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Raspberries for Processing: Conditions of Competition between U.S. and Foreign Suppliers, with a Focus on Washington State

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Glossary of Terms

Terms	Definition
B Grade	Product group that includes block frozen products and purees.
block frozen	Raspberries that are frozen in their own juices, with or without additional sugar.
Brix	A measure of dissolved sugar. One degree Brix is 1 gram of sucrose in 100 grams of solution.
CanadaGAP	Canadian Good Agricultural Practices certification.
cultivar	Cultivated varieties of plants, developed by breeders to produce desired characteristics.
GLOBALG.A.P.	An international farm assurance organization that promulgates and certifies supplier compliance with Good Agricultural Practices.
grower-processor	A vertically oriented firm that grows and processes its own product.
hoop house or high tunnel	Semipermanent structures that protect crops against extreme weather.
IQF	Individually quick frozen raspberries are loose raspberries, which may be whole, broken, or crumbles.
non-IQF	Any raspberries for processing not considered IQF.
puree	Raspberries blended and sometimes sieved (i.e., to produce a sauce).
seconds	Raspberries that were originally intended for sale in the fresh market but do not meet product specifications.
straight pack (s-pack)	Block frozen raspberries without added sugar.

Abbreviations and Acronyms

Item	Definition
AAEA	Agricultural and Applied Economics Association
AMS	Agricultural Marketing Service (USDA)
ASOEX	Chilean Fruit Exporters Association
AUV	average unit value
AVE	ad valorem equivalent
BCRGA	British Columbia Raspberry Growers Association
CCFTA	Canada-Chile Free Trade Agreement
CETA	Comprehensive Economic and Trade Agreement (Canada and EU)
CIF	cost, insurance, and freight
COOL	country of origin labeling (United States)
co-op	cooperative
COP	cost of production
CORFO	Production Development Corporation (Chile)
COVID-19	coronavirus disease 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
CV	coefficient of variation
ERS	Economic Research Service (USDA)
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	Food and Agriculture Organization Statistics Division database
FAS	Foreign Agricultural Service (USDA)
FDA	U.S. Food and Drug Administration
FOB	free on board
FSMA	Food Safety Modernization Act (United States)
FSSC 22000	Food Safety System Certification 22000
FY	fiscal year
GAP	Good Agricultural Practices
GFSI	Global Food Safety Initiative
GHP	Good Handling Practices
GMP	Good Manufacturing Processes
GSP	Generalized System of Preferences (United States)
GTA	Global Trade Atlas (database)
ha	hectare (2.47 acres)
HACCP	Hazard Analysis and Critical Control Points
HARPC	Hazard Analysis and Risk-Based Preventive Controls
HS	Harmonized Commodity Description and Coding System
HTS	Harmonized Tariff Schedule of the United States
INDAP	Institute for Agricultural Development (Chile)
IPRs	intellectual property rights
IQF	individually quick frozen
IRO	International Raspberry Organization
kg	kilogram(s)
LMHIA	Lower Mainland Horticultural Improvement Association
MFN	most-favored-nation (tariff rates)
MRLs	maximum residue levels
mt	metric ton(s)
NAFTA	North American Free Trade Agreement
NASS	National Agricultural Statistics Service (USDA)

Raspberries for Processing

Item	Definition
NGO	nongovernmental organization
OECD	Organisation for Economic Co-operation and Development
OR	Oregon
RBDV	raspberry bushy dwarf virus
RCA	revealed comparative advantage
RIDC	Raspberry Industry Development Council (British Columbia)
SAG	Agricultural and Livestock Service (Chile)
SIAP	Agrifood and Fisheries Information Service (Mexico)
SORS	Statistical Office of the Republic of Serbia
SQF	Safe Quality Food Program (global program)
SRCA	symmetric revealed comparative advantage
USD	U.S. dollar
USDA	U.S. Department of Agriculture
USITC	U.S. International Trade Commission
USMCA	United States-Mexico-Canada Agreement
USTR	U.S. Trade Representative
WA	Washington State
WRRC	Washington Red Raspberry Commission
WTO	World Trade Organization

Executive Summary

The purpose of this investigation is to provide information and analysis on the U.S. processed raspberry industry and its competitiveness compared to foreign suppliers to the U.S. market. The U.S. processed raspberry industry consists of two segments. The first segment produces fresh raspberries used as an input into processed products; the second is processed raspberry products—including frozen berries, puree, and juice—which are used as ingredients in a range of processed foods and retail products. The U.S. industry has reported increased competition with imports in the U.S. market in recent years for both processed raspberry products and fresh raspberries for processing, as well as a decline in U.S. prices for these products.

The U.S. processed raspberry industry is based largely in Washington State, with a small amount of fresh raspberries for processing also grown in Oregon and some processing in California of fresh raspberry “seconds.”¹ From 2015 to 2020, sales of processed raspberry products supplied by the industry in Washington were roughly \$530 million, while U.S. imports were valued at about \$740 million during this period, for an estimated total U.S. market of over \$1 billion over the period. Demand for raspberries in the United States, as evidenced by apparent consumption, was largely steady from 2015 to 2019.

The U.S. industry has expressed concerns about U.S. imports of fresh raspberries for processing, processed raspberries, and frozen mixed berries (which include raspberries). From 2015 to 2020, U.S. imports of fresh and processed raspberries were supplied by four major source countries—Mexico, Chile, Serbia, and Canada—which are profiled within this investigation along with the United States. Due to several factors, including proximity, Mexico was the largest supplier of fresh raspberries for processing to the United States from 2015 to 2020. Together, Mexico, Chile, Serbia, and Canada supplied 99 percent of U.S. imports of processed raspberries in 2020. Meanwhile, in 2020, Canada was the largest supplier by volume of frozen mixed berries to the United States, a product in high demand by U.S. consumers.

The Request

U.S. Trade Representative Robert Lighthizer requested this investigation in a letter received by the U.S. International Trade Commission (USITC or Commission) on April 9, 2020. The letter asked for information on the conditions of competition between the United States (specifically in Washington State) and foreign suppliers of both raspberries meant for processing and processed raspberries. The letter noted that WRRRC and its members (raspberry growers and processors) had raised concerns about imports of fresh raspberries for processing (not for fresh consumption) and of processed raspberries (including frozen) and had alleged that unfair practices were involved.

The Trade Representative requested the Commission conduct three overall assessments of the U.S. processed raspberry industry and major suppliers of processed raspberries to the United States,

¹ These are berries originally grown for the fresh market but later sold to the processed market because these fruits did not meet fresh market specifications.

including: (1) a cross-country comparison of competitiveness, (2) an analysis of U.S. prices, and (3) an estimate of the economic impact of imports. The Trade Representative also requested information on production, consumption, and trade, as well as profiles of processed raspberry industries in the United States and in major supplier countries to the U.S. market. The report primarily focuses on the period between 2015 to 2019, but includes 2020 in chapters 3 through 7 (the industry profiles), in chapter 8 (“Pricing Analysis: Relationship between Imports and Prices in the U.S. Market”), and chapter 9 (“Economic Impacts of Imports”).

Overall Findings

The study took a different approach for each of the three requested assessments:

The cross-country assessment used an agricultural competitiveness framework to provide a qualitative analysis of competitiveness. The framework compared the United States’ processed raspberry industry to industries in countries that are major suppliers to the U.S. market (Mexico, Chile, Serbia, and Canada) in terms of delivered cost, product differentiation, and reliability of supply. Chapter 2 (“Cross-Country Comparison of Competitiveness”) also provides an estimation of symmetric revealed comparative advantage (SRCA) as another indicator of competitiveness of the profile countries.

A descriptive analysis of prices in the U.S. market was conducted using available price data. Along with information on the product mix of imports, these data were used to provide a look at the relationship between Washington State prices and import prices in the U.S. market for processed raspberries and fresh for processing raspberries.

A partial equilibrium model was used to assess the economic impact of imports from major producing and exporting countries on production and prices of Washington fresh for processing and processed raspberries. This quantitative analysis used estimated results for two separate market segments: individually quick frozen (IQF) raspberries and non-IQF raspberries (encompassing fresh for processing, block frozen, puree, and juice, including concentrate).

The data and methodology used in this report, as well as its scope, as described in chapter 1 (“Introduction”), differ from those the Commission uses in import injury investigations. For example, in contrast to this investigation, in import injury investigations the Commission utilizes questionnaire data submitted by industry participants to measure such things as production and pricing.

Cross-Country Comparison of Competitiveness

As shown in table ES.1, the U.S. processed raspberry industry in Washington State and the main suppliers of imports were evaluated on three broad dimensions: delivered cost, product differentiation and reliability of supply. The United States comparison is based on the processed raspberry industry in Washington State and does not consider competitive factors of processed raspberry production in Oregon, California, or other regions in the United States. The Commission found that the U.S. industry in Washington is a high-cost producer of processed raspberry products including premium products—that is, IQF raspberries—that have highly desirable product characteristics (based on reputation for food safety, color, and sugar content) Canada is also a high-cost supplier of slightly less differentiated products than the United States, producing primarily non-IQF products (purees and block frozen) along

with some IQF raspberries. Chile and Serbia are both medium-cost suppliers of highly differentiated IQF products, including organic IQF raspberries. Mexico is a low-cost supplier of less differentiated products, primarily non-IQF products (fresh for processing, block frozen, puree, and juice and juice concentrate). All these countries have medium or high reliability of supply, which refers to the ability of a supplier to deliver a specified quantity of a product of a particular quality to a given location at a contracted time.

Table ES.1 Comparison of competitive factor categories for processed raspberries in selected countries, 2015–20

Country	Delivered cost	Product differentiation	Reliability of supply
United States (WA)	High	High	Medium
Canada	High	Medium	Medium
Chile	Medium	High	High
Mexico	Low	Low	High
Serbia	Medium	High	Medium

Source: Compiled by USITC.

Note: The United States comparison is based on the processed raspberry industry in Washington State and does not consider competitive factors of processed raspberry production in Oregon, California, or other regions in the United States. For Mexico, the competitive analysis considers exports of processed raspberries and seconds from the fresh market channel that are exported for processing.

Analysis of Prices in the U.S. Market

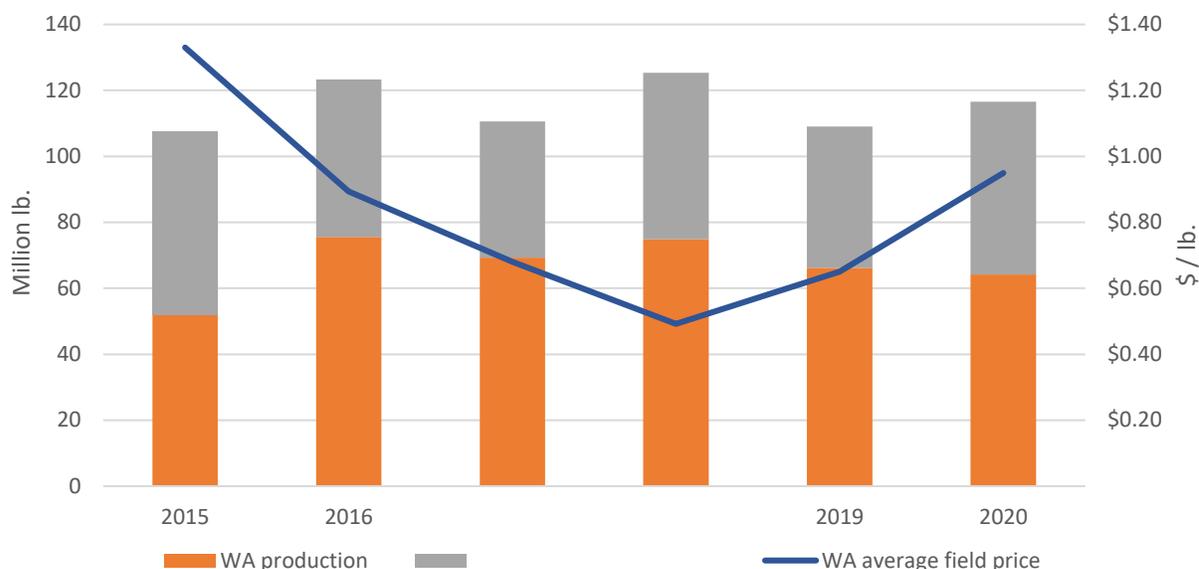
U.S. industry representatives in Washington State have stated that there is a clear relationship between increased imports and lower U.S. prices for raspberries. In studying this relationship using available annual data, the Commission’s descriptive analysis noted that between 2015 and 2020, prices were related to the combination of U.S. domestic production, stocks, and imports that made up total U.S. supply.

In response to low domestic production, quantities of U.S. imports peaked in 2014 for non-IQF products and in 2015 for IQF. However, these peaks are not fully apparent in figure ES.1. In 2015, prices for Washington processed raspberries started at a 10-year high due to lingering effects from low domestic production in 2014–15. After this period of record-high pricing, prices continuously declined along with imports until 2018. In 2018, prices hit period low levels, when U.S. supply and imported quantities reached a peak. As a result, the analysis showed that, although higher imports coincided with a drop in prices of U.S.-produced processed raspberries in 2018, declining prices coincided with declining imports earlier in the period. Washington prices rebounded in 2019 and again in 2020, as imports declined in 2019 but rose again in 2020 along with high consumer demand for frozen foods in 2020.

The Commission also compared, based on available annual data, average unit values (AUVs) of U.S. imports with Washington prices to assess the degree to which changes in these different prices appear to be correlated, and found that the degree of linkage varied by product (IQF or straight pack). Import AUVs for major straight pack-supplying countries and Washington straight pack sales prices appeared to be correlated during 2015–20, though import AUVs for Mexico reflected pricing that was far more stable (i.e., fluctuated less) than either Washington prices or Canadian AUVs. U.S. sales prices for IQF raspberries and import AUVs for major IQF-supplying countries appeared to follow the same general trends more closely throughout 2015–20.

Figure ES.1 U.S. imports of frozen raspberries; Washington production and field prices of raspberries for processing, 2015–20

Imports and production are in million lb. (left axis) and field prices are in dollars per lb. (right axis). Underlying data for this figure appear in [appendix H table H.1](#).



Source: USITC DataWeb/Census, imports for consumption, HTS 0811.20.2025, accessed February 4, 2021 (for frozen raspberry imports); WRRRC, email message to USITC staff, December 18, 2020 (for Washington production and Washington average field price).
 Note: The prices provided by WRRRC are estimated average prices and do not represent actual prices paid by their customers.

Economic Impacts of Imports

Observing that a surge in the growth rates of imported fresh for processing and processed raspberries occurred prior to 2016, partial equilibrium models were used to simulate a counterfactual scenarios in which the sharp increase in U.S. imports of IQF and non-IQF raspberries did not take place before 2016, reducing imports both during the surge years and in the 2016–20 period. Modeling results show that for the IQF and non-IQF markets, reducing imports would have increased revenue (i.e., gross sales) for Washington processors. The non-IQF market faced faster-growing import competition than the IQF market during the period of analysis. Washington prices and production of non-IQF raspberries would have been much higher absent the large increase in growth rates of imports. The IQF market was impacted less by imports over the period of analysis but did face short spikes of higher competition with imports. The models indicate that, in those years, domestic revenue from IQF raspberries would have been higher. Due to capacity constraints in Washington’s production of IQF raspberries, that increased revenue would have mostly come through higher prices, with smaller effects on production levels. A summary of these results is shown in table ES.2.

Table ES.2 Summary of estimated impacts of imports on the Washington markets for IQF and non-IQF raspberries, 2016–20

In millions of U.S. dollars and percentages.

Product	Actual value of Washington gross sales (millions of US\$)	Simulated value of Washington gross sales (millions of US\$)	Actual Washington market share (% of sales)	Simulated Washington market share (% of sales)	Simulated change in price (% over actual)	Simulated change in production (% over actual)
IQF	225.1	295.2	46.7	61.2	29.4	1.1
Non-IQF	205.5	373.3	37.9	68.8	34.7	34.7
Total	430.6	668.4	42.0	65.3	32.0	17.1

Source: Model estimates by USITC.

Note: The model used values reported by the WRRRC for actual Washington sales value and U.S. import values as reported in official import statistics. The actual and simulation values are based on the total values from 2016 to 2020. The simulation changes in price and production are expressed as a weighted average (based on actual domestic value) of the percentage above the actual prices and production in each year from 2016 to 2020. The market shares columns show Washington State's share out of the sum of sales value for Washington and imported products. IQF and non-IQF raspberries from California or other states are not included in the total.

