of this trait, it is still unknown which and how fruit texture characteristics (crispness, hardness, juiciness, and mealiness), fruit anatomy (skin, flesh, or air pocket) or fruit external appearance (size and shape) are affecting the overall firmness and SDC processing efficiency/yield.

Shelf life, flavor, and sweetness were ranked as the least important traits. This probably reflects industry trends that direct a small (3% to 5%) percentage of production to the fresh market while the majority of producers sell their cranberries to the processing market. Cranberries exhibiting fruit rot damage and deficiencies in fruit size, anthocyanin content, and firmness are being redirected from the SDC to the juice concentrate market, directly affecting the prices received by producers. Currently, the demand for SDC is higher than for juice concentrate, with price premiums paid for the SDC. Meanwhile, the price for cranberries used for juice concentrate has decreased due to accumulation of fruit that cannot be sold at SDC grades.

Developing high precision and cost-effective strategies to evaluate traits such as fruit size and anthocyanin content is important since many factors, including environmental conditions and management practices, can affect their expression. Also, cranberry exhibits useful genetic variation for these traits, suggesting opportunities to identify associated molecular markers that can be used to improve fruit characteristics important for the industry.

Seasonality

Seasonality is less important for the cranberry market when compared to other berries as the cranberry industry is predominately based on frozen sales. Nonetheless, Canadian cranberries are harvested in early to mid-autumn, when they have ripened to a glossy, deep red. As the US and Canada have historically been the only major players in the cranberry market, almost all cranberries are produced at the same time of the year from September to November (Table 39). However, this is changing. Chile has been a new player in the market since 2013. Both Chilean acreage and production has been increasing steadily since then. Owing to their southern hemisphere location, Chile is producing cranberries at a time of year (March-May) when no one else is. As the majority of BC cranberries aren't harvested until October, growers mostly miss the window for selling across Canadian Thanksgiving which is a significant opportunity. BC cranberries, are however, harvested in time for American Thanksgiving which is a much bigger market than its Canadian counterpart.

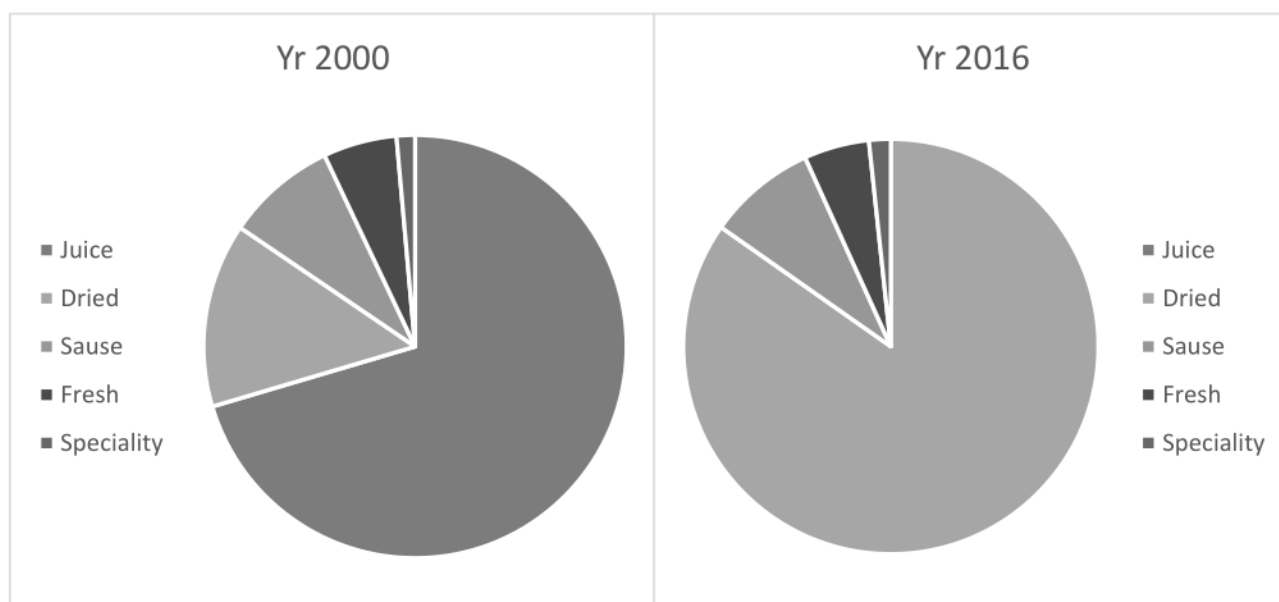
Table 39: Availability Calendar of Cranberries for Major Growing Regions

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Wisconsin												
New Jersey												
Massachusetts												
Washington												
Oregon												
Chile												
BC												

Current Market Channels

Cranberries are consumed in many forms including fresh, frozen, dried, dried sweetened, chocolate covered, in sauces, in jams, as juice, in baking products, in granola bars and trail mixes, or as capsules. Although, there is some consumption of fresh cranberries, the global cranberry market is predominantly a processed market. Only about 5% of cranberries produced in North America are sold fresh and the remaining 95% are processed. BC echoes a similar division by market channel. In the past, the cranberry market was dominated by juice with nearly three quarters of cranberries used in juice production at the turn of the century (Figure 31). However, in the last two decades, this dominance no longer lies with the juice market but rather more than 80% of cranberries are now used to make dried products. By way of example, in 2003 Ocean Spray turned 9,071 tonnes of cranberries into Craisins (a dried sweetened product). By 2016, this number had multiplied twelve-fold, growing to 250 million. With the rise of dried cranberries, the price of juice concentrate has dropped as the production of dried cranberries produces excess liquid which is usually sent to the juice market. As more product is sent to the juice market, the price has dropped.

Figure 31: Percentage of cranberries needed for various products



Source: BC Cranberry Congress. Fruit quality and trends in the Cranberry Industry. 2017

Export sales

Export data for the BC cranberry industry is somewhat unique. It should be interpreted with the knowledge that a significant portion of the fresh volume is exported in order to be processed in Washington State and then re-imported into BC for distribution and consumption. This arrangement is a result of BC's considerable linkages with Ocean Spray.

Export data for fresh cranberries only is available (Table 40 and 41).^{ix} In 2018, the province exported about 56,000 tonnes of fresh cranberries. The primary destination for fresh cranberries is the US which accounted for nearly 100% of all fresh cranberry exports in 2018. The US has long been the dominant market for BC fresh cranberries. This relates to the leading position Ocean Spray occupies in the provincial market and to the high consumption levels of cranberries in the US. Although, much of this production leaves the province as fresh crop, the vast majority of it is destined for processing in Washington State. The market for fresh cranberries is minimal in both Canada and the US. Even though data for frozen cranberries is not available, primary market research indicates that frozen exports follow a similar export pattern to fresh exports. Frozen cranberries are predominately sent to the US for further processing via the Ocean Spray co-operative.

Table 40: BC's 2009-2019 Exports of Fresh Cranberries & Bilberries, by Country and by Year

Quantity* (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019**	Total
Global	28,599.7	19,380.9	16,579.5	30,207.3	31,261.0	25,661.2	40,914.9	41,681.5	34,001.7	56,372.0	25,468.0	350,127.7
US	28,599.7	19,368.5	16,533.1	30,151.7	31,187.0	25,402.8	40,851.7	41,410.1	33,697.5	56,356.0	25,447.6	349,005.7
China	0.0	0.9	0.6	18.2	46.3	120.9	0.0	224.6	116.1	0.0	0.0	527.6
Germany	0.0	0.0	0.0	0.0	25.7	0.0	0.0	0.0	118.4	0.0	0.0	144.1
Brazil	0.0	0.0	0.0	0.0	0.0	70.0	63.2	0.0	0.0	0.0	0.0	133.2
Netherlands	0.0	0.0	3.8	0.0	0.0	0.0	0.0	4.0	68.6	0.0	0.0	76.4
Chile	0.0	0.0	0.0	0.0	0.0	43.5	0.0	0.0	0.0	0.0	0.0	43.5
Japan	0.0	11.6	9.9	0.0	0.0	0.0	0.0	21.6	0.0	0.0	0.0	43.1
Poland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.2	0.0	0.0	20.4	41.6
Taiwan	0.0	0.0	0.0	36.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.3
Australia	0.0	0.0	32.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.1
Lithuania	0.0	0.0	0.0	0.0	0.0	24.0	0.0	0.0	0.0	0.0	0.0	24.0
Indonesia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	16.0	0.0	17.1

Source: Statistics Canada

*Fresh export quantities include cranberries and bilberries. Berry quantity is rounded to the nearest tenth of a tonne.