Global Trends and Industry Profiles: Findings and Observations

This report covers global trends and industry profiles for the U.S. industry and for major suppliers of fresh for processing and processed raspberries to the U.S. market. For the global trends, relevant production and trade data were gathered from publicly available data sources as well as from industry representatives and non-industry organizations. The country profile data were gathered by reviewing existing literature and conducting extensive interviews with sources knowledgeable about the industry, including traders and representatives of firms, trade associations, academics, government officials, and nongovernmental organizations (including those that represent the interests of workers). Industry and product information was also given to the Commission at a public hearing, where representatives from the fresh and processed raspberry industries provided testimony.

Global Production, Consumption, and Trade

Raspberries are a specialty crop, and only a few countries produce and export the product in large quantities (figure ES.1). Generally, raspberries that are intended for processing do not travel long distances before being processed due to their short shelf life. Thus, processing is typically located near growing areas, which means that the countries that grow raspberries for processing are often large producers of processed raspberries; however, not all large fresh raspberry producers process and/or export raspberries.

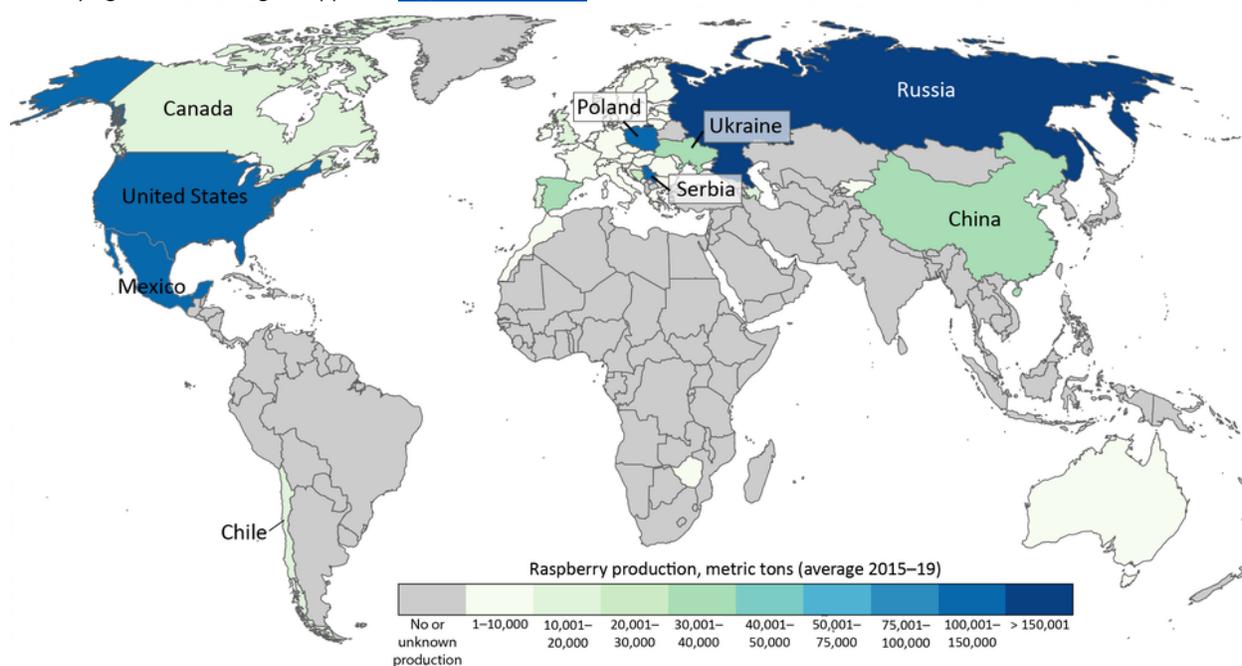
Given the lack of raspberry processing data, fresh raspberry production and the levels of imports and exports of frozen raspberries are broad indicators use to identify the key players in the global processed raspberry market. Global production of fresh raspberries is highly concentrated, with the top five countries—Russia, Mexico, Serbia, the United States, and Poland—supplying 73.1 percent of production in 2019. Russia is the largest single-country raspberry producer by volume, but most Russian raspberries

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are grown for its home fresh market, unlike those in Mexico and Serbia. Poland is the fifth-largest single-country producer by volume, producing primarily for the processed export market. But it supplied less than 1 percent of U.S. imports of frozen raspberry products each year from 2015 to 2020. The United States is the fourth-largest global producer of raspberries, production in the United States fell 14.1 percent, from 119,295 mt in 2015 to 102,510 mt in 2019, largely due to declines in U.S. fresh market production. While Chile and Canada rank as 10th- and 13th-largest producing countries by volume, they are also top suppliers to the U.S. market.

Figure ES.2 Global raspberry production by country, average 2015–19

Underlying data for this figure appear in [appendix table H.2](#).



Source: FAO, FAOSTAT database, Crops: Raspberries, accessed January 19, 2021; Li, “12th World Conference,” accessed March 23, 2021 (data for China).

Note: FAO data for Chile may be incomplete; alternative, higher estimates for Chilean production from Chilealimentos are presented in chapter 7 (“Chile”). Production data for China are not available from FAO and are unofficial statistics from an industry representative.

Growth in global raspberry consumption is driven by several factors, including improved raspberry cultivars, better logistics, and consumers seeking more healthful diets. In recent years, consumers have increased their consumption of fruits, including raspberries, because of increased consumer interest in healthier eating. The global COVID-19 pandemic increased retail demand for frozen fruits in 2020, but supply-side factors have limited product availability.

Processed raspberry products are more durable and have a longer shelf life than fresh raspberries. The processed products are therefore more easily traded across longer distances, but trade is still concentrated in value chains in two regions: the Americas and Europe. In 2019, the United States and Canada were the largest importers in the North and South American regional value chain, supplied by North and South American exporters, including Chile and Mexico. Serbia is a major supplier of processed

raspberries to the United States; but Serbia primarily supplies European countries, primarily Germany and France, the largest global importers of frozen raspberries.

Due to the perishability of fresh raspberries for processing, they are generally traded across shorter distances. Thus, Mexico and Canada supply most of the United States' imports of fresh raspberries for processing. During 2015–20, the United States, however, was not a major global exporter of either processed raspberries or fresh raspberries for processing because the United States consumes most of what it produces and imports.

United States

The United States is the fourth-largest producer of raspberries in the world. The country produced over 100,000 metric tons in 2019, more than 10 percent of global production. Approximately one-third of the volume of total U.S. production of raspberries is made up of raspberries for processing, valued at over \$60 million in 2020. Most production of U.S.-grown raspberries for processing occurs in Washington State, and to a lesser extent in California and Oregon.² The Washington industry is also a major producer of processed raspberry products; its processed industry sales were estimated to be worth over \$90 million in 2020. California also processes raspberry seconds originally grown for the fresh market.

Two aspects of the U.S. processed raspberry industry distinguish it among the world's major producers of raspberries for processing. First, the industry machine-harvests raspberries instead of handpicking them. Second, most of the U.S. industry is made up of vertically integrated firms that do both growing and processing. These two characteristics allow for the quick harvesting and processing of large volumes of raspberries in a highly localized area. However, two factors weaken U.S. competitiveness vis-à-vis imports, particularly in lower-value processed products. One factor is geographic concentration, which exposes the majority of the U.S. raspberries grown for processing to the same weather events. Also, the United States' relatively high production costs, driven by high labor costs, can limit the competitiveness of U.S. products relative to imports. In addition, the highly concentrated growing region in Washington has climate and pest pressures that make producing organic raspberries on a commercial scale difficult and expensive.

Canada

Canada is a minor global producer and exporter of processed raspberry products, almost exclusively serving its home market and the U.S. market. Nearly all processed raspberry production in Canada is in the Fraser Valley, British Columbia, which is just over the border from Washington. Canadian processors in British Columbia primarily convert fresh berries from Canada and the United States into IQF raspberries, straight pack, puree, and juice concentrate. Canada also has a competitive repacking industry, which sources large volumes of frozen inputs from U.S., Canadian, Chilean, and Serbian

² California accounted for 26.0 percent of U.S. raspberries for processing while Oregon accounted for only 6.3 percent of U.S. raspberries for processing from 2015–2017, the last three years of available state level data. In some instances, production data for California and Oregon were included in the industry analysis, but the primary focus of this investigation is on the industry in Washington. California focuses its production on growing raspberries for the fresh market but also sells, at arm's length, raspberry seconds to the processed market.

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producers to supply the U.S. market with IQF raspberries and frozen mixed berry products that include raspberries. Canadian exports of frozen processed raspberry products to the United States increased from 2015 to 2020, even as production of domestic fresh raspberries for processing fell because of poor weather, rising land rents, low yields, and farmers pulling canes (raspberry plants) to grow other berries. To export more to the U.S. market, Canadian processors imported increasing volumes of fresh and frozen raspberries as inputs.

The raspberry industries in Washington and British Columbia have a special relationship because of their geographical proximity, similar production systems and cost structures, shared focus on processing, and cross-border integration. Canadian frozen raspberry products remain competitive in the United States due to Canadian processors' access to fresh raspberries for processing grown in both British Columbia and Washington. However, Canadian growing and processing costs are considered to be higher than those in the United States, due to higher land costs. Despite high delivered costs, Canadian IQF repackers benefit from access to large volumes of IQF raspberries from Canadian and imported sources.

Mexico

Mexico is the second-largest global producer of raspberries (after Russia), supplying 15 percent of global production in 2019. Mexico's raspberry production mainly serves the lucrative fresh market in the United States. Mexico's small raspberry processing industry grew out of this fresh market production. That industry is driven solely by the availability of raspberry seconds, or raspberries that do not meet the product specifications for the fresh market, whose volume has been growing in recent years as overall raspberry production has grown. Mexican exports to the United States include processed raspberry products produced in Mexico using raspberry seconds, as well as fresh raspberry seconds in bulk form that are processed by U.S. firms. As shown in chapter 3 ("United States"), fresh raspberries for processing from Mexico accounted for nearly all U.S. imports of fresh raspberries for processing.

Mexico's competitiveness in the U.S. processed raspberry market is enhanced by favorable growing conditions for raspberries, an extended growing season that allows product to be available almost year-round, and relatively low delivered costs of raspberries both for the fresh market and for processing. The raspberry industry in Mexico enjoys a delivered-cost advantage in the U.S. fresh market from the lower costs of labor as well as the Mexican industry's high yields and proximity to the U.S. market, which increases the volume of raspberry seconds available for processing. To a certain degree, these competitive strengths are mitigated by the fact that Mexican raspberries are grown to the specifications of the fresh market, even those that are diverted to the processing market. This means that for certain processing applications, these raspberries cannot necessarily be substituted for raspberries grown specifically for processing in Washington.

Serbia

Export-oriented Serbia primarily supplies the European Union (EU) with processed raspberry products. The United States accounted for less than 4 percent of Serbia's total exports of frozen raspberries during 2015–20. However, within the U.S. market, Serbia is a major supplier. In 2019, Serbia was the second-largest U.S. supplier by value, and the third largest by quantity after Chile and Mexico. The majority of U.S. imports of frozen raspberries from Serbia are IQF products. Serbia has the ideal climate and land to

produce raspberries, including organic raspberries, and most of these products are destined for the processed market. Serbia's grower's organic production allowed Serbia to achieve a highly competitive position in terms of product differentiation among processed raspberry suppliers to the United States from 2015 to 2020.

Several factors contribute to Serbia's competitive position in the U.S. market. Serbia's processors have access to organic raspberries in volumes suitable for commercial sale. This is primarily due to the country's ideal growing climate and widely dispersed geographic growing areas. Data show that the number of growers cultivating organic raspberries is growing each year. In addition, as a candidate for accession to the EU, Serbia's established relationships in the EU market and its compliance with the EU's stringent standards of quality and safety have contributed to the acceptance of its raspberry exports (largely frozen) on the global stage. The EU-Serbia trade relationship also facilitates a trade route from Serbia to United States. The low cost of the raw material, which is impacted by low labor costs, has contributed to Serbia's success as a global supplier in recent decades.

However, despite Serbia's highly competitive position in the EU and United States, the Serbian raspberry industry's growth has largely plateaued. The lack of integration between growers and processors prevents growers from receiving the full benefits of increased global market prices for the fresh input, lending to instability at the Serbian grower level, including grower-led protests within Serbia. The primary growing region within Serbia has also been hit with a series of adverse weather events over recent years. These weather problems have contributed to inconsistent yields, which have depressed export quantities of processed product in certain years. Nonetheless, even though the Serbian raspberry industry has a few impediments to overcome in order to continue to expand and diversify, Serbia is expected to continue to be a significant exporter of frozen raspberries, competing with processed raspberries in the United States.

Chile

As of 2020, Chile is the second-largest source of U.S. imports of frozen raspberries and a major global producer and exporter of processed raspberry products. The country continues to play a key role in the global market, despite modest declines in both production and exports of processed raspberries between 2015 and 2020. Frozen raspberries (including IQF whole and broken products) account for most of Chile's processed raspberry production. Chile has increasingly shifted into organic raspberry production, with frozen organic raspberries accounting for over 20 percent of total production and almost half of Chile's frozen raspberry exports to the United States.

The U.S. industry filed trade remedy cases against imported Chilean IQF red raspberries in 2001, alleging sales at less than fair value (which resulted in an antidumping order, since revoked in 2007). However, since that time Chile has become a relatively high-cost supplier. Moreover, Chile's exports to the United States peak in months when U.S. raspberry stocks are declining, and Chile's increasing emphasis on organic products further reduces direct competition with frozen raspberries produced in the United States. In 2020, the United States was the destination market for about 33 percent of Chile's frozen raspberry exports. Chilean exports of frozen raspberries to the United States have fallen over the period, however, and Mexico surpassed Chile in 2020 to become the largest U.S. supplier.

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Chile has a competitive processing industry that supplies frozen raspberries to the United States. Most exports to the United States come from a small number of experienced processors using high-quality freezing, sorting, and packing equipment. Chilean processors' access to hand-picked raspberries and strategic use of both belt and static freezers help them obtain a higher ratio of IQF output and more whole IQF berries than most other countries. At the same time, the labor costs associated with operating static freezers and buying handpicked berries drive up their costs of production. The labor intensity of growing and handpicking raspberries (compared to other, more profitable fruit) has also prompted a long-term decline in the quantity of raspberries that are available for processing in Chile.

The growth in organic raspberries in Chile reinforces Chile's status as a relatively high-cost supplier focusing on higher-value products. Chile's climate, the prevalence of small raspberry growers, and coordination between processors and small growers have supported the growth in organic exports.

Chapter 1

Introduction

The purpose of this investigation is to provide information and analysis on the U.S. processed raspberry industry and its competitiveness compared to foreign suppliers to the U.S. market.³ The U.S. processed raspberry industry consists of two segments: fresh raspberries grown for use as an input into processed products, and processed raspberry products, including frozen berries, puree, and juice, used as ingredients in a range of processed foods and retail products. Recently, the U.S. industry has reported increased competition from U.S. imports of both processed raspberry products and fresh raspberries for processing, as well as a decline in U.S. prices for these products.⁴ According to the Washington Red Raspberry Commission (WRRRC), these trends have led to lower U.S. profits, fewer acres in production, and fewer raspberry growers.⁵

The U.S. processed raspberry industry is small relative to other global suppliers, even though U.S. demand for raspberries, along with all types of berries, has grown in recent decades.⁶ This trend is bolstered by increasing availability of higher quality berries year-round.⁷ The U.S. processed raspberry industry is based in Washington State and, to a lesser extent, in California and Oregon, and is characterized by a high level of vertical integration across the growing and processing stages of production.⁸ From 2015 to 2020, sales of processed raspberry products supplied by the industry in Washington were roughly \$530 million, while U.S. imports of processed raspberries and fresh raspberries for processing were valued at about \$740 million during that period, for an estimated total

³ For purposes of this investigation, the term “U.S. processed raspberry industry” refers to growers and processors of fresh raspberries for processing and processed raspberry products.

⁴ This report uses the terms “processed raspberry products” and “processed raspberries” interchangeably; these terms refer to processed raspberries including frozen berries, puree, and juice.

⁵ USITC, hearing transcript, September 17, 2020, 12 (testimony of Jon Maberry, WRRRC).

⁶ USDA, ERS, “Berries led Growth in Frozen Fruit Consumption” accessed February 14, 2021.

⁷ Barro, “Americans Are Eating a Lot More Berries,” December 1, 2014.

⁸ California accounted for 26.0 percent of U.S. raspberries for processing while Oregon accounted for only 6.3 percent of U.S. raspberries for processing from 2015–17, the last three years of available state level data. In some instances, production data for California and Oregon were included in the industry analysis, but the primary focus of this investigation is on the industry in Washington. California does not focus its production on growing raspberries for processing, but rather for the fresh market. USDA, NASS, Raspberries for Processing, Production, accessed June 20, 2021; WRRRC, “Statistics,” accessed March 23, 2021 <https://www.red-raspberry.org/statistics>; industry representatives, interview by USITC staff, June 1, 2020; industry representative, interview by USITC staff, November 24, 2020.

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U.S. processed raspberry market of over \$1 billion over the period.⁹ The average annual value of sales of the Washington processed raspberry industry was about \$90 million from 2015 to 2020.¹⁰ By contrast, California’s industry focuses on producing “fresh market” raspberries (raspberries consumed fresh), although berries that do not meet fresh retail requirements (referred to as “seconds”) enter the processed marketing channel along with raspberries specifically grown for processing.¹¹ Between 2015 and 2019, California supplied roughly one-quarter of the U.S.-grown raspberries for processing, by quantity.¹²

From 2015 to 2020, U.S. imports of fresh for processing and processed raspberries (including mixed fruit blends) were supplied by four major sources: Mexico, Chile, Serbia, and Canada.¹³ Of these suppliers, Mexico has been a significant concern to the U.S. industry because, in recent years, it has increased the quantities of raspberries for processing it exports to the U.S. market.¹⁴ Mexico is currently the largest supplier of fresh raspberries for processing to the United States, owing to its proximity to the United States and its steady increase in production of all raspberries over the past decade.¹⁵ Although nearly all

⁹ USITC calculations of the U.S. processed raspberry market are based on Washington sales of processed raspberry products and U.S. imports of fresh raspberries for processing and processed raspberry products; however, this U.S. processed raspberry market calculation does not include U.S. sales of fresh raspberries for processing or processed product produced in California and Oregon, due to limited availability of state level data, or fresh raspberries for processing produced in Washington to avoid double counting those raspberries, which are then transformed into a processed raspberry products. U.S. import values also include shipping costs, which may over-estimate import market share. For a calculation of U.S. and import shares of consumption by quantities including for California and Oregon please see chapter 3 (“United States”), table 3.6. USITC calculations based on USDA, NASS, Raspberry Production, accessed November 27, 2020; USITC DataWeb/Census, HTS statistical reporting numbers 0810.20.1020, 0810.20.1022, 0810.20.1024, 0810.20.9020, 0810.20.9022, 0810.90.9024, 0811.20.2025 and schedule B number 0811.20.0000, accessed March 30, 2021; WRRRC, email message to USITC staff, December 18, 2021.

¹⁰ WRRRC, email message to USITC staff, December 18, 2021.

¹¹ Driscoll’s, written submission to the USITC, September 8, 2020, 3–4.

¹² The statistics in this sentence refer specifically to USDA NASS data. At the time of its survey, USDA NASS asks growers for the quantity, units, average unit value or value received of raspberries sold or to be sold to commercial processing. These raspberries are labeled as “meant for processing.” However, some raspberries may end up in other channels or discarded. Government representative, interview by USITC staff, June 18, 2020; USDA, NASS, “Raspberry Production, Area harvested and Yield,” accessed November 27, 2020.

¹³ USITC DataWeb/Census, HTS statistical reporting numbers 0810.20.1024, 0810.20.9024, and 0811.20.2025, accessed February 4, 2021.

¹⁴ U.S. import data for fresh raspberries for processing—“Fresh raspberries in containers other than those under 5kg”—were revised downward in early 2021 after the U.S. Census Bureau clarified container weight with importers of record. Data on fresh raspberries for processing in this report reflect these revisions. Staff at the U.S. Census Bureau expect further downward revisions. USITC DataWeb/Census, HTS statistical reporting numbers 0810.20.1024 and 0810.20.9024, accessed February 4, 2021. USITC, hearing transcript, September 17, 2020, 13 (testimony of Brad Rader, Rader Farms).

¹⁵ FAOSTAT database, “Production Quantity, Raspberries,” accessed January 19, 2021.

fresh raspberries produced in Mexico are intended for the fresh market, a share of those berries do not meet fresh-market standards and are sold for processing in both Mexico and the United States.¹⁶

U.S. growers and processors represented by the WRRRC also report concerns about U.S. imports of processed raspberries from Mexico and Serbia, and of frozen mixed berries (raspberries, blackberries, blueberries, and strawberries) from Canada.¹⁷ Together with Chile, these four countries supplied 99 percent of U.S. imports of processed raspberries in 2020.¹⁸ Total U.S. imports of processed raspberries from Mexico, Serbia, and Canada increased 40.5 percent by volume, or 4,788 metric tons (mt), between 2015 and 2020. However, U.S. imports from Chile declined over the same period in terms of value (by 52.6 percent) and volume (by 44.5 percent), resulting in an overall decline of 1,524 mt in the absolute volume of U.S. imports of processed raspberries.¹⁹ In 2020, Canada was the largest supplier by volume of frozen mixed berries to the United States, a product highly in demand by U.S. consumers. Import quantities from all these suppliers fluctuated over the period due to weather events and other dynamics of the global supply of raspberries.²⁰

Scope

The U.S. Trade Representative requested that the U.S. International Trade Commission (Commission or USITC) investigate and provide information on the conditions of competition between the United States and foreign suppliers of raspberries meant for processing and processed raspberry products. In his letter, the Trade Representative stated that the WRRRC and its producer members had raised concerns about imports of fresh raspberries for processing (not fresh consumption) and processed raspberries (including frozen), citing unfair practices. He further stated that WRRRC had raised concerns about

¹⁶ Due to data limitations for U.S. imports of fresh raspberries for processing, staff are unable to determine the trend for the share of Mexican fresh raspberries that became U.S. imported seconds over the 2015–20 period. In chapter 8, the pricing analysis estimates a share using 2019 and 2020 for import levels of earlier years. The qualitative analysis in chapter 5 found one industry representative who noted that the share was trending downward over the period due to advancements in yields of fresh market raspberry cultivars. Industry representative, interview by USITC staff, December 1, 2020; Driscoll’s, written submission to the USITC, September 8, 2020, 3–4; Driscoll’s, written submission to the USITC, September 24, 2020, 2–4; USITC, hearing transcript, September 17, 2020, 37–41 (testimony of Tony Miller, Cascade International Foods).

¹⁷ The term “processed raspberries” refers mainly to HTS statistical reporting number 0811.20.2025, frozen uncooked red raspberries, while frozen mixed berries refers to HTS 0811.90.8085, frozen mixed berries (blackberries, blueberries, raspberries, and strawberries). Processed raspberries and juice (including concentrate) may also enter under HTS 0811.90.8080, 0811.90.8095, 2007.99.6510, 2008.99.2120, 2009.89.6055, and 2009.89.7055. In addition, a share of 0810.20.1020 and 0810.20.9020 and 0810.20.1024 and 0810.20.9024 are considered fresh raspberries for processing, which are made into different processed raspberry products. As discussed in Appendix E “Import Data Sorting for Modeling Inputs.” Industry concerns are noted in the request letter from the Trade Representative and the hearing transcript. USITC, hearing transcript, September 17, 2020, 11 (testimony of Jon Maberry, Maberry Packing); 13–14 (testimony of Brad Rader, Rader Farms); 17 (testimony of Rolf Haugen, Northwest Berry Co-op).

¹⁸ USITC DataWeb/Census, HTS statistical reporting number 0811.20.2025, accessed February 4, 2021.

¹⁹ USITC DataWeb/Census, HTS statistical reporting number 0811.20.2025, accessed February 4, 2021.

²⁰ USITC DataWeb/Census, HTS statistical reporting numbers 0811.20.2025 and 0811.90.8085, accessed February 4, 2021.

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increased pesticide residue violations of imported product as well as misleading labeling of frozen mixed berry packs imported from Canada that do not accurately identify the origin of raspberries in the pack.

Therefore, under authority delegated to him by the President of the United States and pursuant to section 332(g) of the Tariff Act of 1930 (19 U.S.C. § 1332(g)), the Trade Representative requested that the Commission conduct an investigation and prepare a report that provides an overview of the U.S. raspberry industry in Washington State and assesses the conditions of competition between U.S. and foreign suppliers of raspberries meant for processing.

The Trade Representative stated that the Commission's report should focus primarily on the 2015 to 2019 period and include the following:²¹

- An overview of the U.S. raspberry industry in Washington State—including fresh raspberries for processing, frozen, and juice—as well as an overview of the industries producing fresh and processed raspberries in major producing and exporting countries. The overviews should include information on production and processing volumes and trends, planted acreage, processing capacity, supply chains, domestic consumption, imports, and exports of fresh and processed raspberries.²²
- Recent trends in production, pricing, and consumption for fresh and processed raspberries in the United States and other major producing and exporting countries over the last five years. A pricing analysis should include the relationship between prices of domestic products and imports of fresh and processed raspberries in the U.S. market to the extent such data are available.
- An overview of U.S. imports of fresh and processed raspberries including information on the main country sources of supply, trade patterns, and supply chains of major suppliers to the United States, as well as an overview of country of origin labeling practices in major U.S. supplier countries.
- A description of foreign government policies, financial aid, and programs that directly or indirectly affect production, infrastructure, exports, and imports of fresh and processed raspberries, including product labeling and food safety regulations, producer support, and tariff and nontariff measures.
- A comparison of the competitive strengths and weaknesses of production and exports of fresh and processed raspberries in the United States and other major producing and exporting countries, including such factors as cost of production, industry structure, technology, product

²¹ Trade data for full-year 2020 were incorporated into the industry overviews, but global 2020 data were not available for inclusion into the “Global Production, Consumption, and Trade Trends” section of chapter 1 (“Introduction”) or in chapter 2 (“Cross-country Comparison of Competitiveness”).

²² Area harvested data from FAOSTAT are used in lieu of planted acreage data, which are not available globally for raspberries.

innovation, exchange rates, supply chains and distribution, pricing, marketing regimes, and government policies.

- A qualitative and, to the extent possible, quantitative assessment of the economic impact of imports from major producing and exporting countries on production and prices of U.S. fresh and processed raspberries.

Approach

Based on the request from the Trade Representative, the Commission conducted three broad assessments of the U.S. processed raspberry industry and major suppliers to the United States: (1) a cross-country comparison of competitiveness, (2) an analysis of U.S. prices, and (3) an estimate of the economic impact of imports. The report also provides information on production, consumption, and trade for major global producers and exporters, as well as profiles of industries producing fresh and processed raspberries in major supplier countries to the U.S. market (i.e., Canada, Chile, Mexico, and Serbia and the United States itself). The report primarily focuses on the period between 2015 to 2019 but includes 2020 where available.

The cross-country assessment used an agricultural competitiveness framework as well as estimation of symmetric revealed comparative advantage (SRCA). The framework and SRCA estimation compared the United States' processed raspberry industry to industries in countries that are major suppliers to the U.S. market (Canada, Chile, Mexico, and Serbia). The framework connects analytic assumptions, parameters, and structures that define competitive conditions in agricultural trade. Next, a descriptive analysis of prices in the U.S. market was conducted using available price data. Along with information on the product mix of imports, this information was used to provide a cursory look at the relationship between Washington prices and import prices in the U.S. market. Finally, a partial equilibrium model was used to assess the economic impact of U.S. imports from major supplier countries on production and prices of Washington-produced individually quick frozen (IQF) and non-IQF (fresh for processing, block frozen, puree, and juice, including concentrate) in the U.S. market. This quantitative analysis estimated results for these two market segments.

As requested, the report also includes global trends and industry profiles for the U.S. industry and major suppliers of fresh for processing and processed raspberry products to the U.S. market. Data for the trends and profiles were gathered by reviewing existing literature and conducting extensive interviews with sources knowledgeable about the industry. Among these sources were firm representatives, trade associations, academia, traders, government officials, and nongovernmental organizations, including those that represent the interests of agricultural workers. Commission staff identified sources with expertise in each segment of the supply chain, from growers and processors to traders and purchasers. In addition, staff conducted interviews with third parties outside of industry to verify data and obtain unbiased information. The Commission also gathered industry and product information at a public hearing, where representatives from the fresh and processed raspberry industries provided testimony.

In addition to a literature review and primary data collection, relevant production and trade data were collected from publicly available data sources, as well as from industry representatives and organizations outside of industry. Global production data were obtained from the Food and Agriculture Organization of the United Nations (FAO). Trade data came from the Commission’s DataWeb, a database built on U.S. Census Bureau data. Pricing data for domestic raspberries came from U.S. industry representatives, and average unit values of imported raspberries were calculated using value and quantity data from DataWeb. Primary sources for labor-related conditions and costs were the World Bank, labor union-affiliated nongovernmental organizations, academia, and industry sources.

Report Organization

Chapter 1 provides an overview of processed raspberry products, including production systems and marketing channels, as well as information on global raspberry production, consumption, and trade. Chapter 2 gives a cross-country comparison of the competitiveness of the major processed raspberry suppliers to the U.S. market. Chapters 3–7 present profiles of the processed raspberry industries of the United States, Canada, Mexico, Serbia, and Chile. Chapter 8 provides information on prices of processed raspberries in the U.S. market during the years analyzed. Lastly, chapter 9 presents estimated economic impacts of reduced U.S. imports of fresh raspberries for processing and processed raspberries on Washington production and prices of Washington-produced non-IQF and IQF raspberries.

Data Availability and Limitations

Production

Production data for processed raspberry products are extremely limited because the products are largely intermediate goods. However, there are widely available data for fresh production of raspberries. Data are available at the global and national level for fresh raspberry production, area harvested, and yield from FAO during 2015–19. However, FAO production, area harvested, and yield data do not break out raspberries intended for the fresh market versus for processing.²³ The USDA National Agricultural Statistics Service (NASS) reports U.S. production differentiated by raspberries for fresh market and meant for processing for 2014–17 by state and on a more aggregate level for 2018–19. Production data for Washington State for fresh raspberries are also available from the WRRRC for the years 2015–20 and are generally consistent with the available USDA NASS data. Washington State grows raspberry primarily for processing. In this report, production data for fresh raspberry production (regardless of end use) are presented as an indicator of available supply of raspberries for processed

²³ FAO notes the following on its production, yield, and area harvested data, “There is limited geographical comparability due to differences between countries in methods and coverage, except for regions where countries are bound by regulations mandating harmonized methods, such as EU countries.” For more information visit FAO Stat at <http://www.fao.org/faostat/en/#data/QC/metadata>. FAO, FAOSTAT database. FAOSTAT, “Production Quantity, Raspberries,” accessed January 11, 2021.

raspberry production and supplemented with quantitative (if available) and qualitative information about the size of processed raspberry production for each country profiled.

Global Trade

Global trade data for fresh and processed raspberries are also limited. Trade data at the global level for most exporting countries do not disaggregate raspberries from all other berries. In addition, global trade data categories for processed raspberries contain multiple processed raspberry products, impacting the ability to provide meaningful analysis of global trade flows by product. Global trade data presented in this report are for two Harmonized Commodity Description and Coding System (HS) 6 digit subheadings: 1) HS 0810.20, certain fresh berries (covering raspberries, blackberries, mulberries, and loganberries), which accounts for trade in fresh raspberries (for both the fresh market and for processing); and 2) HS 0811.20, certain frozen berries (covering raspberries, blackberries, mulberries, loganberries, currants and gooseberries), which accounts for trade in frozen raspberries (IQF and other processed raspberry products), but excludes some purees and juice. Of the berries classified under these two HS categories, raspberries account for most of the trade.²⁴

U.S. Trade

For analysis of fresh and processed raspberries in the U.S. market, U.S. import data (at the Harmonized Tariff Schedule of the US (HTS) 8- and 10-digit level) are more useful than trade data at the global level. Even so, U.S. import data are not broken out cleanly by most product types, which precludes precise trade analysis of the main processed products that compete with U.S. production in the U.S. market (namely, IQF, block frozen, puree, and juice). Further, some of the HTS breakouts that provide for more product clarity were recently established and, as such, have no corresponding long-term data for analysis. For example, until July 2018, the HTS statistical reporting numbers for fresh berries did not break out bulk containers. In July 2018, a breakout for bulk fresh raspberries (raspberries in containers of 5 kilograms or greater) was established. Given that raspberries for the fresh market are not shipped in bulk containers whereas raspberries for processing are shipped in this manner, this breakout established a way to distinguish between fresh market raspberries and fresh raspberries for processing.