**2019 data reflects exports during the months of Jan.-Nov. only.

Table 41: BC's 2009-2019 Exports of Frozen Cranberries, by Country and by Year

Quantity (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
No data												

Source: Statistics Canada

^{ix} There are no specific HS codes to track exports of frozen cranberries (which are grouped with a number of other frozen products).

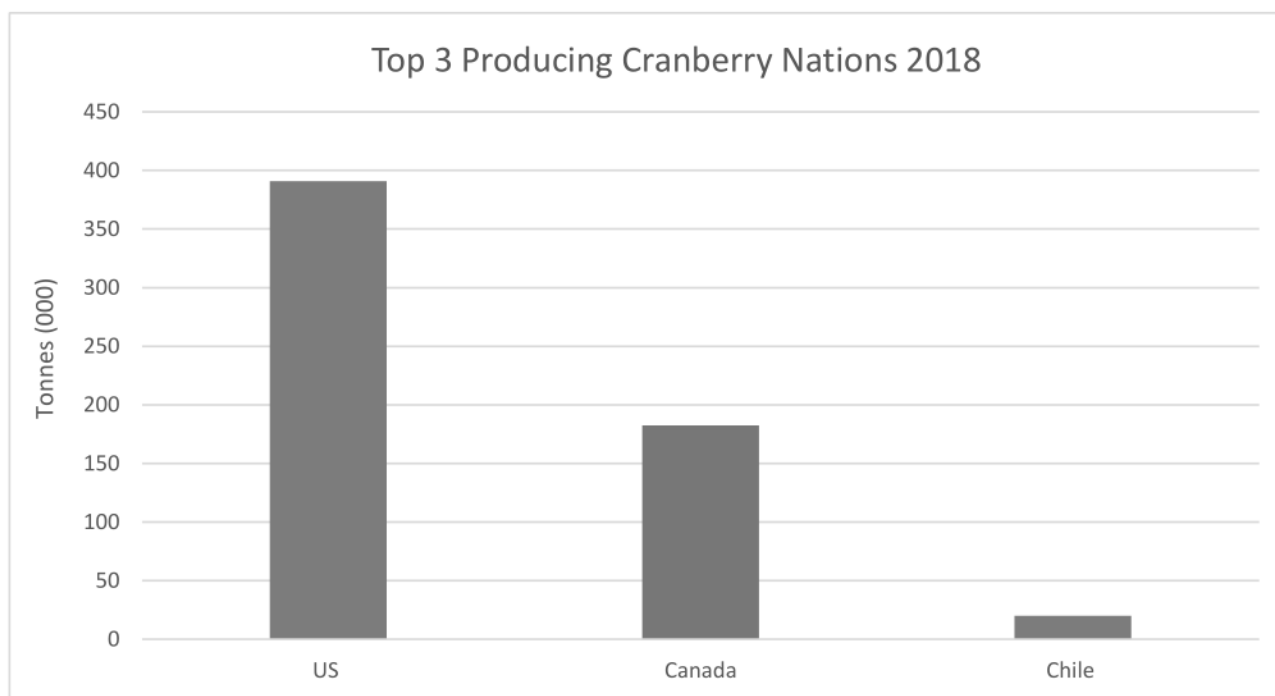
B. MARKET PROFILE

Current Global Cranberry Supply

Very few countries commercially produce cranberries. North America dominates the global cranberry market. Canada, accounting for about 31% of the global crop, is the second largest producer behind the US which has roughly twice the production of Canada (Figure 32). Collectively, Canada and the US comprise about 97% of global production. For two consecutive years, in 2017 and 2018, the United States Department of Agriculture (USDA) announced seasonal volume regulations for the cranberry industry. This had obvious limitations for production capacity in these years. Chile is the third largest producer, predominately through the presence of Ocean Spray. China has also begun production. While their volume has yet to feature in official data from the United Nations Food and Agriculture Organization, it is expected to in the coming years as China ramps up production.

Figure 32 can be reviewed alongside Table 39 (page 112). Combined these graphics showcase global production volume by the top 3 producing countries against the seasonal supply of cranberries. Globally, the majority of cranberries are produced in the northern hemisphere resulting in a dominant season from September to December.

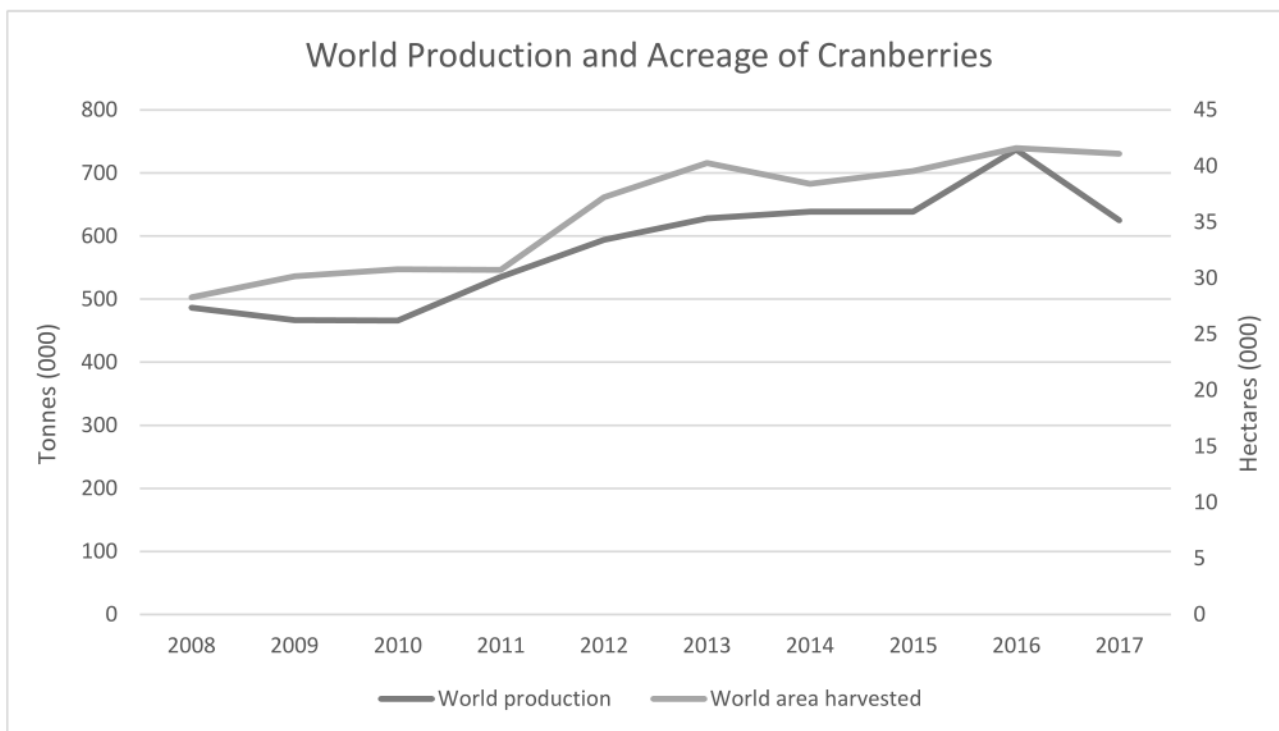
Figure 32: Top 3 Producing Cranberry Countries by Production Volume 2018



Source: US Cranberries Annual Meeting 2019

Global production of cranberries experienced steady growth between the years 2010 and 2016 (Figure 33). However, production contracted in 2017 by 15%. Nonetheless production for the last decade has increased overall by 29% while acreage is up 45%. Future growth is forecast for the industry.

Figure 33: World Production and Acreage of Cranberries 2008-2017



Source: UN FAOSTAT

Purchasing Trends

Consumer demands change over time and these changes range from basic concerns such as improving food safety, shelf life, and reducing wastage, to demands for increasingly cultured foods having special characteristics in terms of nutritional value, palatability and convenience. The following paragraphs describe the trends present in the cranberry market.