In this report, U.S. import data are presented for fresh raspberries,²⁵ frozen uncooked raspberries,²⁶ and juice (including juice concentrate).²⁷

²⁴ Government of British Columbia Ministry of Agriculture, “Market Analysis: Global Export Market Overview for British Columbia’s Raspberry Industry,” April 20, 2011, 8.

²⁵ HTS 0810.20.1020 (all fresh September–June), 0810.20.1024 (bulk fresh September–June), 0810.20.9020 (all fresh July–August), and 0810.20.9024 (bulk fresh July–August).

²⁶ HTS 0811.20.2025 (frozen uncooked red raspberries).

²⁷ HTS 2009.89.6055 (red raspberry juice including concentrate before partial year 2018) and 2009.89.7055 (red raspberry juice including concentrate after partial year 2018).

The various HTS statistical reporting numbers for raspberries are presented in chapter 3 (“United States”) in table 3.7. Clean U.S. import data are not available for other products of interest in this investigation, including frozen mixes of berries (mixes of only raspberries, blackberries, blueberries, or strawberries),²⁸ cooked raspberry purees (e.g., aseptic purees),²⁹ and for other purees (pasteurized puree),³⁰ therefore, information on trade in these products is estimated by other means, including qualitative information collected from industry representatives. The estimated proportions of U.S. imports of in-scope product under these lines have been included in the quantitative analysis presented in chapter 9 of this report, (“Import Data Sorting for Modeling Inputs”).

Processed Raspberry Products

The products of interest in this investigation are frozen and otherwise processed raspberry products as well as the main input into these products, fresh raspberries for processing. Processed raspberry products include IQF raspberries, block frozen raspberries, purees, and juices, including concentrate (see figure 1.1 for example images). In the United States, fresh raspberries intentionally grown for processing are produced primarily by the industry in Washington and to a limited extent also in Oregon.³¹ Raspberries are available in other colored varieties, but only red raspberries are produced on a commercial scale and are thus the focus of this investigation.³²

In this report, the product scope is focused on products produced by the U.S. industry in Washington. The term “processed raspberries” does not include further-processed raspberry products such as jams, preserves, or raspberry yogurts.³³ Nor are fresh market raspberries the focus of this investigation. However, this report does present information on such raspberries, given that raspberry seconds, which do not meet fresh market specifications, may enter the processed raspberry market channel to be made into processed raspberry products. This is a practice common in fresh produce production, and for raspberries it occurs in fresh market-focused industries, such as those in California and Mexico.³⁴ Information on fresh market cultivars and raspberry production at the growing stage is also presented in the report in the context of production costs and competitiveness of fresh market seconds. The

²⁸ Imports of frozen mixes of berries containing red raspberries are classified under HTS 0811.90.8085, which is a basket category of mixes of berries containing only raspberries, blackberries, blueberries, or strawberries. There are limited data for this statistical reporting number because in midyear 2019, it was broken out from another HTS number that contained a larger basket of frozen mixed fruit mid-year 2019.

²⁹ Aseptic purees of red raspberries are classified under HTS 2007.99.6510 cooked pastes and purees of red raspberries. This statistical reporting number includes other products such as fruit roll-ups, which are not in-scope.

³⁰ Other purees of red raspberries are classified under HTS 2008.99.2120, it is unclear if this category is entirely composed of pasteurized purees.

³¹ Washington and Oregon are part of the Pacific Northwest raspberry-growing region along with British Columbia, Canada. As noted above, raspberries produced in California for the fresh market that do not meet fresh market standards (seconds) also enter the processing market.

³² USDA, NASS, “*Raspberry Production, Area harvested and Yield*,” accessed April 7, 2021.

³³ WRRRC lists its raspberry supplier members and the products they produce on its website. WRRRC, “Suppliers,” accessed March 19, 2021, <https://www.red-raspberry.org/suppliers>; industry representatives, interview by USITC staff, June 1, 2020.

³⁴ Industry representatives, interviews by USITC staff, June 23, 2020, September 15, 2020, and October 26, 2020.

presentation of information on the fresh market channel is included to show where seconds enter the processed raspberry supply chain.

Figure 1.1 Processed raspberry products (within the scope of this report)

From left to right, IQF whole raspberries, IQF raspberry crumbles, block frozen raspberries, raspberry puree with seeds, and raspberry juice concentrate.



Source: WRRRC photos by Wild Hive, 2020 (permission to use with attribution).

The processed raspberry products covered in this report can be divided into two categories, largely based on the value of the products: (1) IQF raspberries (e.g., whole berries, various proportions of free-flowing whole and broken, and crumbles) and (2) non-IQF processed raspberries (e.g., block frozen, puree, and juice, including concentrate). IQF raspberries are the highest-value processed product, with whole berry IQF products commanding a higher price than IQF free-flowing whole and broken berries and IQF crumbles. Lower-valued products, in order of value, are block frozen and puree, juice concentrate, and finally, juice stock and field run.³⁵ Both “juice stock” and “field run” refer to minimally sorted fresh raspberries for processing that are chilled or frozen without further processing. Juice stock is specifically intended for juice processing.³⁶ Fresh market raspberries achieve a higher price than raspberries meant for processing and most processed raspberry products.³⁷

IQF Raspberries

IQF raspberries are loose, frozen raspberries. Besides whole berries and crumbles, they may include free-flowing whole and broken berries in varying proportions; for example, IQF 80:20 means product with a ratio of 80 percent whole raspberries to 20 percent broken raspberries.³⁸ Crumbles are

³⁵ Values are based on industry-provided price estimates. WRRRC, email message to USITC staff, December 18, 2020.

³⁶ Industry representatives, interviews by USITC staff, November 20, 2020 and November 24, 2020.

³⁷ USITC, hearing transcript, September 17, 2021, 23 (testimony of Ryan Commons, Driscoll’s, Inc.).

³⁸ Industry representative, interview by USITC staff, July 30, 2020; Aneberries, SunOpta, written submission to the USITC, September 8, 2020, 3.

individually quick frozen drupelets (see figure 1.1 second photo from the left).³⁹ IQF raspberries are processed by rapidly blasting the berry with cold air to maintain the structure of the raspberry. IQF raspberries can be frozen using continuous automated tunnels, which freeze berries on a belt in a continuous line.⁴⁰ Alternatively, some IQF berries are frozen on trays in static freezers.⁴¹ IQF raspberries can be reprocessed into puree or juice concentrate, but the reverse is not possible—once raspberries are block frozen (see description in “Non-IQF Processed Raspberries” section below), they cannot be processed into IQF.

Bulk whole IQF raspberries are typically repacked by buyers into packaging for retail sale, either into bags of a single fruit or bags of various fruits (these may be referred to as “repacked” or “rebagged”). “Mixed bags” are combinations of IQF fruits—commonly raspberries, blackberries, blueberries, and strawberries.⁴² These bagged raspberry products are purchased directly by consumers and made into smoothies or used in various recipes. Free-flowing whole and broken raspberries can be used as ingredients for further manufactured products such as jams and yogurts, or used for juice stock, depending on the quality.⁴³

Non-IQF Processed Raspberries

For purposes of this investigation, non-IQF processed raspberry products include block frozen raspberries, pureed raspberries, and juice concentrate.⁴⁴ Block frozen products are raspberries frozen in their own juices. There are two types of block frozen products: without sugar added (“straight pack”) and with sugar added (“sugar pack”).⁴⁵ Pureed raspberries are sieved (i.e., passed through a screen) to remove seeds fully or partially, and are typically made to customer specifications about the amount of seeds left in the product, consistency, and sweetness.⁴⁶ Puree is typically produced in frozen form but can also be produced in aseptic packaging, which extends the shelf life of the product without refrigeration. In addition, puree can be pasteurized or concentrated.

³⁹ One point of confusion is that the term “crumbles” is used to define different products among industries. For example, the Mexican industry refers to free-flowing whole and broken as “crumbles,” while Serbia calls this product type raspberry “mixtures.” In Chile, frozen pieces of raspberries that have broken off during the IQF tunnel freezing process are referred to as “raspberry crumbles.” For additional examples of IQF crumbles (individual drupelets) see Enfield Farms, “Bulk: Crumbles,” accessed April 25, 2021 <https://www.enfieldfarms.com/bulk> and Sicony, “Discover Raspberry Crumble,” accessed April 25, 2021, <https://www.sicolyn.com/transformed/raspberry-crumble-1060>.

⁴⁰ WRR Channel, “Washington Red Raspberry Harvesting and Processing Tour,” August 12, 2020.

⁴¹ Industry representative, interview by USITC staff, March 5, 2021.

⁴² Industry representative, interview by USITC staff, June 1, 2020.

⁴³ Industry representative, interview by USITC staff, June 23, 2020.

⁴⁴ For purposes of our quantitative analysis in Chapter 9, fresh raspberries for processing are included in the non-IQF category because either they are transformed into non-IQF processed products once they enter the United States or they are used as substitutes for non-IQF products in further processed products. For more information see chapter 9 (“Economic Impacts of Imports”).

⁴⁵ Funt and Hall, 2013, *Raspberries*, 2013, 197.

⁴⁶ WRR Channel, “Washington Red Raspberry Harvesting and Processing Tour,” August 12, 2020.

Raspberry purees, like block frozen, are typically used as ingredients in consumer food products that require raspberry flavor and texture, such as yogurts, ice creams, and bakery items.⁴⁷ Block frozen products and purees are also described as “B-grade” that is, one of the grades assigned by the Agricultural Marketing Service (AMS) of the U.S. Department of Agriculture (USDA) to frozen raspberries typically used in these products (see “Product Standards and Certification” section below).⁴⁸ These products are also called “bulk” because they tend to be packed in larger containers (28-pound pails or 355-pound plastic drums) than IQF raspberries (25-pound or custom-sized plastic lined boxes).⁴⁹

Juice stock is the minimally sorted fresh, chilled, or frozen input to juice and concentrate. Raspberry juice is a liquid product of pressed juice stock berries, either of single strength or concentrate; to make concentrate, single-strength juice is filtered and heated to remove water content for ease of transport.⁵⁰ Industry representatives have noted that when raspberry juice is traded, it is predominantly in concentrate form.⁵¹

Market Channels for Raspberries

In general, there are two broad marketing channels for fresh and processed raspberries: (1) the processed market and (2) the fresh market (for fresh consumption) (figure 1.2). For purposes of this report, the processed channel starts at the grower level with fresh raspberries grown from cultivars that are optimized for processing. Fresh raspberries are sold to independent processors or processed internally by integrated grower-processors.⁵² The processed products are then sold to distributors, repackers, juice packers, food manufacturers, and food service (hotel, restaurants, or catering). These customers may use the processed raspberry products in jams, yogurts, baked goods, and other foods, or repack them into individual bags for retail sale. Various intermediaries are involved in aggregating fresh berries (inputs) and processed products and directing them through the marketing channels.⁵³

Meanwhile, fresh market growers start with fresh raspberries grown from cultivars optimized for fresh consumption. These raspberries are often sold to large fresh fruit marketers directly by the growers.⁵⁴

⁴⁷ Industry representative, interview by USITC staff, June 23, 2020.

⁴⁸ USDA, AMS, “Grades of Frozen Raspberries,” accessed April 7, 2021; industry representative, email message to USITC staff, August 21, 2021.

⁴⁹ WRR Channel, “Washington Red Raspberry Harvesting and Processing Tour,” August 12, 2020; Enfield Farms, “Our Products: Enfield Farms,” accessed February 13, 2021.

⁵⁰ Industry representatives, interviews by USITC staff, June 23, 2020, and September 15, 2020.

⁵¹ Industry representatives, interviews by USITC staff, July 29, 2020, and September 15, 2020.

⁵² USITC, hearing transcript, September 17, 2021, 68 (testimony of Jon Maberry, Maberry Packing, LLC).

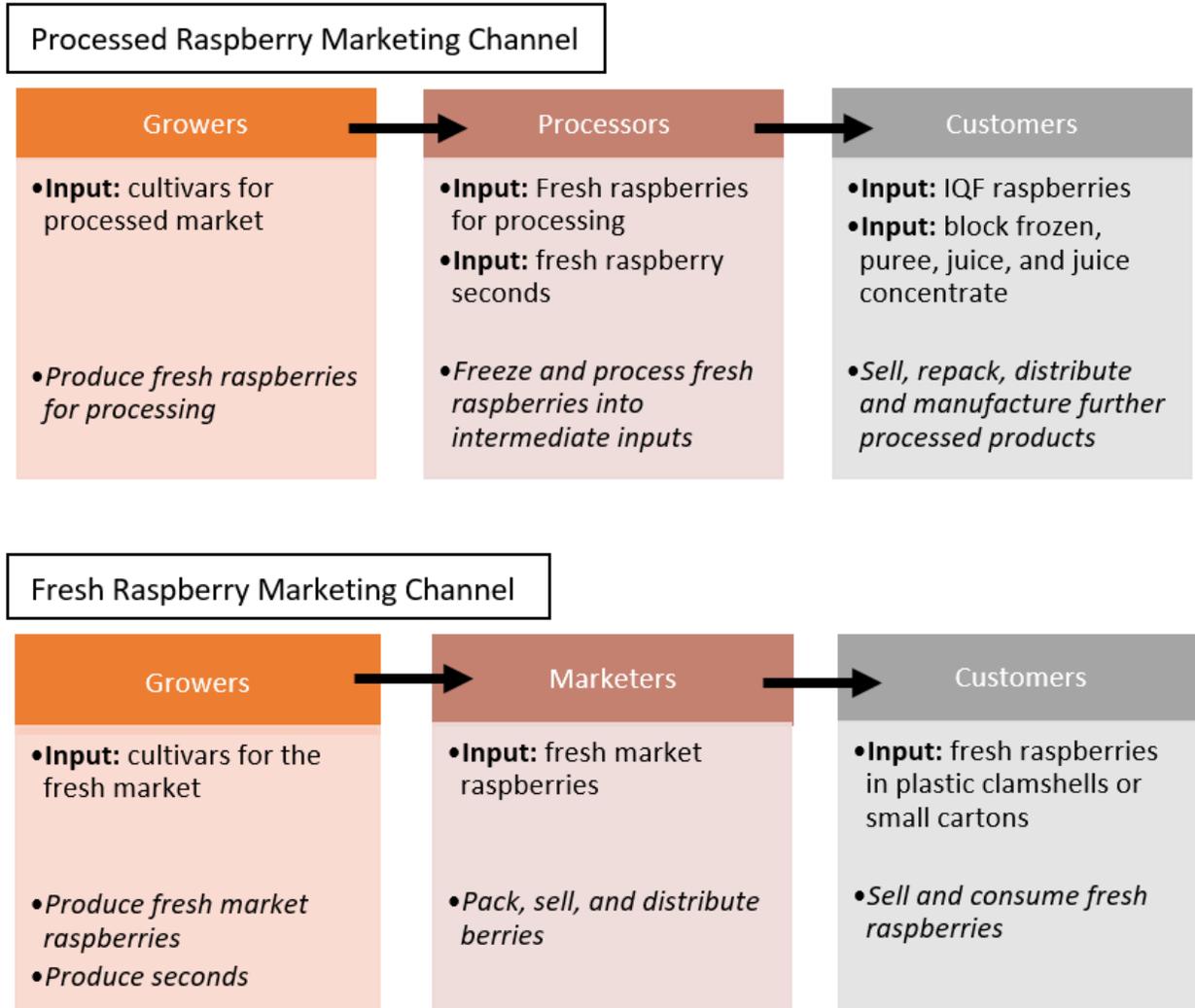
⁵³ Industry representatives, interviews by USITC staff, September 15, 2020, and November 24, 2020.

⁵⁴ In addition to sales to marketers, fresh raspberries are also sold direct to consumers via pick-your-own operations, farmer’s markets, community supported agriculture, and roadside stands. Funt and Hall, *Raspberries*, 2013, 191–98.

Raspberries for Processing

The marketers buy, package, and then sell product to consumers at grocery stores in clear plastic clamshell packaging.⁵⁵ Raspberry seconds enter the wholesale or processed markets from the fresh market mainly after sorting by pickers and to a lesser extent after sorting by packers.⁵⁶

Figure 1.2 Marketing channels for raspberries



Source: Funt and Hall, *Raspberries*, 2013, 191–200.