- **In recent years, consumers have become very sugar conscious.**
 - Raw cranberries are quite tart. Therefore, sugar is typically added to the final processed products such as juice and dried. Consumers in North America have become conscious of sugar in their diets, which in turn affects their consumption of sweetened cranberry products.
- **Demographically, consumers buying cranberries in US are older and earn more.**
 - In the US, for the seventh straight year, the likelihood of a cranberry purchase increased according to income. Shoppers earning more than \$100,000 annually comprised the group most likely to buy the berries overall.
 - Shoppers age 50 and older were more likely to buy cranberries than younger consumers, a trend that has continued for several years.¹⁸
- **There has been an increase in the popularity of organic cranberries.**
 - The likelihood of an organic only cranberry purchase nearly doubled from 2016, up 9% from 2017 trends. Cranberries showed the most growth in the likelihood of an organic only purchase in 2017 and 2018 (Produce market guide, 2018).¹⁹

- **Suppliers have noticed an increase in the sale of cranberries as a result of marketing communication efforts.**
 - Suppliers have been promoting recipe development to entice consumers. Cross-promoting berries with ingredients for recipes, sweet and savory, help retailers sell more berries and boost sales of additional items.²⁰
- **Millennials have a higher interest in frozen cranberries.²¹**
 - Young consumers don't consume as many fresh berries as the other age groups. This is attributed to differences in lifestyles. Millennials are time-poor when compared to older generations. Thus, frozen products allow them to consume whenever needed while retaining all the nutrients and the tastes.

BC Cranberry Imports by Type

Import data for the BC cranberry industry is somewhat unique. It should be interpreted with the knowledge that a significant portion of the quoted import volume originated in BC which explains why 'Canada' appears as a line item in the four following tables. Owing to BC's close ties with Ocean Spray, significant quantities of BC's production is shipped to Washington State where Ocean Spray's main processing facilities on the west coast are located. Cranberries are sent here for processing and then sent back into BC for distribution and consumption. It should also be noted that while the following tables are divided into fresh and frozen markets, the market for fresh cranberries worldwide is limited. Thus, although the following quantities are listed as fresh it is likely large portions of the fresh crop ultimately ended up as frozen or processed products.

Table 42 and 43 below highlight the largest imports of cranberries into the province by country of origin for the years 2009 through 2019. Following that, Table 44 and 45 outline import volume by calendar month for the year 2019 (Jan-Nov). This distinction enables visibility of both the origin of BC imports over the last decade and the time of year in which berry imports typically arrive. BC imports a small volume of fresh and frozen cranberries. In 2018, excluding Canadian imports, less than 5,000 tonnes were imported. Imports for fresh and frozen cranberries almost exclusively originate from the US. Chile and Mexico imported a minimal quantity of fresh cranberries in 2018 while the US was the sole importer of frozen berries.

Table 42: BC's 2009-2019 Imports of Fresh Cranberries, by Country and by Year

Quantity* (tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019**	Total
Global	766.3	368.4	680.5	1,062.5	1,119.0	498.5	1,045.2	1,022.9	913.0	1,148.3	665.6	9,290.2
US	731.2	287.2	534.8	892.8	1,069.2	373.5	969.3	939.3	904.2	1,104.4	627.1	8,433.0
Canada	34.7	80.7	143.0	169.7	49.8	125.0	75.9	83.6	8.8	12.1	5.7	789.0
Chile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.5	27.0	40.5
Mexico	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3	4.6	22.9
Thailand	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7
Peru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2
Colombia	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
China	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth of a tonne. Canada imports are excluded.

**2019 data reflects imports during the months of Jan.-Nov. only.

Table 43: BC's 2009-2019 Imports of Frozen Cranberries*, by Country and by Year

Quantity **(tonne)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019***	Total
Global	270.5	761.8	58.6	94.6	3,090.7	737.9	2,561.5	4,516.1	1,493.7	3,279.8	4,933.9	21,799.1
Canada	0.0	0.0	0.0	0.0	2,808.1	658.0	1,839.2	3,332.8	1,106.7	1,615.7	3,336.0	14,696.5
US	270.5	739.8	56.5	94.2	282.6	79.9	722.3	1,182.3	387.0	1,664.1	1,597.9	7,077.1
Ecuador	0.0	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.0
Fiji	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1
Germany	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0
Mexico	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4

Source: Statistics Canada

*Import data for frozen cranberries also includes frozen cranberry pulp imports.

**Berry quantity is rounded to the nearest tenth of a tonne.

***2019 data reflects imports during the months of Jan.-Nov. only.

BC predominantly imports fresh cranberries during BC's peak cranberry season, which begins in mid-September and lasts through to December. The US accounts for the majority (95%) of fresh imports while Chile (4%) accounts for most of the rest. Canada re-imports only a minor quality of fresh cranberries. Imports in September and October alone accounted for approximately 85% of BC's 2019 total production, excluding December, coinciding with Canadian Thanksgiving, which has a tradition of incorporating cranberry products alongside holiday turkeys (e.g., in cranberry sauce). This suggests that December 2019 imports data would similarly show an uptick in import activity given that cranberries feature in a number of traditional winter holiday recipes as well. Meanwhile, the modest quantity of cranberries imported in later winter months mostly originated farther south in the Americas, where there is a later harvest.

Table 44: BC's 2019 Imports of Fresh Cranberries, by Country and by Month

Quantity *(tonne)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	2019 Total**
US	0.0	1.0	0.0	0.0	0.0	24.0	0.0	0.0	336.2	225.3	40.6	627.1
Chile	4.9	14.2	8.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.1
Canada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	5.3	5.7
Total	4.9	15.2	8.0	0.0	0.0	24.0	0.0	0.0	336.2	225.7	45.9	659.9

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth. Canada imports are excluded.

**2019 import data is available for Jan.-Nov. only.

From January to November 2019, BC imported more than seven times the number of frozen cranberries as fresh cranberries. Of the frozen cranberries that were imported, one third originated from the US while the remaining two thirds were re-imported to BC having originally been grown in the province. As with BC's fresh cranberry imports, 2019 data on frozen cranberry imports show an increase beginning in the fall and persisting through the winter months. Unlike fresh cranberries, however, BC's frozen cranberry imports (by quantity) continue year-round and reach their maximum in February and March following the fall harvest and holidays seasons. This reflects the common practice of freezing unused stores of fresh cranberries to prevent spoiling and waste. Frozen berries will retain their flavour for up to one year (versus only a few months for refrigerated cranberries).

Table 45: BC's 2019 Imports of Frozen Cranberries, by Country and by Month

Quantity *(tonne)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	2019 Total**
Canada	1,410.0	1,213.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.5	694.3	3,335.8
US	208.5	269.9	261.4	27.8	0.9	1.1	134.9	171.0	113.1	222.2	187.0	1,597.8
Total	1,618.5	1,482.9	261.4	27.8	0.9	1.1	134.9	171.0	113.1	240.7	881.3	4,933.6

Source: Statistics Canada

*Berry quantity is rounded to the nearest tenth. Canada imports are excluded.

**2019 import data is available for Jan.-Nov. only.

Key Competitors

United States

- The US is the world's largest cranberry producing country accounting for 61% of the global market. In 2017, the US produced three times the number of cranberries than its next closest rival, Canada.
- Wisconsin is the leading producer of cranberries in the US, producing 62% of the national crop in 2017. Other leading cranberry producing states include Massachusetts, New Jersey, Oregon, and Washington.
- The total hectares of cranberries harvested in 2016 was 16,794, with an average yield per acre of 11.5 tonnes, ranging from 5.45 to nearly 14.4 tonnes per acre. The total value of the utilized US cranberry production was \$292.29 million, 92% of the value coming from processed cranberries.
- Domestically, the cranberry industry is dominated by a handful of grower/processors. Ocean Spray is one of the largest companies accounting for 70% of the North American market.
- Canada currently enjoys lower tariffs to China for cranberry products compared to the US providing an export market for BC cranberry grower/processors not affiliated with Ocean Spray.

Chile

- In recent years, cranberry production in Chile has been on the rise, and it is expected to rise even further. The reason behind this growth is the expansion of harvestable areas.
- One advantage of Chile's harvesting season is its location in the southern hemisphere. This means that the growing season in Chile occurs at a different time than the growing season of other large markets in North America and Europe.
- In recent years, Ocean Spray has moved into Chile and bought the production for both Sweetened Dried Cranberries and the production facilities for concentrate from Cran Chile.
- The strategic decision to move into this South American market has provided Ocean Spray with the ability to ship cranberries to Europe without any of the tariffs charged on US produced products. With China now putting tariffs on US origin cranberries, the co-operative is further able to leverage this investment.²²
- As its production of cranberries grows, Chile is becoming an even more important exporter of the fruit. The main recipients of Chile's cranberry exports are China, North America, and Europe.

China

- China is not currently a major competitor as it has only begun production. However, it is widely expected that Chinese production will ramp up in the coming years, to position itself as a leading cranberry producer.