Note: Fresh growers sometimes bypass marketers and sell directly to the consumer.

⁵⁵ Driscoll's, Inc., written submission to the USITC, September 8, 2020.

⁵⁶ USITC, hearing transcript, September 17, 2021, 23–24 (testimony of Ryan Commons, Driscoll's, Inc.); Funt and Hall, *Raspberries*, 2013, 191–98.

Farm-level Raspberry Production and Distribution

Cool and temperate climatic conditions, achieved through geographic location or protected agriculture (see discussion below), are ideal for raspberry production. In these conditions, raspberry plants receive the appropriate amount of time at cool temperatures (“chill hours”) to produce berries and reduce pest and disease pressures, such as fungus.⁵⁷ Timing of extreme cold, heat, moisture (precipitation or humidity), and wind also impacts plant health, and thereby yields.⁵⁸

Whether cultivating raspberries for processing or fresh market, conventional or organic, raspberry production requires year-round management, such as plant and soil care, plant health monitoring, field cleaning, pruning, and applying any pest and disease applications. Additionally, water management, including irrigation and drainage, is a critical part of good production practices. However, production practices for fresh raspberries intended for processing differ from practices for raspberries for the fresh market in several ways, including cultivar, timing of harvest (largely based on cultivar), choice of production system, and distribution method.⁵⁹

All commercial raspberry production relies on cultivars, meaning cultivated varieties of plant, rather than wild plants.⁶⁰ Cultivars are developed by breeders and subsequently selected by growers for various berry characteristics. These include flavor, Brix level (sugar content), size, color, shape, and firmness of the berry.⁶¹ Other important characteristics of raspberry cultivars are resistance to root rot and raspberry bushy dwarf virus; the cultivar’s harvest time, which can extend the market window of the grower; and its ability to withstand certain climate elements such as rain, wind, heat, and humidity.⁶²

⁵⁷ Different raspberry cultivars require a varying period in cold weather between harvest seasons, known as “chill hours.” If the canes (long thin stalks on which raspberries grow) do not get the required chill hours, or the canes are exposed to severe cold too late in the season, they may bloom or leaf out at unexpected times and may also produce lower quality fruit. Funt and Hall, *Raspberries*, 2013, 33–44 and 68–69.

⁵⁸ Funt and Hall, *Raspberries*, 2013, 33–44.

⁵⁹ Funt and Hall, *Raspberries*, 2013, 91, 103, 121, and 133; USITC, hearing transcript, September 17, 2021, 23 (testimony of Ryan Commons, Driscoll’s, Inc.).

⁶⁰ The harvest season varies by cultivar and climate. A raspberry’s harvest time designates it as summer-bearing, fall-bearing, or everbearing. Funt and Hall, *Raspberries*, 2013, 58–65 and 68–69; industry representative, interview by USITC staff, March 5, 2021.

⁶¹ Brix level is the percentage of sugar solids in any liquid products made from plant materials. Industry representatives refer to Brix levels when measuring the sugar content in liquid processed raspberry products, e.g., puree, juice concentrate, single-strength juice, or reconstituted juice. Higher Brix levels indicate higher levels of sugars. USDA, AMS, *Technical Procedures Manual*, June 2020, 17. The standard Brix level for single strength raspberry juice is 10.5. Brix Values of Unconcentrated Natural Fruit Juices, 19 C.F.R. § 151.91, accessed March 22, 2021.

⁶² USITC, hearing transcript, September 17, 2020, 44–45 and 154 (testimony of Jean-Christophe Hestean, SunOpta); industry representatives, interviews by USITC staff, July 24, 2020, October 26, 2020, and March 11, 2021.

Raspberries for Processing

Cultivars are selected based on characteristics that are desirable for the end use of the raspberries.⁶³ Growers of raspberries for processing choose cultivars that are suited to withstand the freezing process and, in some countries and regions, mechanical harvesting. Mechanical harvesters shake the raspberries from the canes on which they grow, potentially damaging them. Additionally, berries that are processed through a tunnel freezer are lightly shaken and tossed to blast all of them with cold air. Many raspberry growers and processors prefer cultivars strong enough to keep their shape throughout harvesting and freezing in order to produce as many whole IQF raspberries as possible.⁶⁴ However, some food manufacturers prioritize raspberry flavor and Brix level over berry structure. Cultivars considered as having both durability and desirable flavor characteristics, such as Meeker and Willamette, are widely grown.⁶⁵

While there are many varieties of raspberries that do not require a fee for use, some firms have developed fee-for-use cultivars for the processed and fresh markets. Generally, various licensing and exclusivity arrangements govern the development and use of these cultivars in order to protect intellectual property rights (IPRs).⁶⁶ Costs for creating fee-for-use cultivars may include research and development expenditures, plant breeder services to propagate the cultivar, and legal fees for IPR protection and enforcement.⁶⁷ In the fresh market, proprietary cultivars are generally developed by large berry marketing firms and require growers to sign multiyear contracts stating that the grower will sell the entire harvest of that proprietary berry back to the marketer.⁶⁸

The processed raspberry market prefers to produce its fresh raspberry inputs using an open field approach, which is a relatively extensive system (requiring less labor and capital).⁶⁹ By contrast, the fresh market favors a more intensive system because growers must achieve higher yields to pay for the extra inputs of raspberries needed to produce fresh market raspberries. In open field systems, raspberries are grown in fields exposed to the elements, while many growers for the fresh market use “hoop houses” (or “high tunnels”) that shield the raspberry plants against severe weather. Hoop houses reduce pests and diseases on plants, extend the harvest season, and increase yields overall, but require

⁶³ Raspberry cultivars developed for the fresh market are developed for long shelf life that allows the berries to be transported long distances and maintain freshness until sold at retail. Other important traits for fresh market raspberries are bright berry color, large size, and consistent flavor and appearance. Driscoll’s, Inc., written submission to the USITC, September 8, 2020, 2; industry representative, email message to USITC staff, July 16, 2020.

⁶⁴ Industry representative, interview by USITC staff, September 15, 2020.

⁶⁵ Northwest Plant Company, “Raspberries,” accessed April 7, 2021, <http://www.nwplant.com/raspberries/>.

⁶⁶ Industry representatives, interviews by USITC staff, December 3, 2020 and March 11, 2021; Funt and Hall, *Raspberries*, 2013, 58–65; Northwest Plant Company, “Raspberries,” accessed April 7, 2021, <http://www.nwplant.com/raspberries/>.

⁶⁷ Industry representative, interview by USITC staff, March 11, 2021.

⁶⁸ Industry representative, interview by USITC staff, December 3, 2020.

⁶⁹ Intensive agriculture is the practice of using more labor and capital to maximize agricultural production or yields. Intensive farming can include using protective growing systems and using fertilizers and pesticides to protect crops. Conversely, extensive agriculture uses relatively less labor and capital in relation to the area of land used. The crop yield in extensive agriculture depends primarily on the natural soil, climate, and other weather factors. WRR Channel, “Washington Red Raspberry Harvesting and Processing Tour,” August 12, 2020; BBC, “Feeding the Human Race,” accessed April 13, 2021; European Commission, “Glossary: Extensive Farming” accessed April 18, 2021; European Commission, “Glossary: Intensive Farming” accessed April 18, 20.

more capital investment than open fields.⁷⁰ Moreover, raspberries grown in hoop houses are picked by hand, while open raspberry fields are organized to accommodate either handpicking or machine harvesting.⁷¹ Generally, both production systems use a trellis system to support the bushes and allow harvesters or pickers to access the berries easily.⁷²

In general, raspberries grown for processing can be transported in bulk containers, while raspberries for the fresh market or the IQF process cannot.⁷³ Most non-IQF raspberry products can use fresh raspberry inputs that have sustained damage during transport; to be suitable for the IQF process, however, the fresh raspberries must be whole and intact. As such, fresh raspberries intended for the IQF process cannot be transported in bulk containers, which would damage the whole raspberry.⁷⁴ Raspberries for fresh consumption are typically packed into small, retail-ready plastic clamshell packaging shortly after harvesting and in nearby areas to limit transportation time.⁷⁵

Product Standards and Certifications

Processors and growers of raspberries use various product standards and certifications to relay information about product safety and quality to their customers. Some product standards are required by U.S. law and must be met before either U.S.-grown or imported product can be sold in the U.S. market.⁷⁶ Certifications of compliance with standards are often presented on fresh and processed raspberry suppliers' websites, specification sheets, and labels for retail packaging. Standards can be used to differentiate processed raspberry products and sometimes support higher prices.⁷⁷

Compliance with the U.S. Food Safety System

Raspberries for processing and processed raspberries that are consumed by humans and animals—whether produced domestically or imported—are required to meet U.S. food safety and labeling standards. The Food Safety Modernization Act (FSMA) greatly expanded food safety oversight authority

⁷⁰ Academic experts, interview by USITC staff, January 21, 2021; USITC, hearing transcript, September 17, 2020, 21–23 (testimony of Ryan Commons, Driscoll's, Inc.).

⁷¹ Machine-harvested raspberries require enough space between rows, typically about 10 feet, to allow a machine harvester to pass. When raspberries are handpicked, rows can be spaced closer together than with machine harvesting.

⁷² Funt and Hall, *Raspberries*, 2013, 99 and 130–31.

⁷³ USITC, hearing transcript, September 17, 2020, 35 (testimony of Lance Jungmeyer, Fresh Produce Association of the Americas or FPAA).

⁷⁴ USITC, hearing transcript, September 17, 2020, 35 (testimony of Lance Jungmeyer, FPAA).

⁷⁵ USITC, hearing transcript, September 17, 2020, 23 (testimony of Ryan Commons, Driscoll's, Inc.).

⁷⁶ USITC, hearing transcript, September 17, 2020, 56 (testimony of Antonio Dominguez, IRO) 115 (testimony of Lance Jungmeyer, FPAA).

⁷⁷ For an example of food safety certifications on a company product website, see Enfield Farms, "Food Safety," accessed April 8, 2021 <https://www.enfieldfarms.com/food-safety>; Enfield Farms, "Quality," accessed April 8, 2021 <https://www.enfieldfarms.com/food-safety>; for an example of USDA organic certifications and U.S. marketing standard Grade A on retail packaging, see Nature's Touch, "Organic Raspberries," accessed April 8, 2021, <https://www.naturestouchfrozenfoods.com/en/frozen-fruits/raspberry/organic-raspberries-usa>.

at the U.S. Food and Drug Administration (FDA) through amendments to the Federal Food, Drug, and Cosmetic Act (21 U.S.C. §§ 301 et seq.).⁷⁸ FSMA governs the safety of many U.S.-grown, processed, and imported food products, including fresh and processed raspberries.⁷⁹

FDA has specific mandates concerning the safety of U.S. grown and processed food products as well as imported products. The agency has the authority to administratively detain food, including imported products, if it is adulterated by various hazards and to take other actions, such as mandatory recalls, to enforce U.S. food safety standards.⁸⁰ In addition, FSMA requires U.S. importers and suppliers to verify the safety of their supply chains.⁸¹ In particular, the Foreign Supplier Verification program under FSMA provides a mechanism for U.S. importers to confirm that their suppliers meet U.S. food safety standards and to take legal responsibility for the safety of imported products.⁸² In addition, the Produce Safety Rule applies to both domestic and imported produce, including raspberries, and sets science-based minimum standards for the safe growing, harvesting, packing, and holding of fruits and vegetables grown for human consumption.⁸³

Third-party Food Safety Certifications

To ensure full compliance with U.S. and other countries' food safety standards, suppliers often source fresh and processed raspberries from growers and processing facilities that are using Good Agricultural Practices (GAP), Good Handling Practices (GHP), and Good Manufacturing Processes (GMP).⁸⁴ To identify themselves as achieving high levels of compliance with food safety standards, many growers and traders also become certified by third-party certifiers.⁸⁵ For example, GLOBALG.A.P. is a private sector body that certifies production, handling, and responsible supply chain practices for raspberries and other

⁷⁸ FSMA, Pub.L. No. 111-353, §§ 101-405 (2011).

⁷⁹ FDA, *FSMA Facts: Background on the FDA Food Safety Modernization Act (FSMA)*, July 21, 2011.

⁸⁰ FDA, *FSMA Facts: Background on the FDA Food Safety Modernization Act (FSMA)*, July 21, 2011.

⁸¹ Foreign Supplier Verification Programs for Importers of Food for Humans and Animals, 80 Fed. Reg. 74225 (November 27, 2015).

⁸² Foreign Supplier Verification Programs for Importers of Food for Humans and Animals, 80 Fed. Reg. 74225 (November 27, 2015) provides details on this supplier program; *see also* FDA, *FDA At a Glance: Final Rule on Foreign Supplier Verification Programs*, May 11, 2017; USITC, hearing transcript, September 17, 2020, 114-15 (testimony of Lance Jungmeyer, FPAA).

⁸³ Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption, 80 Fed. Reg. 74353 (November 27, 2015) provides draft guidance on the Produce Safety Rule. For more information on Produce Safety Rule coverage and compliance dates see FDA, "FSMA Final Rule on Produce Safety," accessed March 23, 2021 <https://www.fda.gov/food/food-safety-modernization-act-fsma/fsma-final-rule-produce-safety>.

⁸⁴ AMS, "Good Agricultural Practices (GAP) & Good Handling Practices (GHP)," accessed August 30, 2020 <https://www.ams.usda.gov/services/auditing/gap-ghp>; Current Good Manufacturing Practice, Hazard Analysis, and Risk-Based Preventive Controls for Human Food, 80 Fed. Reg. 55907 (September 17, 2015); FDA, *Key Facts: about Preventive Controls for Human Food*, accessed March 21, 2021; USITC, hearing transcript, September 17, 2021, 33 and 114-15 (testimony of Lance Jungmeyer, FPAA).

⁸⁵ FSMA has a third-party certifier accreditation program as noted in Accreditation of Third-Party Certification Bodies to Conduct Food Safety Audits and To Issue Certifications, 80 Fed. Reg. 74569 (November 27, 2015). Various industry representatives stated that third-party certifications are common in the global raspberry industry. Industry representatives, interviews by USITC staff, July 29, 2020, and July 30, 2020.

agricultural products around the world.⁸⁶ Likewise, raspberry-processing facilities are often certified by third-party certifiers that use Global Food Safety Initiative (GFSI) standards.⁸⁷ The Global Food Safety Initiative is a global food safety benchmarking initiative that recognizes various food safety certifications (e.g., Safe Quality Food or SQF) as meeting GFSI Standards.⁸⁸ Import compliance with food safety standards is further discussed as it relates to competitiveness in chapter 2 (“Cross-country Comparison of Competitiveness”) and in the “Government Programs” and “Compliance with Food Safety Standards” sections within each of the industry profiles.

Organic Certifications

As with quality grading, growers and processors of raspberries use USDA-accredited certifiers to verify the organic status of their product.⁸⁹ Consumers typically perceive organic products as having higher “nutritive value, taste, and appearance” and associate their production with a “natural process, care for the environment and animal welfare and the non-use of pesticides and fertilizers.”⁹⁰ The real or perceived difference between organic and conventional raspberries means that consumers are willing to pay more for organic raspberries. Thus, organically grown raspberries can translate into larger returns for processors and growers than conventionally grown raspberries.⁹¹

USDA-certified organic goods must be grown without using certain chemicals.⁹² A key challenge facing organic production of raspberries is controlling mold while limiting or avoiding the use of fungicides. Generally, most of the raspberry growers that produce product that achieves organic certification have either dry weather during critical times of the growing season or use hoop houses to protect against wet weather in order to limit or avoid the use of fungicides for mold.⁹³

⁸⁶ Funt and Hall, *Raspberries*, 2013, Glossary 1, 264.

⁸⁷ Industry representatives, interviews by USITC staff July 29, 2020 and July 30, 2020.

⁸⁸ GFSI, “Certification: Achieving a GFSI Certificate,” accessed March 23, 2021 <https://mygfsi.com/how-to-implement/certification/>; SQF Institute, “About the SQF Program,” March 23, 2021 <https://www.sqfi.com/why-get-certified/about-sqf-program/>.