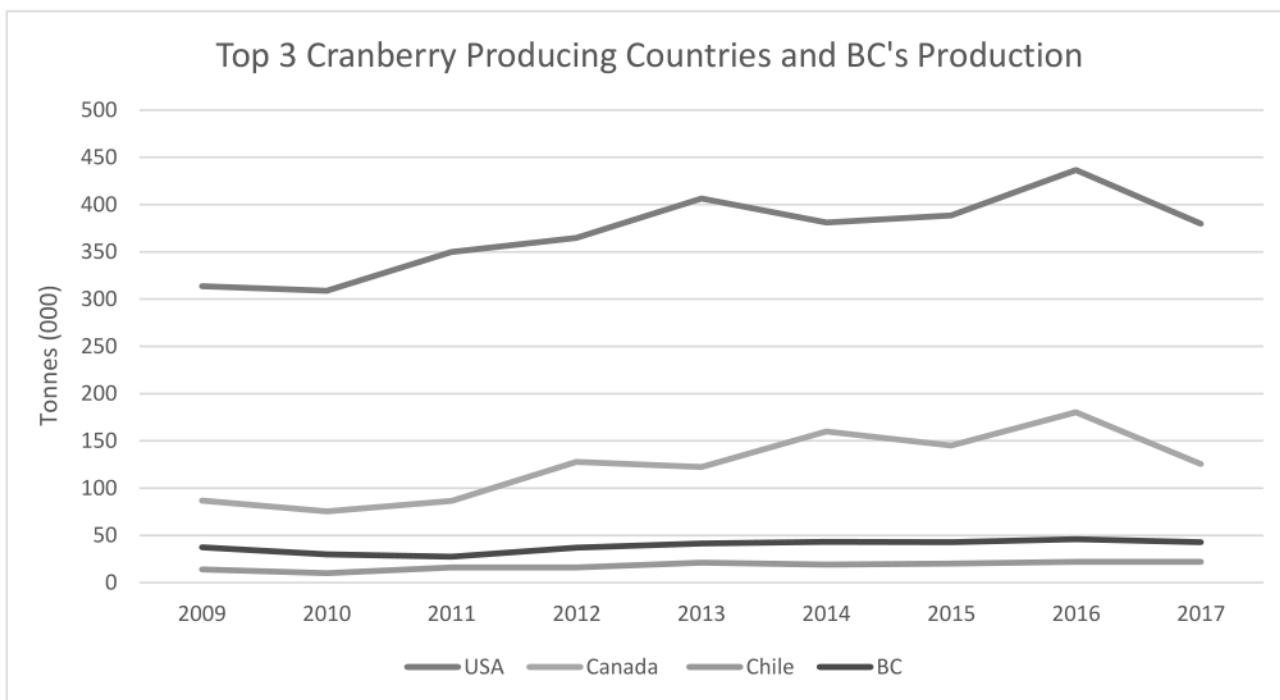
- For now, cranberries are grown by one company in the Fuyuan region of China. Fuyuan has developed Cranberry production as a measure in supply-side reform, which will promote organic agriculture and tourism agriculture.
- Honghai Cranberries is behind Asia's only cranberry bog which is 280 hectares in size. It is estimated that China will have over 700 acres by the end of 2020.
- The rise of online sales platforms is expected to stimulate the development of cranberry sales within China.

C. BENCHMARK ANALYSIS OF BC CRANBERRIES' PERFORMANCE VERSUS COMPETITORS

Figure 34 below, tracks the market share of the world's three largest cranberry producing countries over the last nine years. For comparative purposes, BC's production volume has also been included. This allows the performance of BC cranberries to be compared to its competitors and the market leaders.

BC's share of the world cranberry market has remained consistent over the last decade despite the Canadian market share rising. As discussed previously, BC's steady supply of the cranberry crop is attributed to Ocean Spray's control of the provincial market. The rise of Canadian market share is largely a result of increased production in Quebec. Over the course of the last decade, BC's share of the global market has ranged from 5-8%, averaging a 7% share (Table 46). So long as the co-operative model remains the business model of choice for BC growers, the industry is limited in its capacity to increase their market share in any meaningful way. For growers that sell or want to sell to Ocean Spray, expansion is largely at the discretion of the co-operative. Unless the BC industry chooses to expand beyond Ocean Spray, Ocean Spray undergoes significant growth or other competing countries rapidly increase production in the coming years, BC's market share is expected to remain constant.

Figure 34: Largest Producing Cranberry Countries and BC's Production 2009-2017



Source: UN FAOSTAT, Statistic Canada and US Cranberries Annual Meeting 2019

Table 46: BC's Percentage Share of World Cranberry Production by Volume 2008-2017

Quantity (tonne)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
World	486,372	466,874	466,006	535,010	594,260	628,184	638,833	638,989	737,081	625,181
BC	31,445	37,421	29,838	27,431	37,044	41,571	43,258	42,711	45,904	42,628
BC's % share	6%	8%	6%	5%	6%	7%	7%	7%	6%	7%

Source: UN FAOSTAT and Statistic Canada

D. SWOT ANALYSIS

A SWOT analysis was conducted to determine the key strengths, weaknesses, opportunities and threats (SWOT) facing BC's cranberry industry (Table 47). SWOT analyses are often used to inform strategic planning by outlining the conditions that affect the economic and broader development potential of a region or industry. For this study, the SWOT was used to summarize the market development potential in BC cranberry industry. Data from this SWOT will be utilized to influence strategies and actions to expand the sector now and in the future.

For the purposes of this report, the SWOT is characterized in the following terms:

- **Strengths (Positive, Internal):** The capabilities, resources, or attributes of BC's cranberry sector that provide a competitive advantage to the industry and that can serve as an important foundation for market development.
- **Weaknesses (Negative, Internal):** The capabilities, resources, or attributes of BC's cranberry sector that need improvement and that may limit current or future market development.
- **Opportunities (Positive, External):** The circumstances that, if capitalized on, could contribute positively to market development growth in BC's cranberry sector.
- **Threats (Negative, External):** The circumstances that do or could have a negative impact on market development growth prospects of BC's cranberry sector.

The data for this analysis was gathered from over 58 key informant interviews as well as the literature and document review.

Table 47: SWOT Analysis for Cranberries

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ○ Cranberries have a number of positive attributes <ul style="list-style-type: none"> • Cranberries are a well known North American fruit with many health benefits. • BC berries have a good colour, size and firmness and are able to meet the specifications for SDC's. ○ The Canadian brand and perception are strong internationally <ul style="list-style-type: none"> • Growers and processors can leverage this when selling. ○ BC has a good climate and growing conditions for berries <ul style="list-style-type: none"> • Parts of BC have a mild climate without severe winter conditions. This is especially true in the agriculturally rich Fraser Valley, Vancouver Island and Pemberton. • The cranberry is a native crop to North America which is suited to the temperate BC climate and rich soil. ○ The provincial industry is strong, established and a large global player <ul style="list-style-type: none"> • BC has a long history of growing cranberries. • It is one of the largest producing regions in the world industry producing 12% of the North American crop. • The provincial industry is home to many dedicated farmers who have good local technical expertise. • The commodity is of strategic importance to agriculture in Canada. ○ Cranberry production within BC is well located <ul style="list-style-type: none"> • The Fraser Valley is located close to the US border for trade. • BC neighbours the largest cranberry consumer market, the US. • International air and seaport access are nearby. • Located on the Pacific Rim, BC has easier access to the Asian market than most. • Growers access to water for irrigation is advantageous. 	<ul style="list-style-type: none"> ○ Without sugar, a cranberry has a very tart taste <ul style="list-style-type: none"> • A fresh cranberry is a tart tasting berry. Thus, sugar is usually added. As the sugar-conscious movement rises, this is a concern. It is particularly problematic for sugar infused dry products and sugar sweetened juice. • Some markets and consumers don't know what a cranberry is or how to use it. Education and marketing efforts would be required to overturn this. ○ BC faces higher costs than competing regions specially land and production costs <ul style="list-style-type: none"> • Agricultural land costs in BC are some of the highest in the world. One acre of land in the Fraser Valley can be 6 times the price of an acre of land across the border in Washington. • Production input costs, such as fertilizer, pesticides and freezer space, are higher in BC than competing regions. • The cost of bees and access to them for pollination is a concern. The charger for a hive in BC is \$125 compared to \$25 in the US. ○ Other berries and other fruits produce in the market at the same time which heightens competition <ul style="list-style-type: none"> • Cranberries must compete with other superfruits. ○ Weather damage is a constant concern <ul style="list-style-type: none"> • One challenge that growers face is frost damage to vines. Frost in bogs can occur as late as June. A producer can lose up to 50% of a crop in as little as two hours. To protect their crops, growers spray the vines with water when the temperature nears freezing. The ice protects the plants from frost damage. • Any extension to the growing season will require enhanced crop management as the cranberry crop will be exposed to an increasing array of weather patterns including potential drier summers, wetter springs and a continue threat of frost from September through to June.

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ○ The dominant presence of the world's largest cranberry co-operative provides certainty and stability to co-op members <ul style="list-style-type: none"> • Ocean Spray agrees to purchase crop from its members irrespective of market dynamics. • The Ocean Spray brand is a well-recognised brand and dominant in the cranberry market. • Ocean Spray is largely charged with marketing and R&D responsibilities. ○ The global cranberry industry is forecast to grow as demand rises <ul style="list-style-type: none"> • The global cranberry market value is forecast to reach US\$121 billion by 2025 with a compound annual growth rate (CAGR) of 3.54% over the forecast period. ○ BC currently produces cranberries for multiple market channels <ul style="list-style-type: none"> • BC markets a variety of cranberry products including fresh, frozen IQF, frozen bulk, dry infused (with sugar), dehydrated, juice, powder, puree, freeze dried and wine. 	<ul style="list-style-type: none"> ○ It is very costly to renovate a bog <ul style="list-style-type: none"> • Firstly, it can take five years for a renovated planting to achieve full production and another two years will be required before any economic returns are viable. It can cost upwards of \$30,000 to renovate an acre. Some fields are 30-40 acres in size. • Secondly, it can take 8-14 years to pay off the investment in full. • Thirdly, Ocean Spray can place limits on the amount of acreage that can be renovated or replanted each year. ○ The high cost of cranberries is expected to hamper the growth of market <ul style="list-style-type: none"> • It's an expensive berry to grow and it is expensive to launch new products which the cranberry market relies on. According to Ocean Spray, it can cost \$600,000 to launch a new product SKU in a retail chain in Canada. ○ BC has a heavy reliance on one single purchaser <ul style="list-style-type: none"> • In this case, the purchaser is Ocean Spray. While the presence of Ocean Spray in the BC market brings with it some benefits, reliance and a lack of revenue stream diversification in any circumstance is high risk. • Any reduction of purchasing or other problems with this co-operative would have devastating effect on BC industry. ○ The cranberry industry is facing an oversupply of concentrate as a by-product of the sweetened and dried process <ul style="list-style-type: none"> • The juice market is contracting but simultaneously faces a surplus of juice concentrate resulting in a lower price for growers. ○ There is not sufficient freezer capacity in BC to accommodate both cranberries and blueberries. <ul style="list-style-type: none"> • This is particularly true if there was any closure of the US border as a lot this BC fruit is sent to the States for freezing.

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ○ Development and production of new value-added food products <ul style="list-style-type: none"> • Increase value-added products made in BC including chocolate enrobed dry cranberries, more infused dry, juices and purees. • There is a rising global interest in dried fruit which cranberries could capitalise on. • Develop sales to the pet food market nationally. Most BC pet food manufacturers currently incorporate dried or frozen berries in their dog and cat food products. According to the pet food industry between 20 and 30% of dry pet foods contain cranberries. ○ There is still room for health growth <ul style="list-style-type: none"> • Further communication and promotion of cranberry health benefits can encourage the purchase of cranberries. • Increase awareness of health benefits among all age, education, and income group. ○ Encourage Ocean Spray to develop new products and to market them in Canada <ul style="list-style-type: none"> • Develop juice with reduced sugar or artificial sweeteners. • The Asian market is growing, and more volume is required from non-Ocean Spray growers. There is a big demand in China particularly among women for urinary tract health. ○ Exhaust the domestic and North American market <ul style="list-style-type: none"> • Canada continues to import cranberries during its production months. Efforts should be made to match domestic consumption with domestic production. • There are domestic opportunities to promote cranberries to the food service sector including restaurants and healthcare institutions. • Like Buy BC, Quebec and Ontario have successful programs for promoting local foods some ideas could be learned from these programs • Cranberry plus health: partners with hospitals in the US. BC should look to mimic this Ocean Spray organisation. 	<ul style="list-style-type: none"> ○ Current US trade policy <ul style="list-style-type: none"> • Closure of the border would devastate the industry given the reliance on a US based co-operative and the US market. ○ The threat of new competitors being added to an already crowded market <ul style="list-style-type: none"> • The forecasted increase in global supply will come not only from currently producing countries but also new countries entering the market. It is suspected that Eastern Europe and China will enter the market. ○ Other berries and other fruits produce in the market at the same time which heightens competition <ul style="list-style-type: none"> • Cranberries must compete with other superfruits. ○ BC faces a generational transfer issues (viability, financing) <ul style="list-style-type: none"> • With an aging labour pool and with little indication that the younger age group want to succeed their parents, the future of the industry is that risk. ○ Climate change will bring unpredictable and more extreme weather patterns to the province <ul style="list-style-type: none"> • Seasonal variability in weather will put pressure nearly all aspects of the industry from growing to harvesting to breeding. ○ Further changes to government regulations, policies and processes present as areas of concern for the industry <ul style="list-style-type: none"> • Regulatory uncertainty and related complications and costs are constant considerations which are beyond the control of growers and processors. ○ Securing sufficient and reliable labour is an annual concern for the industry <ul style="list-style-type: none"> • Accessing labour is increasingly difficult with no guarantee that circumstances will improve in the years to come. Without the current Temporary Foreign Worker Program, the industry would

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ○ Currently, BC exports can benefit from a strong US dollar for international sales <ul style="list-style-type: none"> • This is a time limited opportunity while the US dollar is strong for Canadian exporters. • There is potential to also try and capitalise on other markets where US dollar is currently favourable. ○ Education and marketing can increase consumption and drive sales <ul style="list-style-type: none"> • Utilize research done on behalf of the industry regarding health benefits in promotional info and campaigns. • Increase market coordination among the various industry groups. • Focus on differentiating BC berries, the BC season and buying local. • Increase consumer experiences with BC cranberries to increase the demand. ○ Export opportunities exist both in terms of improving access to current export destinations and opening new export markets <ul style="list-style-type: none"> • Reduction in tariffs to enhance access to current export markets. • Secure attractive trade opportunities with new markets including those in China, Japan, India and Europe. The main inheritors of Chile's cranberry exports are China, North America, and Europe. • Work to meet MRL regulations so Europe can become a legitimate market. ○ A well-funded breeding program and associated research offer long-term opportunities <ul style="list-style-type: none"> • Among other factors, new varieties are needed to extend the growing season and increase yields. New varieties from other regions need additional testing under BC growing conditions. • New varieties that would enable growers and processors to hit Canadian Thanksgiving would be in high demand. ○ Replanting offers to extend the growing season and produce higher yields 	<p>cease to exist, highlighting how finely balanced the supply of labour is for this industry.</p> <ul style="list-style-type: none"> ○ Unstable health and viability of the honeybee industry <ul style="list-style-type: none"> • Pollination is an important aspect of cranberry production. Insecticide selection to avoid harming pollinators and the control of natural insect predators are critical in growing berries.

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Renovating with different varieties that can spread the season over a longer timeframe and produce greater yields offers potential. Cultivars that produce with the sweetened and dried market in mind also offer opportunity. ○ There are likely opportunities to sweeten cranberry products with non sugar sweeteners, although most of those are more expensive than sugar 	

E. KEY OPPORTUNITIES AND ACTION PLAN

1. Growth in the Sweetened and Dried Cranberry Market

Due to the presence of Ocean Spray, value-added processing is not a significant activity in BC except for a small number of independent growers/processors. Most producers reference high capital costs and low volume outputs when asked about the potential of value-added processing. However, one form of value-added processing that did emerge as promising from the primary market research was drying cranberries and the products derived from dried cranberries including sweetened and chocolate or yogurt enrobed cranberries. Additionally, global demand for dried fruit generally and dried cranberries especially is forecast to rise in the coming years. The global dried cranberry market accounted for US\$170 million in 2018 and is expected to grow at a CAGR of 4.7% during the forecast period 2019 – 2027 to account for US\$256 million by 2027.²³

Value-added products, including SDCs, expand the market for cranberries by introducing additional products to the consumer. Almost all BC cranberry production is exported to Ocean Spray who process the berries in the USA and then export frozen berries and finished products back to Canada. Although Ocean Spray has developed a number of value-added products, BC growers have little influence over those developments or which products make their way to Canadian retail shelves. The high cost of listing products in the Canadian grocery retail market is a deterrent for Ocean Spray to launch new lines into Canada.