⁸⁹ To sell imported products as organic in the United States these products must be certified to either the USDA standard or an equivalent international standard. For example, Canadian and European Union organic standards have established equivalency with USDA organic certification. That is, products produced worldwide and certified organic in Canada (to Canada Organic Products Regulations), and product from the EU or packaged in the EU and certified organic in the European Union (to EU Organic Standards) can be sold as organic in the United States. USDA, AMS, “How to Become Certified,” accessed March 23, 2021 <https://www.ams.usda.gov/services/organic-certification/becoming-certified>; USDA, AMS, “Importing Organic Product into the United States,” December 1, 2016.

⁹⁰ Shafie and Rennie, “Consumer Perceptions Towards Organic Food,” 2012, 360–67.

⁹¹ Industry representatives, interviews by USITC staff, June 1, 2020 and August 13, 2020.

⁹² USDA, AMS, “About Organic Labeling,” accessed February 13, 2021, <https://www.ams.usda.gov/rules-regulations/organic/labeling>.

⁹³ FAO, “Production Quantity, Raspberries,” FAOSTAT database, accessed January 11, 2021; IHS Markit, Global Trade Atlas, HS subheading 0811.20, accessed July 7, 2020; industry representative, interview by USITC staff, July 24, 2020.

USDA Marketing Standards

Beyond certifications for food safety, the chain for supplying processed and fresh raspberries to the U.S. market uses the USDA Agricultural Marketing Service (AMS) grading system to indicate the quality of their products. Frozen and fresh raspberries sold in the United States are graded by AMS fee-for-service graders, who indicate the quality (amount of foreign material, mold, or larvae) and characteristics (whole or broken, color, etc.) of the berry. AMS designates frozen raspberries for manufacturing on lettered scales (U.S. Grade A, or U.S. Grade B) and fresh raspberries on numbered scales (U.S. No. 1 or U.S. No. 2).⁹⁴ The U.S. industry commonly refers to processed products as Grade A or B and sometimes Class A or B. Higher-value IQF products are always made from whole Grade A frozen raspberries; block frozen and puree are typically made from Grade B berries, but can also be made from Grade A.

Global Production, Consumption, and Trade

Production of fresh raspberries lends itself to regions and countries with cool and temperate climates, and processing is typically located adjacent to these growing regions. The largest global producers and exporters of processed raspberry products are often also large producers of fresh raspberries; however, not all large fresh raspberry producers process and/or export raspberries.

Production data for processed raspberry products are extremely limited because the products are largely intermediate goods. However, there are widely available data for fresh production of raspberries globally from FAO. Therefore, in this report, data on the production of fresh raspberries and the levels of imports and exports of frozen raspberries are used to indirectly identify the key players in the global processed raspberry industry. Global import data indicate that Europe and North America are large consumers of processed raspberry products, and supply chains are concentrated in those two regions. In recent years, U.S. consumers have increased their consumption of fruits, including raspberries. Processed raspberry products are more durable and have a longer shelf life than fresh raspberries. As such, they are more easily traded across borders, but trade is still concentrated within North and South America and Europe.

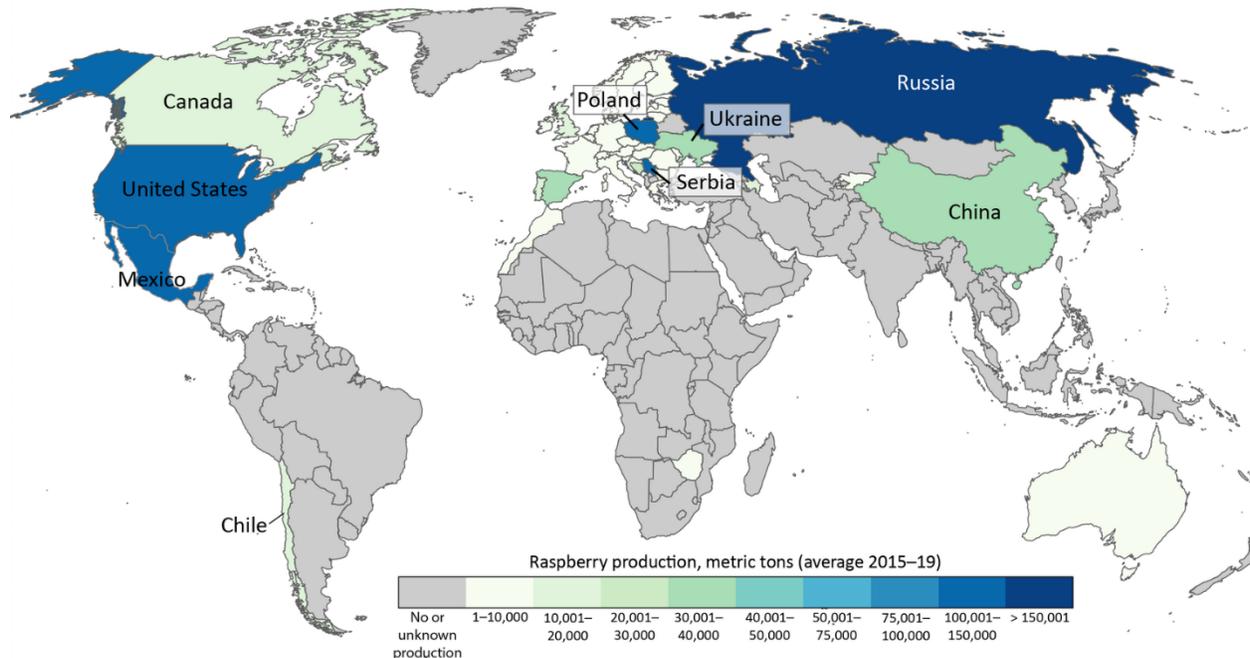
⁹⁴ The scale of U.S. No. 1 for fresh raspberries “consists of similar varietal characteristics, which are well colored and which are free from cores, mold or decay, and from dried and distinctly immature berries and from damage caused by over maturity, crushing, shriveling, dirt, or other foreign matter, hail, sunscald, wind-whips, and other scars, moisture, birds, disease, insects, discoloration, mechanical or other means.” U.S. Grade A (or “U.S. Fancy”), “is the quality of frozen raspberries that are whole and practically free from defects; possess a good character; possess a normal flavor and odor.” U.S. Grade B (or “U.S. Choice”) scores slightly lower on the AMS scoring sheet but berries maintain reasonably good color, an absence of defects, and character. USDA, AMS, “Grades and Standards of Raspberries,” accessed April 7, 2021; USDA, AMS “Grades of Frozen Raspberries,” accessed April 7, 2021.

Production

Raspberries are a specialty crop, with only a few countries producing and exporting the product in large quantities.⁹⁵ Due to the specific conditions required to grow raspberries, production tends to concentrate in regions and countries with cool and temperate climates (figure 1.3). Global production of fresh raspberries is highly concentrated, with the top five countries—Russia, Mexico, Serbia, the United States, and Poland—accounting for 73.1 percent of production in 2019.

Figure 1.3 Global fresh raspberry production by country, average 2015–19

Underlying data for this figure appear in [appendix H table H.2](#).



Source: FAO, FAOSTAT database, “Crops: Raspberries (production),” accessed January 19, 2021; Li, 12th World Conference, IRO, accessed March 23, 2021.

Note: FAO data for Chile may be incomplete; alternative, higher estimates for Chilean production from Chilealimentos are presented in chapter 7 (“Chile”). Production data for China are not available from FAO and are unofficial statistics from an industry representative.

A country’s total raspberry production, even if it includes production of fresh market raspberries, is the broadest indicator of its ability to supply processed raspberries to the global market. Between 2015 and 2019, global raspberry production grew 21.9 percent according to the FAO—from 676,487 mt in 2015 to

⁹⁵ In this report, data for fresh raspberry production (regardless of end use) are presented as an indicator of available supply for processed raspberry production. These data are supplemented with quantitative (if available) and qualitative information about the size of processed raspberry production for each country profiled. There is limited geographical comparability between countries of FAOSTAT data on production, area harvested, and yield due to differences between countries’ data collection methods and coverage. For more information visit FAOSTAT at <http://www.fao.org/faostat/en/#data/QC/metadata> FAO, FAOSTAT database. FAOSTAT, “Production Quantity, Raspberries,” accessed January 11, 2021.

Raspberries for Processing

822,493 mt in 2019 (figure 1.4).⁹⁶ While Russia is the largest single-country raspberry producer by volume, producing 174,000 mt in 2019, most of these raspberries are grown for Russia's own fresh market, and the country supplied negligible amounts of raspberries to the United States from 2015 to 2019.⁹⁷ Mexico, the second-largest global player, produced 128,848 mt in 2019. Over the 2015–19 period, Mexican production of fresh raspberries nearly doubled.⁹⁸ The country grows raspberries primarily for the fresh market, but a stable share of raspberry seconds is produced as well.

Raspberry production in Serbia, the next largest global producer, fluctuated over the period, primarily due to weather events. Overall, though, Serbia's production increased by 23.6 percent, from 97,165 mt in 2015 to 120,058 mt in 2019. Poland is the fifth-largest single-country producer by volume, producing primarily for the processed export market, but it supplied less than 1 percent of U.S. imports of frozen raspberry products from 2015 to 2019.⁹⁹ The United States is the fourth-largest global producer of raspberries, production in the United States fell 14.1 percent, from 119,295 mt in 2015 to 102,510 mt in 2019, largely due to declines in U.S. fresh market production. Chile and Canada, also important U.S. suppliers, according to FAO produced 15,942 mt and 9,145 mt of fresh raspberries, respectively, in 2019. An alternate data source for Chile estimated that Chile produced about 30,000 mt of fresh raspberries, which is more in line with Chile's level of processed raspberry exports.¹⁰⁰

⁹⁶ FAO, "Crops: Raspberries (production)," FAOSTAT database, accessed January 18, 2021.

⁹⁷ FAO, "Crops: Raspberries (production)," FAOSTAT database, accessed January 19, 2021; USITC DataWeb/Census, HTS statistical reporting number 0811.20.2025, accessed November 3, 2020; USITC, hearing transcript, September 17, 2020, 143–44 (testimony of John Tentomas, Nature's Touch).

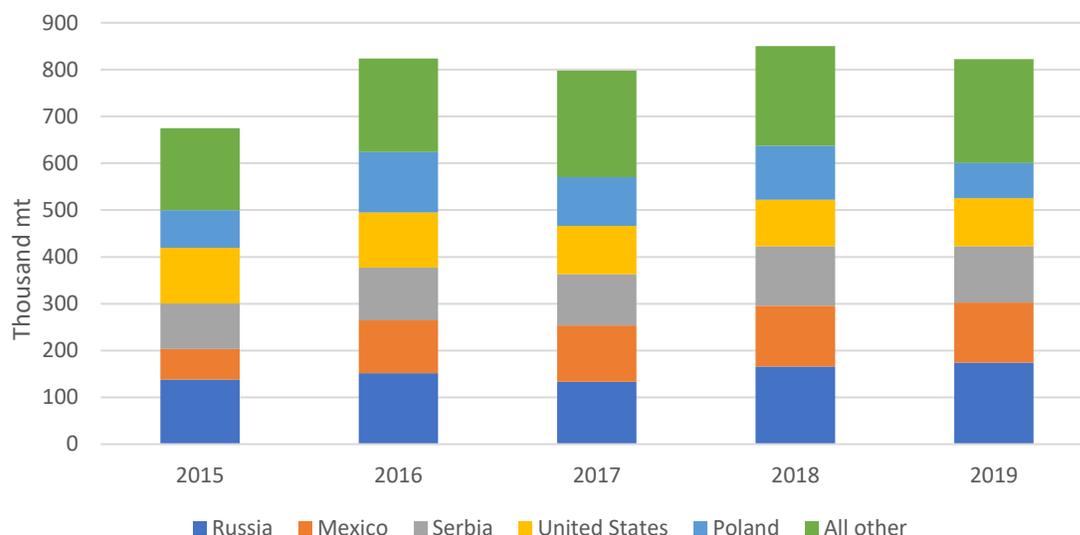
⁹⁸ FAO, "Crops: Raspberries (production)," FAOSTAT database, accessed January 19, 2021.

⁹⁹ IHS Markit, Global Trade Atlas HS subheading 0811.20, accessed July 7, 2020; USITC DataWeb/Census, HTS statistical reporting number 0811.20.2025, accessed November 3, 2020.

¹⁰⁰ Dominguez, "Chilean Raspberry Industry Report 2019," August 2020, 3.

Figure 1.4 Global raspberry production, by country, 2015–19

In thousands of metric tons (mt). Underlying data for this figure appear in [appendix H table H.3](#).



Source: FAO, “Crops: Raspberries (production),” FAOSTAT database, accessed January 18, 2021.

Note: Includes raspberries for the fresh market and processing market. 2019 is the latest year for which data were available. FAO data for Chile may be incomplete; alternative, higher estimates for Chilean production from Chilealimentos are presented in chapter 7 (“Chile”).

As previously mentioned, the largest global producers of fresh raspberries do not always process raspberries or export them to the United States, and therefore do not compete in the U.S. market. Using global export data for frozen raspberries as a proxy for production of raspberries for processing, the largest processed raspberry producers were Serbia, Poland, and Chile, which exported 148,303 mt, 114,699 mt, and 42,176 mt of frozen raspberries, respectively, to the world in 2019 (table 1.1).¹⁰¹ Mexico was estimated to produce over 25,653 mt of raspberries for processing in 2020, nearly all of which were raspberry seconds from the country’s fresh market production.¹⁰² The United States produced 37,421 mt of raspberries for processing in 2019, a small decline of 1 percent from 2015.¹⁰³

¹⁰¹ Poland is not included in table 1.1 because it does not export large quantities of processed raspberries to the United States. IHS Markit, Global Trade Atlas HS subheading 0811.20, accessed July 7, 2020.

¹⁰² Mexican production of raspberries for processing was calculated using U.S. imports of fresh raspberries for processing from Mexico and Mexican exports of frozen raspberries to the world. Mexico exported 10,624 mt of raspberries for processing to the United States and 15,029 mt of frozen raspberries to the world, including to the United States. USITC DataWeb/Census, imports for consumption, HTS 0810.20.1020, 0810.20.1022, 0810.20.1024, 0810.20.9020, 0810.20.9022, 0810.20.9024, and 0811.20.2025, accessed February 4, 2020; IHS Markit, Global Trade Atlas, HS subheading 0811.20, accessed March 16, 2021.

¹⁰³ U.S. production data are production data of fresh raspberries meant for processing for California, Washington, and Oregon. USDA, NASS, Raspberries for Processing, Production, accessed June 20, 2021.

Consumption

Growth in global raspberry consumption is driven by several factors, including improved raspberry cultivars, better logistics, and consumers seeking more healthful diets. In recent years, consumers have increased their consumption of fruits, including raspberries, as a result of increased consumer interest in healthier eating.¹⁰⁴ However, apparent consumption of processed raspberries in the U.S. market has fallen 17.7 percent over the 2015 to 2019 period, from 83,063 mt in 2015 to 68,314 mt in 2019.¹⁰⁵

Although, consumption data for processed raspberries in the U.S. market are limited, U.S. per capita availability of frozen raspberries does offer a rough estimate of supply trends in response to demand for IQF products.¹⁰⁶ U.S. per capita frozen raspberry availability fell from 0.56 pounds in 2015 to 0.39 pounds in 2018, the latest year for which data are available.¹⁰⁷ Over the longer term, per capita availability of frozen raspberries has stayed roughly the same; in 2000, for example, per capita availability of frozen raspberries was 0.37 pounds. The global COVID-19 pandemic increased retail demand for frozen fruits in 2020, but supply-side factors have limited product availability.¹⁰⁸ Another source noted that sales of frozen fruit and vegetables in general grew by 22 percent in 2020 over the previous year, outpacing the 10 percent increase in sales of fresh produce over the same period.¹⁰⁹

Global Trade

The geographical pattern of trade flows varies by raspberry product, and these differences are largely due to the fragile and perishable nature of fresh raspberries compared to the more durable nature of frozen and processed raspberries. As a result, it is typically uneconomical to import fresh raspberries from more remote producers like Chile,¹¹⁰ but processed raspberries can be traded over longer distances.¹¹¹ Regardless, most trade in processed raspberries occurs regionally.

¹⁰⁴ Industry representative, interview by USITC staff, July 16, 2020.

¹⁰⁵ For a more detailed analysis of apparent consumption, refer to chapter 3 (“United States”). USDA, NASS, “*Raspberry Production, Area harvested and Yield*,” Quick Stats database, accessed November 27, 2020; USITC calculations based on USDA, NASS, Raspberry Production, accessed November 27, 2020; USITC DataWeb/Census, HTS statistical reporting numbers 0810.20.1020, 0810.20.1022, 0810.20.1024, 0810.20.9020, 0810.20.9022, 0810.90.9024, 0811.20.2025 and schedule B number 0811.20.0000, accessed March 30, 2021.