The following elements have been identified as requirements for those looking to operate in the sweetened and dried cranberry market:

- Fruit quality: cranberries destined for the sweetened and dried market must be of a high quality.
- Berry traits: Fruit firmness, size, and anthocyanin content are all important factors for cranberries that are destined for the SDC market. The SDC market requires fruit with a diameter >1/2 inches; uniform red color and midrange total anthocyanin (TAcy) of 35–50 mg/100 g fresh weight; round shape; and firm fruit with >450 g/mm with a good flesh integrity. Anthocyanin content is traditionally expressed as TAcy, mg of anthocyanin /100 g fresh fruit and is measured using a spectrophotometer.
- Packaging: For SDC that target to the end consumer, stand up packaging has proven successful. However, processors should take note of the rise in the number of consumers who prefer minimal packaging, driven by environmental concerns. In terms of bulk package, some of those operating in the industry have found it more straightforward to export to Asia so as to avoid all the labeling, packing and language requirements for end-consumer goods.

Actions to develop the sweetened and dried cranberry market

1. Companies that are interested in entering the dried and sweetened cranberry market must first establish if doing so is economically viable for their individual circumstances. To do this companies should conduct a feasibility study to discern the pros and cons of undertaking a project before a significant investment of time and money is made. Some elements to consider during the feasibility study include:
 - Product description (type of dryer must align with product type, volume capacity of dryer compared to availability of raw material)
 - Economic feasibility (cost/benefit analysis)

- Identification of the specific market (prevailing market, consumer demand, future market growth, competitors, potential customers, price point, projection of sales)
 - Technical capability (site analysis, existing technology, transportation, manpower)
 - Organizational feasibility (expansion or contraction, succession planning)
 - Financial projections (cost of dryer, working capital, access to finance, (banks, investors, venture capitalist), ROI,)
2. Upon completion of the feasibility study companies will need to make a 'go/no-go' decision based on the analysis and information. Individuals must judge whether the commitment is worth the time, effort and money and whether it is aligned with the organization's strategic goals and long-term aspirations.
 3. If the investment decision is positive, companies can develop a business plan for the new investment and implement it. Some obstacles to penetrating this opportunity include the capital costs of a dryer and a long return period on the initial investment.
 4. Companies can consult the following link which outlines information on [launching a new product line](#).
 5. For companies that already have drying infrastructure in place or hope to install the necessary equipment, they can explore the following three options:
 - i. Work with distributors who have market contacts, both domestically and internationally, to immediately gain market penetration;
 - ii. Establish direct sales with companies using SDC as ingredients; or
 - iii. Package and sell directly to retail for end consumers

The advantage of using an established distributor is that they already have market contacts for dried berry products. The distributor will be able to provide guidance to the processor on the quality, packaging and product characteristics that are required by the market.
 6. Already established driers should also capitalise on export growth markets. The advantage for BC is the lower shipping costs for dried product and higher prices compared to fresh and frozen products as well as a lower tariff than the US to export to China. To do so, they should identify North American and international markets for their products. This includes contacting companies which use SDC in their products. Examples of the types of companies that can be approached include functional food companies, ingredient companies and pet food companies.
 7. BC producers should consider marketing their SDC products to the following types of companies who are based both in Canada and in international markets:

Pet food

According to the Pet Food Industry Journal cranberries are incorporated into 20-30% of dry pet food in the US. PetCuean, a BC pet food processor, uses dried berries and powders in their products while Canature, a leader in freeze dried pet food, incorporates fresh and frozen berries into its products. There are other pet food companies across Canada and in the US that should be contacted to assess this market opportunity.

Food manufacturers

Dried berries may be marketed as an ingredient in foods such as: cereals, energy bars, trail mixes, bakeries and snack foods. Cranberry processors should make direct contact with these companies in BC, Canada and the US.

Nutraceuticals and Functional Foods

Some nutraceuticals and functional food companies use cranberry powder in their formulae. Most functional food companies in BC contract with companies that do custom blending and formulating for other consumer marketing firms. Standards for product quality are very high for

this market. Cranberry powder processors should contact Rehma Health Products, PNP Pharmaceuticals and GFR Pharma in BC and similar companies across Canada. Companies in BC that formulate their own products include: Natural Immix Health, and Organika.

8. Some potential barriers are difficulties in establishing relationships with potential customers and established competitors in the market.

Government actions/assistance to develop the SDC market

1. Primary market research indicates that the biggest barrier to capitalising on the growth in the dried cranberry market is the significant capital cost and investment required to make such an opportunity feasible. As such, the government should explore funding options which could include a cost sharing program with individual companies seeking to install expensive drying equipment or alternatively could include funding a centralised processing unit which could be shared among those interested in drying. This could take the form of a centralised food hub in the main cranberry growing region, Abbotsford. Other municipalities (e.g. Vancouver, Port Alberni, South Surrey and Quesnel;) in BC have begun, to varying degrees, to avail of the recent BC Food Hub Network launched by the Ministry which seeks to promote growth in the processing sector.
2. The second most referenced obstacle to penetrating the SDC market was that of low volume. There is concern among cranberry growers that they may not have access to markets with sufficient volume. As the dried fruit market is due to undergo significant growth in Asia in particular the Ministry along with the Trade Commissioner Service and others should seek to expand export opportunities for BC processors. Due to BC's relatively small population, any significant processing operation will need to rely on exports to some degree. Thus, ensuring processors have sufficient export opportunity is critical.
3. Given the government's recent commitment to fund a \$2.58 million state of the art Food and Beverage Innovation Centre at UBC, the Ministry must now take action to connect the berry industry to the Centre to ensure this does not become a purely academic pursuit. While the centre won't be operational for several years, the first point of action should be to raise awareness of this new resource among the berry community and to highlight how they will be able to use this centre in the years to come.

2. Maximize Domestic Market Sales for Frozen and Processed Cranberries

In 2019 (Jan-Nov), BC imported 1,587 tonnes of frozen cranberries. Approximately, 32%^x of the frozen cranberries were shipped into the province during BC's main production window (Sept-Nov). The US was the main supplier. Canada echoes similar trade patterns, importing 10,598 tonnes of frozen cranberries in 2019 (Jan-Nov). This import data suggests there is significant domestic consumption, particularly in the fall, which is not currently met by the local industry. The consumption gap represents an opportunity for local growers and processors to exhaust domestic sales channels.

Producers and government alike should capitalise on the strong business case for maximising sales to the domestic market as buying local can strengthen regional economies, support family farms, provide delicious, "fresh-from-the-field" foods for consumers, preserve the local landscape, and foster a sense of community. Farmers' markets, community supported agriculture, local food within grocery stores and food co-ops are among some of successful initiatives of Canada. Other similar

^x Percentage is likely to be fractionally higher than the figure quoted as the numbers referenced are based on 11 months of consumption, excluding December.

initiatives include restaurant and chef initiatives, culinary tourism and regional cuisine initiatives, food security or policy groups, food box programs (door to door delivery) and regional value chains. However, there are a number of barriers to the development of localized food systems. These include lack of financing, a limited growing season and a lack local processing infrastructure.

Potential strategies to develop a local food system include promotional programs focused on local consumers, institutional purchasing programs that create direct links between local growers and local institutions and low interest small loan programs for young farmers. Establishing a cost share program may also help farmers transition to local food production. Other important steps include increased processing capacity, increased market access, improved links between local producers and area distributors, increased private sector involvement and improved agriculture education. Governments can play a very important role in the development of local food systems by providing system-wide support for food grown using sustainable methods and appropriate technology for small-scale farms, improving labeling laws and supporting research and extension programs to disseminate information and research findings.

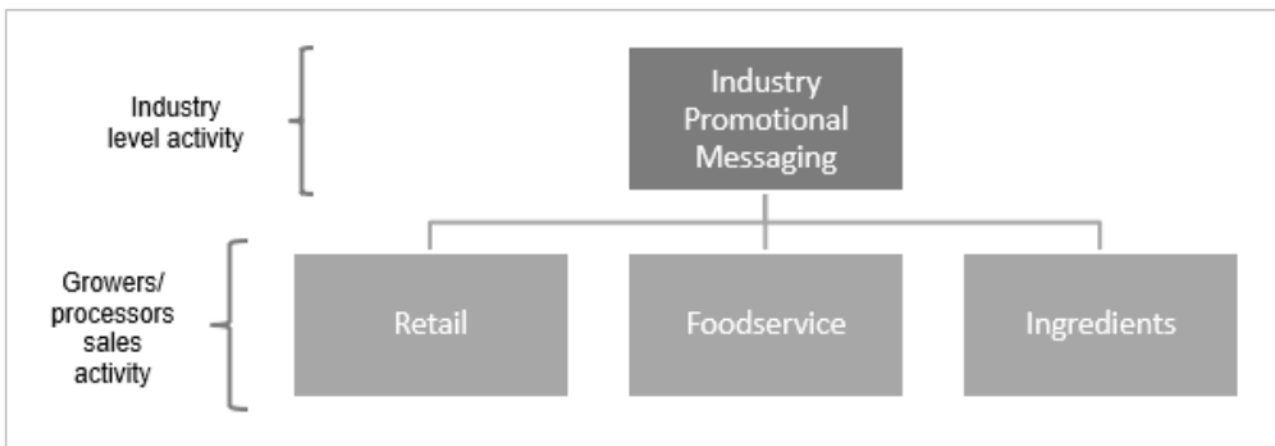
The following elements should be considered by those looking to maximise domestic market sales:

- Fruit quality: cranberries destined for the sweetened and dried market must be of a high quality.
- Berry traits: Fruit firmness, size, and anthocyanin content are all important factors for cranberries that are destined for the SDC market. The SDC market requires fruit with a diameter >1/2 inches; uniform red color and midrange total anthocyanin (TAcy) of 35–50 mg/100 g fresh weight; round shape; and firm fruit with >450 g/mm with a good flesh integrity. Anthocyanin content is traditionally expressed as TAcy, mg of anthocyanin /100 g fresh fruit and is measured using a spectrophotometer.
- Packaging: For SDC that target to the end consumer, stand up packaging has proven successful. Packaging for bulk SDC has fewer aesthetic requirements but should meet labelling and size requirements specified by the buyer.

Actions to increase sales in the domestic market

In order to maximize sales in the domestic market for frozen cranberries, activities at the industry level should complement the market development endeavours of growers and processors. Industry activity should drive increased consumption while grower/processors should focus on sales development capitalising on the increased demand for consumption driven by industry (Figure 35).

Figure 35: Domestic Market Opportunities for the BC Cranberry Industry



Industry level activity to increasing consumption

1. The industry should be responsible for the industry wide promotion of cranberries. The industry should seek to design and implement a professional, multi-pronged promotional campaign emphasising the health benefits of cranberries and use empirical research and evidence to support the marketing messages.
2. To increase consumption by individual consumers, the following strategies should be considered: online advertising; the use of social media influencers; turning consumers into promoters; and the continuous promotion of cranberries, with particular emphasis on health benefits, in various media channels.
3. For their foodservice audience, the strategies recommended include inspiring chefs to cook with cranberries through extensive outreach programs, engaging the skills and online platforms of celebrity status chefs, editorial partnerships with cookbook authors, driving awareness of the berry's versatility on menus in schools, hospitals, restaurants and commercial canteens and attend local foodservice events to promote the use of cranberries.
4. For the health professional audience, some suggested strategies include establishing partnerships with health professionals who believe in the value of cranberries and who are willing to circulate information on the health benefits of cranberries with their audiences while also highlighting the positive health implication of cranberries to consumers.
5. For the ingredient audience, strategies include hosting a cranberry event to encourage the uptake of cranberries into recipes, recipe contests, recipe design, recipe sharing, trade shows, blogs, vlogs media coverage, and aiding ingredient companies where possible.

Processor activity to drive domestic sales

Retail

1. In order to promote cranberries in retail grocery stores, companies should continue to work closely with individual banners to introduce their made in BC value-added products including dried, sweetened and dried, chocolate enrobed and juice.
2. The following guide, prepared by the BC Ministry of Agriculture, outlines information on [how to sell to retailers](#) and should be used by growers/processors.

Foodservice

1. Develop relationships with the food service industry (restaurants) to get more cranberries onto menus.
2. To penetrate the healthcare market, growers and processes should work with healthcare providers to get more cranberry products on the menus. BC companies should seek to work directly with the healthcare food purchasing organizations including Sodexo, Aramark and Compass.
3. Ensure that produce wholesalers and food distributors such as Sysco and Gordon Food Service (GFS) are carrying BC cranberries rather than imports.
4. The following guide, prepared by the BC Ministry of Agriculture, outlines information on [how to sell to the food service industry](#).

Ingredients

1. There are many BC companies incorporating SDC in their products including bakeries, confectionaries, beverage manufacturers, wineries and those making pie fillings, dairy products, sauces, condiments and pet food. All of the companies in BC and else where that use cranberries as ingredients cannot be listed here. An example, however, is Sandel Foods, the only company in BC manufacturing fillings, syrups, glazes and sauces. Besides price, consistency of supply and quality will be the determinants in securing the ingredient market from imports.

3. Expand and Develop New and Existing Export Markets

Developing export markets offer many benefits which include increased sales, economic of scale, reduced vulnerability and global and domestic competitiveness. However, it is not without its obstacles which can include increased costs, increase commitment levels, patience, language barriers, travel requirements and foreign regulations. Nonetheless, there are a number of export opportunities that exist for the BC cranberry industry. The opportunities are two-fold:

- i. **Improve access to markets in which BC companies already has a degree of access to**
 - This includes examples such as tackling the EU MRL standards. While BC and Canada do have access to the European market though the recently signed 'The Comprehensive Economic and Trade Agreement', companies face significant obstacles when it comes to maximum residue limits (MLR's) for pesticides. The EU is the largest economy in the world with more than 500 million people in this single market.
- ii. **Secure access to new markets that are rooted in competitive trade agreements**
 - As global cranberry consumption increase, export opportunities exist in new markets for BC producers. Export markets of note include further expansion to the US, China, Japan, India and Europe. One national food distributor reported that they could not acquire enough frozen cranberries for their export opportunities in Asia, a very fast growing market. The health benefits of cranberries are well recognized in China. BC growers should take advantage of the opportunity to supply this market.

Actions to expand export markets for growers/process

1. Asses export potential and readiness

- This includes examining current company recourses including financial and staffing. Companies should consider their customer profile and whether product modifications will be required for their chosen export market. Transportation, production resources, domestic market success, packaging, labelling and local representation are other factors for review.

2. Develop an export plan

- Export enthusiasts should identify and document their export objectives followed by conducting market research to determine their most appropriate target markets.
- Other key areas of focus include market overview, market-entry strategy, regulatory issues and risk factors.
- Financial assistance for market research and developing export plans by contracting qualified suppliers is available, by selection and approval from Investment Agriculture Foundation under their BC Agrifood & Seafood Market Development Program.

3. Financing export endeavours

- Exporters should establish their export budget. It will likely include the following costs: staffing, market research, travel, marketing, participation in trade shows and product redevelopment. Trade show participation costs can be cost-shared with IAF's BC Agrifood & Seafood Market Development Program.
- Additional funding options should be explored at the following links:
 - Export Financing – Canada Business Network
 - How to Finance your Growing Business – Small Business BC
 - Export Guarantee Program – Export Development Canada
 - Business Development Bank of Canada

- [CanExport program](#)

4. Develop an export marketing strategy

- Language, culture, communication styles and business customs vary from country to country. By companies understanding their target country and customizing their marketing strategy, they will attract buyers more easily.
- More information to creating an effecting marketing strategy can be found at [Export Marketing Strategies – Canada Business Network](#)

5. Enter your target market

- The optimal market entry strategy should be determined. Options include direct or indirect exports, partnerships and acquisitions.
- Consider the use of intermediaries. Using an intermediary to represent your business in an international market can save you time and money and improve your chances of export success.
- Exports should be mindful and informed on the tariffs and export regulations they are likely to face.
- Consideration should be given as to how best to ship the product. Factors to assess include shipping documents, packing, labeling, cargo insurance and maybe even hiring a customs broker.