¹⁰⁶ Since availability is impacted by supply side factors it is not a true proxy for demand.

¹⁰⁷ USDA, ERS, “Berries Led Growth in Frozen Fruit Consumption,” accessed February 14, 2021.

¹⁰⁸ Roerink, “2020: A Year Like No Other,” January 13, 2021.

¹⁰⁹ Roerink, “Fresh Produce Regains Market Share,” July 14, 2020.

¹¹⁰ Industry representative, interview by USITC staff, September 16, 2020.

¹¹¹ Government of British Columbia, “A Global Export Market Overview,” 2010, 6.

Imports of Frozen Raspberries

Most international trade in processed raspberries occurs adjacent to Europe and North America, where most of the world's importers of raspberries are located (figure 1.5).¹¹² Germany was the largest single-country importer of frozen raspberries by volume in 2019 (21.1 percent), followed by France and the United States (8.2 percent and 7.5 percent, respectively). For Germany, the 10 largest sources of processed raspberries by volume that year were other European countries, owing to proximity, well-established trade relationships between regional partners, and the harmonization of rules across European Union members.¹¹³ By contrast, the United States, the third-largest single-country importer, sourced frozen raspberries from a diverse group of sources. Chile supplied 44.9 percent of U.S. imports of frozen raspberries by quantity in 2019, followed by Mexico (21.6 percent), Serbia (18.3 percent), Canada (15.1 percent), and France (less than 1 percent).¹¹⁴

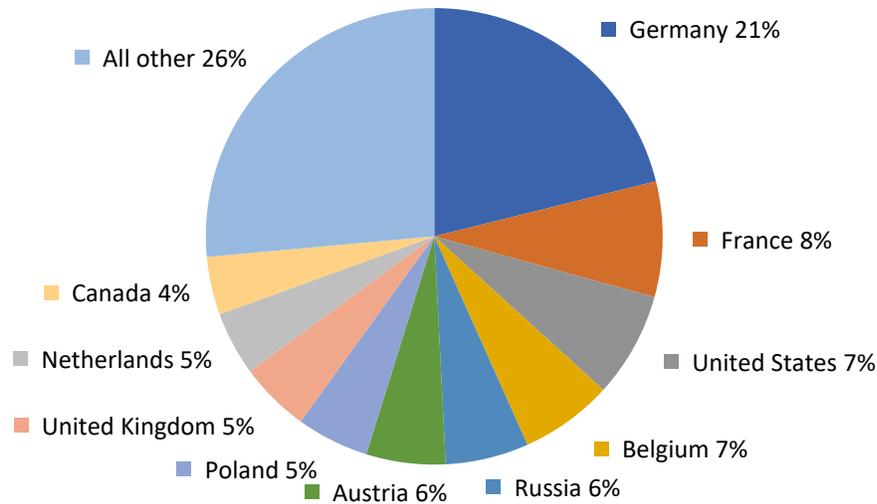
¹¹² Global trade data presented in this report use the Harmonized Commodity Description and Coding System (HS), maintained by the World Customs Organization (WCO). The two HS 6-digit subheadings used are: (1) subheading HS 0810.20, certain fresh berries (covering raspberries, blackberries, mulberries, and loganberries), which accounts for trade in fresh raspberries (for both the fresh market and for processing); and (2) HS subheading 0811.20, certain frozen berries (covering raspberries, blackberries, mulberries, loganberries, currants and gooseberries), which accounts for trade in frozen raspberries (IQF and other processed raspberry products), but excludes some purees, juice, and raspberry content in frozen berry mixes. Some profiled countries provide more granular breakouts of those data. In these cases, a presentation of the data is included in the relevant chapters.

¹¹³ IHS Markit, Global Trade Atlas database, HS subheading 0811.20, accessed July 7, 2020.

¹¹⁴ USITC DataWeb/Census, HTS statistical reporting number 0811.20.2025, accessed February 4, 2020.

Figure 1.5 Frozen raspberries: Share of global imports by volume, 2019

Underlying data for this figure appear in [appendix H table H.4](#).



Source: IHS Markit, Global Trade Atlas database, HS subheading 0811.20, accessed July 7, 2020.

Note: HS subheading 0811.20 covers raspberries, blackberries, mulberries, loganberries, currants, and gooseberries. However, available information indicates that the bulk of exports and imports of this product group are raspberries. Due to rounding, figures may not add up to 100 percent.

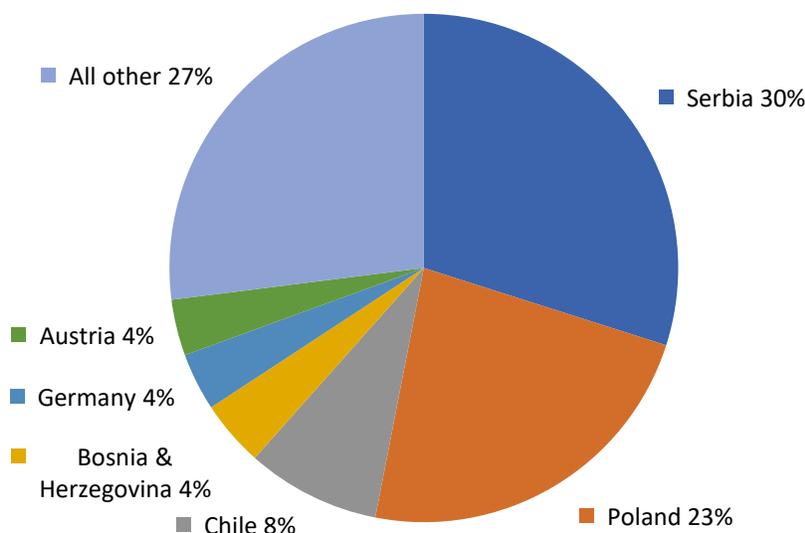
Exports of Frozen Raspberries

Among exporters (figure 1.6), Serbia and Poland accounted for a combined 53.1 percent of total global frozen raspberry exports in 2019, followed at a distance by Chile (8.5 percent) and several European countries.¹¹⁵ The total volume of frozen exports to the world in 2019 was 495,682 mt. The United States accounted for a small share of total global exports. Nonetheless, U.S. exports grew 55.5 percent from 2015 to 2019, compared to 24.6 percent for Canada (also from a low base) and 22.8 percent for Serbia (table 1.1). The United States exports frozen raspberries mainly to Canada. Not all exporters of frozen raspberries saw growth over this period; total exports declined for Mexico (34.2 percent) and Chile (22.6 percent).

¹¹⁵ IHS Markit, Global Trade Atlas, HS subheading 0811.20, accessed July 7, 2020.

Figure 1.6 Frozen raspberries: Share of global exports by volume, 2019

Underlying data for this figure appear in [appendix H table H.5](#).



Source: IHS Markit, Global Trade Atlas database, HS subheading 0811.20, accessed September 3, 2020.

Note: HS subheading 0811.20 covers raspberries, blackberries, mulberries, loganberries, currants, and gooseberries. However, available information indicates that the bulk of exports and imports of this product group are raspberries. Due to rounding, figures may not add up to 100 percent.

Table 1.1 Frozen exports to the world, selected countries, 2015–19

In metric tons (mt) and percentages.

Country	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	Absolute change, 2015–19 (mt)	Percent change, 2015–19
Serbia	120,783	108,379	123,599	134,624	148,303	27,520	22.8%
Chile	54,498	51,577	45,866	45,805	42,176	-12,323	-22.6%
Mexico	14,172	11,948	6,940	10,173	9,323	-4,849	-34.2%
United States	5,412	6,093	5,141	6,515	8,418	3,006	55.5%
Canada	3,073	3,292	2,630	3,141	3,830	757	24.6%
All other	268,283	272,170	303,266	298,858	283,632	15,349	5.7%
Total	466,222	453,459	487,443	499,115	495,682	-4,579	6.3%

Source: IHS Markit, Global Trade Atlas database, HS subheading 0811.20, accessed September 3, 2020.

Note: HS subheading 0811.20 covers raspberries, blackberries, mulberries, loganberries, currants, and gooseberries. However, available information indicates that the bulk of exports and imports of this product group are raspberries.

Imports and Exports of Fresh Raspberries

Imports and exports of fresh raspberries are concentrated within regions due to the relatively short window raspberries have between harvesting and processing. The United States was the largest single-country importer of fresh raspberries by both quantity and value during 2015–19 (accounting for about

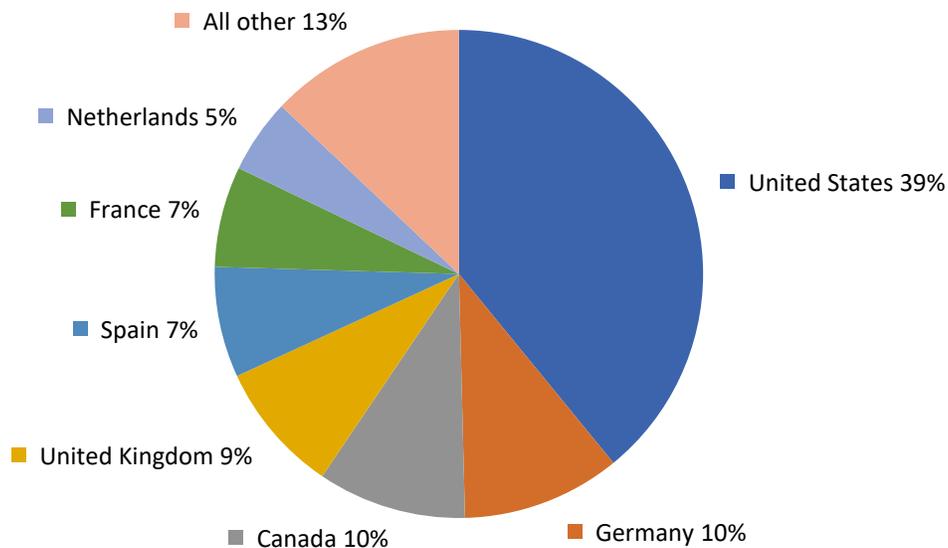
Raspberries for Processing

39 percent of total fresh raspberry imports in both quantity and value), followed at a distance by Germany and Canada (figure 1.7). Mexico, the world’s largest exporter of fresh raspberries in 2019, has been the source of 99 percent of U.S. fresh raspberry imports in every year since at least 2015.¹¹⁶ Spain, the second-largest exporter of fresh raspberries, primarily supplies European countries; while the third-largest exporter of fresh raspberries, the United States, exports primarily to Canada (figure 1.8).

Over the period, total exports of fresh raspberries from Mexico grew 38.0 percent and U.S. exports grew 11.8 percent.¹¹⁷ Exports of fresh raspberries from Canada, Serbia, and Chile all declined over the period 2015–19.

Figure 1.7 Fresh raspberries: Share of global imports by volume, 2019

Underlying data for this figure appear in [appendix table H.6](#).



Source: IHS Markit, Global Trade Atlas database, HS subheading 0810.20, accessed September 3, 2020.

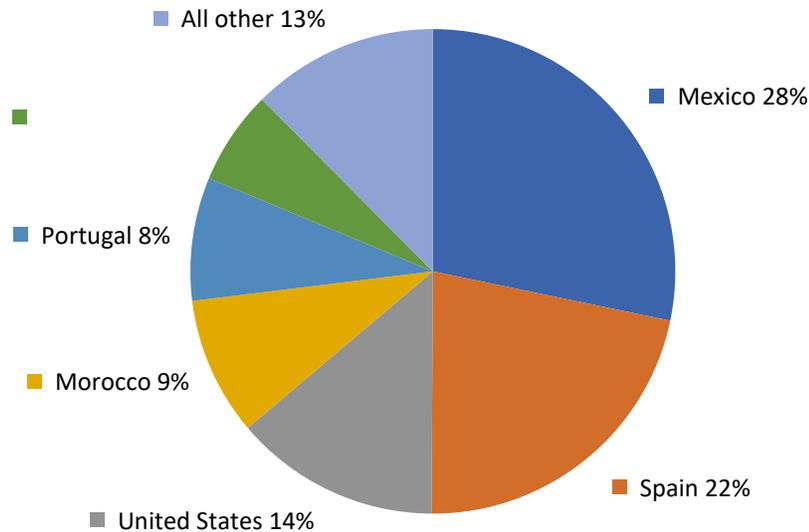
Note: HS subheading 0810.20 covers raspberries, blackberries, mulberries, and loganberries. However, available information indicates that the bulk of exports and imports of this product group are raspberries.

¹¹⁶ USITC DataWeb/Census, HTS statistical reporting numbers 0810.20.1024 and 0810.20.9024, accessed February 4, 2020.

¹¹⁷ Chapter 3 (“United States”) presents more specific export data from schedule B of the Harmonized Tariff Schedule of the United States, which indicate a small decline (3.7 percent) of fresh raspberries exports.

Figure 1.8 Fresh raspberries: Share of global exports by volume, 2019

Underlying data for this figure appear in [appendix H table H.7](#).



Source: IHS Markit, Global Trade Atlas database, HS subheading 0810.20, accessed September 3, 2020.

Note: HS subheading 0810.20 covers raspberries, blackberries, mulberries, and loganberries. However, available information indicates that the bulk of exports and imports of this product group are raspberries. Due to rounding, figures may not add up to 100 percent.

Box 1.1 Newly Developing Processed Raspberry Industries

Commission staff identified some nascent raspberry for processing and processed raspberry industries that could become key global players. The following information summarizes the Chinese and Ukrainian raspberry industries and identifies primary barriers to growth and/or limitations to their competitiveness in the U.S. market.

China

According to 2019 data, China's processed raspberry industry is slightly more oriented towards exporting than serving its domestic market, but industry representatives report that this trend is changing.^a For example, Chinese raspberry firms in Hebei province produce fresh raspberries, IQF frozen raspberries, and purees. These firms are evidently vertically integrated, as they own planted acreage, "quick-freeze" warehouses, and packing facilities. They list their domestic buyers as Chinese high-end supermarkets and international brands in China (DQ, Häagen-Daz, and Walmart, to name a few). United Arab Emirates, Europe, Russia, and the United States are some of their listed export markets.^b There is some production of fresh market raspberries in China for the domestic market, and Driscoll's, a U.S. fresh berry marketer, has a market-leading presence in Yunnan province.^c An industry representative (with offices in China) at the Commission's public hearing noted that China's middle class has started to consume all berries on a larger scale, which has turned the focus of China's raspberry industry toward serving the domestic market.^d

Ukraine

Ukraine is a large producer of fresh raspberries and exporter of frozen raspberries;^e however, it is not a principal supplier of frozen raspberries to the United States, due to processing constraints and standards

Raspberries for Processing

concerns.^f In 2019 Ukraine exported almost 6,800 mt of frozen raspberries, accounting for about 20 percent of its domestic raspberry production.^g While the country exports primarily to markets within the European Union, sales in other parts of the world are expected to grow rapidly in the upcoming years due to industry and government efforts to shift away from local fresh market sales to regional and global processed markets.^h Ukraine manufactures a variety of frozen raspberry products, including IQF, frozen berry mixes, purees, and juice concentrates.ⁱ The industry does not now have enough freezing facilities to support its output of raspberries suitable for processing, but there have been multiple initiatives and limited government support to ramp up infrastructure and production in the processing segment.^j

^a Fresh Plaza, “The Chinese Raspberry Industry Is Getting Ready,” March 13, 2017; Li, “12th World Conference,” IRO, accessed March 23, 2021; U.S. government representative, email message to USITC staff, December 12, 2020.

^b “Beijing Kingsberry Garden Agriculture Technology Co., Ltd.,” accessed February 7, 2021 <http://www.dfberry.cn/english/about/112.html>; Fresh Plaza, “The Chinese Raspberry Industry Is Getting Ready,” March 13, 2017.

^c U.S. government representative, email message to USITC staff, December 12, 2020.

^d USITC, hearing transcript, September 17, 2020 (testimony of Tony Miller, Cascade International Foods).

^e Ukraine was the 7th-largest global producer of raspberries in 2019 and the 11th-largest exporter of frozen raspberries. FAO, “Crops: Raspberries (production),” FAOSTAT database, accessed January 18, 2021. IHS Markit, Global Trade Atlas database, HS subheading 0811.20, accessed July 7, 2020.