6. A wealth of resources for exporters exist. Some of which are be found at the following links:

- The BC Ministry of Agriculture has previously developed Market Export Guides for BC Agrifood and Seafood companies. [Guides for 12 different international markets](#) were prepared. This includes China, Germany, Japan, the Philippines, Singapore, South Korea, Spain, Taiwan, Thailand, the UK, the UAE and Vietnam.
- The Trade Commissioner Services (TCS) funded by the Government of Canada provides services to Canadian businesses that have researched and selected their target market(s) abroad. These services can help a company prepare for the international market, assess market potential, identify qualified contacts and solve problems. With more than 160 offices in Canada and abroad, the TCS provides a full range of international business development services to Canadian SMEs active or interested in exporting.
- MY TCS is an online platform offered by the TCS that provides you with access to market information and insight on business opportunities that match your specific business interests. Opt-in to receive email notifications about new export publications, upcoming trade events, webinars, videos and podcasts, as well as editorial content from the TCS flagship magazine, CanadExport.
- CanExport provides financial support for a wide range of export marketing activities that increase the competitiveness of Canadian companies. CanExport will provide up to \$50 million over five years in direct financial support to Canadian SMEs seeking to develop new export opportunities, particularly in high-growth priority markets and sectors.
- Export Development Canada (EDC) is Canada's trade finance agency, providing financing and insurance solutions locally and around the world to help Canadian companies of any size respond to international business opportunities.
- The Business Development Bank of Canada (BDC) can help you meet your working capital needs through long-term financing and flexible repayment options. BDC can provide you with expert guidance and support to help you seize opportunities to expand and export to the U.S. and other international markets.

- The Agri-Food Trade Service (ATS) of Agriculture and Agri-Food Canada provides a full range of market access, market development and investment services to Canadian agri-food companies.

4. Replanting New Varieties Offers Opportunities to Growers

Some of the current vines in BC are up to 50 years old and yields have declined. Replanting with new varieties should lead to improved yields. If BC is to remain competitive it must begin to, at least match if not exceed the production yield per acre of Wisconsin which produces the highest yield per acre in the cranberry industry. However, this can be an expensive and lengthy endeavour, thus it must be evaluated on a benefit cost basis case by case. As Ocean Spray is the main buyer of BC cranberries for those who deliver to this co-op, their buying intentions and limitations for replanting must be taken into consideration.

Actions to capitalise on replanting

1. Growers should identify varieties that have the best characteristics for their intended purpose and accounting for any preference indicated by their buyers. These include season lengthening cultivars and higher yielding varieties.
2. As there is no one variety that meets every criterion, growers will need to prioritise varieties that align to their future growth and market plans.
3. Growers should gradually replant their cranberry acreage. This will reduce the effects of income loss.
4. Primary market research indicates that the cost of replanting an acre of cranberries costs approximately \$30,000. This does not include the loss of income while the land is returning to yield. With this in mind, financial assistance for replanting should be explored.

APPENDICES

APPENDIX 1 – LIST OF KEY INFORMANT INTERVIEWEES

Organization	Contact name
1. BC Blueberry Council	Anju Gill
2. Raspberry Industry Development Council	Lisa Craig
3. BC Strawberry Growers Association	Lisa Craig
4. BC Cranberry Marketing Commission	Coreen Rodger Berrisford
5. BC Cranberry Growers Association	Mike Wallis
6. Blueberry representative on Industry Advisory Committee	Travis Drew
7. Cranberry representative on Industry Advisory Committee	Jeff Hamilton
8. Raspberry representative on Industry Advisory Committee	Paul Sidhu
9. BC Ministry of Agriculture - BC Berry Specialist	Carolyn Teasdale
10. Independent Industry Specialist	Mark Sweeney
11. Agriculture and Agri-Food Canada - Sector Specialist	Farid Makki
12. Agriculture and Agri-Food Canada - Senior Industry Development Officer	Jeffrey Lang
13. BC Blueberry Council, Raspberry Industry Development Council and BC Strawberry Growers Association - Research Director	Eric Gerbrandt
14. BC Berry Cultivar Development Inc. - Breeder & Geneticist	Michael Dossett
15. Washington Red Raspberry Commission	Henry Bierlink
16. US Highbush Blueberry Council - Marketing Director	Vicki de Bruin
17. Berry Growers of Ontario - Executive Director	Kevin Schooley
18. Association of Strawberry and Raspberry Producers Quebec	Jennifer Crawford
19. Washington State University - Breeder	Pat Moore
20. Pacific Canadian Fruit Packers	Cam Watt
21. Valley Select	Cam Watt
22. Golden Eagle	Alana Aquilini
23. Driediger Farms	Rhonda Driediger
24. North of 49 Naturals	Andrew Small
25. Kahlon Farms	Sukh Kahlon
26. RJT Blueberry	Tina Chow
27. South Alder Farms	Jesse Brar
28. Lally Farms	Manlin Lally
29. Hilliers Estate Farms	Chris Bergan
30. Triple Crown Packers	James Bergan
31. Westberry farms	Parm Bains
32. Coast Cranberries	Dale Duley
33. Coast Cranberries	Jaspal Kaur
34. Fraser Valley Packers	Joe Gill
35. Starline Foods	Joe Gill
36. Silver Valley (Snowcrest)	Ray Biln
37. CanWest	Humraj Kallu
38. Ocean Spray	Mike Dance
39. Berry Haven Farm	David Mutz
40. Bremner Foods	Terry Bremner
41. Yellow point Cranberries	Grant Keefer
42. Fruit D'or	Simon Bonin
43. Save on Foods	Larry Bush & Owen Fike
44. BC Frozen Foods	Yasir Shah
45. Compass	Fiona Lee
46. Berry Mobile	Rob Smith
47. CFP	Chris Messent
48. Sodexo	Cynthia Goertz
49. Northern Health Authority	Darcie Bergeron

50. Sysco	Ryan Thiessen
51. Naturipe	John Shelford
52. Pacific Canadian Fruit Packers	Steve Robinson
53. Fresh Direct	Jozef Hubbermin
54. PetCurion	Jamie Turkington
55. Rhema	Jim Pratt
56. Silver Hills Bakery	Steve MacIntire
57. Sandel Foods	Christine Rietman
58. Yupi	Jenna Adams and Sean Stewart

APPENDIX 2 – OVERVIEW OF THE GROCERY RETAIL MARKET

The Canadian Retail Grocery Landscape

The Canadian retail industry is dominated by two major chains: Loblaw's and Sobeys. Both companies have retail operations in all provinces and employ a number of retail "banners" to capture market share in different market segments. This strategy has also been adopted by some of the larger regional chains such as Metro and Overwaitea Food Group to compete with the nationals and independents in their market areas. Costco and Walmart have also become major players in the grocery business in recent years. Moreover, two drug store chains in BC that carry groceries are owned by grocery retailers.

Banners

Retailers in the food industry use a variety of "banners" or names of stores to differentiate themselves from the competition. The purpose of the banner is to signal to the consumer the positioning of the store in respect to product price, level and range of services, product selection, and shopping experience. Food retailers have traditionally used banners to denote one of four types of store "format": 1) Good food, fine food, great food, premium food 2) Discount, hard discount or super savings 3) Superstore, big box, bulk, wholesale 4) Convenience There are a wide range of store formats in the good or great food category. They can range from the Thrifty Foods, Sobeys or Safeway format with the large produce areas, in-house bakeries and a cold and hot deli to the format of an Overwaitea or Family Foods format.

The following table (Table A1) outlines the percentage market share each major retailer has of the national grocery market while the second table below highlights the retailer active in the BC market.

Table A1: Canadian Market Share Percentage Held by Major Retailers

Retailer	Canadian market share percentage
Loblaw's	30%
Sobeys/Safeway	21%
Costco	11%
Metro	11%
Walmart	7.5%
Save On/Overwaitea	3%

Table A2: Retailers and their respective banners that are active in the BC market

Major Retailers	
National/Regional Chain	Banner Name
Jim Pattison Group	Buy-Low Foods <ul style="list-style-type: none"> Budget Foods Buy-Low Foods Nesters Market Meinhardt Fine Foods Quality Foods Shop n'Save AG Foods Choices Markets Nature's Fare Markets
	Overwaitea Food Group <ul style="list-style-type: none"> Urban Fare Save-On Foods PriceSmart Foods Bulkley Valley Wholesale
Loblaw Company Ltd.	<ul style="list-style-type: none"> Loblaws City Markets Real Canadian Superstore Shoppers Drug Mart T&T Supermarket Supervalu No Frills
H.Y. Louie Co.	<ul style="list-style-type: none"> IGA/Market Place IGA Fresh Street Market London Drugs
Sobeys	<ul style="list-style-type: none"> Sobeys Safeway Thrifty Foods
General Merchandise	
<ul style="list-style-type: none"> Costco Walmart Whole Foods Market 	
Specialty	
<ul style="list-style-type: none"> Stongs Kin's Farm Market Fairway Market Country Grocer Red Barn 	

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