^f Industry representative, interview by USITC staff, July 24, 2020.

^g Ukraine did not export any frozen raspberries to the United States, as of 2019. IHS Markit, Global Trade Atlas database, HS 0811.20, accessed February 6, 2021.

^h Similarly, Bosnia and Herzegovina are growing producers of raspberries, totaling 52,289 mt and 7,206 mt of raspberries, respectively, in 2019. Bosnia and Herzegovina exported nearly 21,000 mt of raspberries in the same year. Bosnia and Herzegovina production varies year to year making their reliability of supply relatively low compared to other regional suppliers. FAO, “Crops: Raspberries (production),” FAOSTAT database, accessed January 18, 2021; IHS Markit, Global Trade Atlas database, HS subheading 0811.20, accessed various dates.

ⁱ Ukrainian Berry Association, “The Ukrainian Berry Industry,” 2020.

^j Fresh Plaza, “Raspberry Production on the Rise Production,” November 23, 2017.

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Chapter 2

Cross-Country Comparison of Competitiveness

Several countries, including the United States itself, supply the U.S. market with raspberries that are either processed or intended for processing; the competitiveness of these suppliers, however, vary substantially.¹¹⁸ Sales of processed raspberry products supplied by the industry in Washington were roughly \$530 million from 2015 to 2020, while U.S. imports were valued at about \$740 million during this period, for an estimated total U.S. market of over \$1 billion during the period.¹¹⁹ Measured by the quantity of fresh raspberries for processing produced by Washington and California, U.S. producers are estimated to have held at most 57 to 64 percent of the U.S. processed raspberry market from 2015 to 2019, with imports comprising nearly all the remainder, see chapter 3 (“United States”) table 3.6.

The Commission’s research showed that the U.S. processed raspberry industry in Washington State is a high-cost producer of premium products—individually quick frozen (IQF) raspberries—that have a reputation for highly desirable product characteristics in terms of food safety, color, and sugar content.¹²⁰ In other words, their products are highly differentiated. Canada is also a high-cost supplier of raspberry products, but it offers slightly less differentiated goods than the United States, producing primarily non-IQF products (purees and block frozen) with some production of IQF raspberries. Chile and Serbia are both medium-cost suppliers of highly differentiated IQF products, including organic IQF raspberries. Mexico is a low-cost supplier of less differentiated products, primarily non-IQF products (fresh for processing, block frozen, puree, and juice and juice concentrate). All these countries are reliable suppliers.

This chapter offers a cross-country comparison of the processed raspberry industries in the United States and in countries that are major suppliers to the U.S. market. It identifies and evaluates several key competitive factors for processed raspberries in a qualitative framework, as well as estimating what is known as the symmetric revealed comparative advantage (SRCA) of each country. A country’s SRCA is a measure, at once quantitative and relative, of its specialization and competitiveness in international trade.¹²¹ The cross-country comparison draws from this report’s country profile chapters, which present in-depth, country-specific industry profiles and detailed discussions of competitive factors.

¹¹⁸ See Chapter 3 (“United States”).

¹¹⁹ WRRRC, email message to USITC staff, December 18, 2021; USITC DataWeb/Census, HTS statistical reporting numbers: a share of 0810.20.1020 and 0810.20.9020, 0810.20.1024, 0810.20.9024, 0811.20.2025, a share of 0811.90.8080, 0811.90.8085, 2008.99.2120, 2007.99.6510, and 2009.89.7055, accessed February 4, 2021.

¹²⁰ The United States comparison is based on the processed raspberry industry in Washington State and does not consider competitive factors of processed raspberry production in Oregon, California, or other regions in the United States. Some of the competitiveness factors for the Washington industry may apply to Oregon and British Columbia, Canada, as well, however, the focus of this analysis is on Washington State.

¹²¹ A comparative advantage is the ability to produce a good or service at a lower opportunity cost than a trading partner. Oxford Reference, “Overview Comparative Advantage,” accessed April 26, 2021.

Chapters 3–7 of the report assess the competitive strengths and weaknesses of the processed raspberry industries in the United States, with a focus on Washington State, and major sources of U.S. imports of processed raspberries and raspberries for processing: Canada, Chile, Mexico, and Serbia. In 2019, these countries combined accounted for 99.9 percent of the U.S. imports of processed raspberries and raspberries for processing.¹²² The SRCA complements the qualitative cross-country comparisons by giving a quantitative measure of the overall competitiveness of a country’s raspberry industry in the U.S. and global markets. The SRCA is an expression of the revealed comparative advantage (RCA) index, in which a positive value indicates a high degree of comparative advantage and a negative value indicates a lack of comparative advantage.¹²³

Competitive factors influence the ability of an industry to supply products with the characteristics demanded by buyers, who base their purchasing decisions on three primary criteria: delivered cost, product differentiation, and reliability of supply. For processed raspberries, delivered cost reflects the cost to acquire or produce the primary input—fresh raspberries—as well as processing (freezing), storage, transportation, trade, and compliance costs. Product differentiation refers to the ability to provide processed raspberries in the form and packaging wanted by buyers and with the desired product characteristics, e.g., grade, Brix (sugar level),¹²⁴ flavor profile, color, viscosity, or cultivation method (organic or conventional). Reliability of supply refers to the ability of suppliers to deliver an agreed-on quantity of product to a specified location at a contracted time, which can depend on the efficiency of supply chains, the functioning of marketing information systems, the weather, and other supply and production factors.

The comparison of competitive factors in this chapter focuses on processed raspberries and fresh raspberries for processing. Factors related to fresh raspberries (and to a lesser extent, raspberry seconds from the fresh market) are also considered, however, since fresh raspberries are the primary input for processed raspberries and can affect the delivered cost and product characteristics of processed raspberries.¹²⁵

Industry Comparison

Comparing production levels, yields, industry focus (fresh or processed), and industry orientation (home market or export market) can give an idea of the relative strengths and weaknesses of a country’s

¹²² USITC, DataWeb/Census, HTS statistical reporting numbers 0810.20.1024, 0810.20.9024, 0811.20.2025, 2007.99.6510, 2008.99.2120, 2009.89.6055, and 2009.89.7055, accessed April 29, 2021. This calculation does not include raspberry content share of 0811.90.8080 and 0811.90.8085.

¹²³ See appendix G for a summary of the literature on RCA and SRCA and how these measures were calculated for this report.

¹²⁴ Brix level is the percentage of sugar solids in any liquid products made from plant materials. Industry representatives refer to Brix levels when measuring the sugar content in liquid processed raspberry products, e.g., puree, juice concentrate, single-strength juice, or reconstituted juice. Higher Brix levels indicate higher levels of sugars. USDA, AMS, *Technical Procedures Manual*, June 2020, 17. The standard Brix level for single-strength juice is 10.5. Brix Values of Unconcentrated Natural Fruit Juices, 19 C.F.R. § 151.91 (April 1, 2011).

¹²⁵ Raspberry seconds, in the case of Mexican fresh raspberries, are defined as raspberries that do not meet the product specifications for the fresh market.

industry compared with its competitors. In the case of processed raspberries, fresh raspberries are a primary input and an important component of the delivered cost for processed raspberries. Hence the productivity of a country's fresh raspberry industry is an important component of the total delivered cost of processed raspberries. The focus of fresh raspberry production differs among the countries included in this analysis, which affects the costs of fresh inputs for raspberry processors. It also affects production practices, costs to produce fresh raspberries, and yields, which contribute to the competitiveness of processed raspberry industries.

Production practices vary by industry focus, and these practices influence yields. In countries and regions where the industry is focused on the fresh market, like Mexico and California, growers use production practices that result in higher yields of fresh raspberries. These practices include a protected field system (hoop houses), hand harvesting, and proprietary cultivars suited for the fresh market that achieve high yields.¹²⁶ Washington growers, who produce for the processing market, use an open field production system exposed to weather elements that uses mechanical harvesting and cultivars optimized for processing, which can lead to lower yields than growers in California and Mexico. Fresh market raspberries receive higher prices than raspberries for processing.

Yield data from 2015 to 2019 correspond to production practices and industry focus. From 2015 to 2019, fresh market-focused California and Mexico had the highest levels of productivity, with average yields of 21.3 and 18.3 metric tons (mt) per hectare, respectively (table 2.1).¹²⁷ Countries and regions using open field systems and focusing on the processing market had lower productivity over the period; in particular, Washington, Chile, Serbia, and Canada had average yields of 9.2, 7.4, 5.4, and 5.3 mt per hectare, respectively. Since these are average yields, they may not be reflective of the most productive farms in these countries. For example, yields in Serbia range from 5–6 mt for traditional growers to 15–20 mt for larger and more modern farms.¹²⁸

¹²⁶ Raspberries are grown in Mexico using production systems that are essentially identical to those for the fresh raspberries grown in California. Hoop houses in the United States or Mexico reportedly cost \$30,000 per hectare and, though that is less than the cost of a greenhouse (which typically cost more than \$100,000), they are a high-cost initial investment. Industry representative, email message to USITC staff, October 24, 2020; industry representatives, interviews by USITC staff, September 16, 2020, and October 26, 2020; academic experts, interview by USITC staff, January 12, 2021.

¹²⁷ More details on California's role in the U.S. processed raspberry industry are provided in chapter 3 ("United States").

¹²⁸ Džagić et al., "Integrated Report on Performance and Value Chain Analysis," December 2017, 47.

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Table 2.1 Raspberries: Industry summary concerning production, area harvested, and yield, selected countries, yearly average 2015–19, exports 2019

Production and exports are in metric tons (mt), harvest area is in hectares (ha), yield is in mt/ha, and ratios are in percentages; n.a. = not available.

State/Country	Average fresh raspberry production (mt)	Average harvest area (ha)	Average yield (mt/ha)	2019 Processed raspberry exports (mt)	2019 Processed exports to fresh production ratio (%)
Washington	35,431	3,834	9.2	n.a.	n.a.
California	74,820	3,505	21.3	n.a.	n.a.
United States	108,214	7,584	14.3	8,418	7.8
Canada	10,553	1,991	5.3	3,830	36.3
Chile	34,045	4,578	7.4	42,176	123.9
Mexico	111,454	6,090	18.3	9,323	8.4
Serbia	113,429	20,834	5.4	148,303	130.7

Source: Compiled from FAO, FAOSTAT database, Crops: Raspberries, accessed January 19, 2021; IHS Markit, Global Trade Atlas database, HS 0811.20, accessed September 4, 2020; and USDA, NASS, “Raspberries—Acres Harvested” and “Raspberries—Production Measured in LB,” accessed February 14, 2021.

Note: The United States row presents averages for production, area, and yield at the national level; thus, it does not sum with Washington and California values. Export data are based on exports under HS 0811.20 which covers frozen raspberries, blackberries, mulberries, loganberries, currants, and gooseberries. Alternate, higher estimates are used above for Chilean production and yields, but area harvested is from FAOSTAT. Dominguez, “Chilean Raspberry Industry Report 2019,” accessed March 31, 2021, 3.

The portion of a country’s production of fresh raspberries that is exported as processed raspberries varies by country. Both Chile and Serbia rely heavily on the processed raspberry export market (table 2.1). In fact, in 2019 processed raspberry exports exceeded fresh raspberry production for the two countries. One reason for this seeming paradox is that both Chile and Serbia import frozen raspberries from third countries to be later exported.¹²⁹ Additionally, export statistics may include some trade in blackberries, mulberries, loganberries, currants, and gooseberries.

Canada and the United States produce substantial quantities of raspberries for both the fresh market and processing. In 2019, 62 percent of Canadian-produced raspberries were sold to processors, and the remainder went to the fresh market.¹³⁰ Processed raspberry exports accounted for over one-third of Canadian fresh production (table 2.1). In the United States, about 60 percent of total raspberry production by volume in 2019 was meant for fresh consumption; 40 percent, for processing.¹³¹

¹²⁹ For example, Serbia imported 15,189 mt and Chile imported 2,034 mt of frozen raspberries in 2019. IHS Markit, Global Trade Atlas database, HS 0811.20, accessed April 13, 2021. Note this HS subheading covers imports of frozen raspberries, blackberries, mulberries, loganberries, currants, and gooseberries.

¹³⁰ In 2019, 83 percent of raspberries produced in British Columbia (5,615 mt) and 5 percent of raspberries produced in Quebec (61 mt) were sold to processors. Government of Canada, written submission to the USITC, December 4, 2020, tables 1 and 2, 3; FAO, FAOSTAT database, Crops: Raspberries, accessed January 19, 2021.

¹³¹ USDA, NASS, Quick Stats, “Raspberries—Production, Measured in LB,” “Raspberries, Fresh Market—Production, Measured in LB,” and “Raspberries, Processing—Production, Measured in LB,” accessed March 16, 2021.

Most U.S.-produced raspberries used for processing are grown in Washington State, and 95 percent of Washington’s fresh raspberry production was destined for processing in 2017, the last year for which state-level data are available.¹³² Most U.S. fresh and processed raspberries are used to fulfill domestic demand, although there are some exports of processed and fresh raspberries.¹³³

By contrast, in Mexico the industry is focused on exporting for the fresh market. This is indicated by the large share of Mexican fresh raspberry production—nearly half in 2019—that is imported by the United States in small containers, mostly plastic clamshells, and is meant for fresh consumption.¹³⁴ Exports of processed raspberries account for a much smaller proportion of Mexican production, with processed exports accounting for 8.4 percent of fresh production in 2019 (table 2.1). Mexico also exports some fresh raspberries to the United States in containers of 5 kg or more that are likely destined for processing.¹³⁵

The focus market channel of growers in each of the profiled industries affects processors’ costs for fresh raspberry inputs. The portion of a grower’s production of raspberries meant for processing versus the portion for the premium-priced fresh market influences the grower’s overall profitability and the prices at which processors can purchase the grower’s input. In Mexico, for example, raspberry growers sell most of their production to the fresh market, with around 10 percent of raspberry production sold as residual products (or raspberry “seconds”) for wholesale marketing or processing.¹³⁶ Compared to raspberries for processing, raspberries sold to the fresh market receive premium prices, which increase revenues and can boost grower profitability.

By contrast, raspberry growers in Washington, Canada (British Columbia), Serbia, and Chile primarily produce for the processed market.¹³⁷ The share of raspberry production going to processing in these three countries and in Washington is roughly 90 percent or higher.¹³⁸ Growers in these countries and in

¹³² USDA, NASS, Quick Stats, “Raspberries, Production, Measured in LB,” “Raspberries, Fresh Market—Production, Measured in LB,” and “Raspberries, Processing—Production Measured in LB,” accessed March 16, 2021.

¹³³ For example, in 2019, the United States exported 21,211 mt of fresh raspberries and 4,814 mt of frozen raspberries, primarily to Canada. USITC DataWeb/Census, domestic exports, Schedule B number 0810.20.5000 and 0811.20.0000, accessed February 4, 2020. Schedule B numbers 0810.20.5000, 0810.20.2000, and 0811.20.0000 also cover blackberries, mulberries, and loganberries, in addition to raspberries.

¹³⁴ USITC DataWeb/Census, imports for consumption, HTS 0810.20.1022 and 0810.20.9022, accessed April 29, 2021; FAO, FAOSTAT database, Crops: Raspberries, accessed June 2, 2020.

¹³⁵ U.S. imports of fresh raspberries from Mexico in containers of 5 kg or more are likely destined for the processing sector. USITC, hearing transcript, September 17, 2020, 21–22, 25–26 (testimony of Ryan Commons, Driscoll’s, Inc.).

¹³⁶ USITC, hearing transcript, September 17, 2020, 99–100 (testimony of Tony Miller, Cascade International Foods), 101–02 (testimony of Jean-Christophe Hestean, Sunopta Inc.), and 18–21 (testimony of Ryan Commons, Driscoll’s, Inc.); industry representatives, interviews by USITC staff, September 16, 2020, December 1, 2020, and December 3, 2020.

¹³⁷ The other significant Canadian provinces producing fresh raspberries (Quebec and Ontario) primarily produce raspberries for the fresh market.

¹³⁸ USDA, NASS, Quick Stats, “Raspberries, Production, Measured in LB,” “Raspberries, Fresh Market—Production, Measured in LB,” and “Raspberries, Processing—Production Measured in LB,” accessed March 16, 2021; BC Ministry of Agriculture, *A Global Export Market Overview*, 2010, 9; industry representative, interview by USITC staff, February 11, 2021.

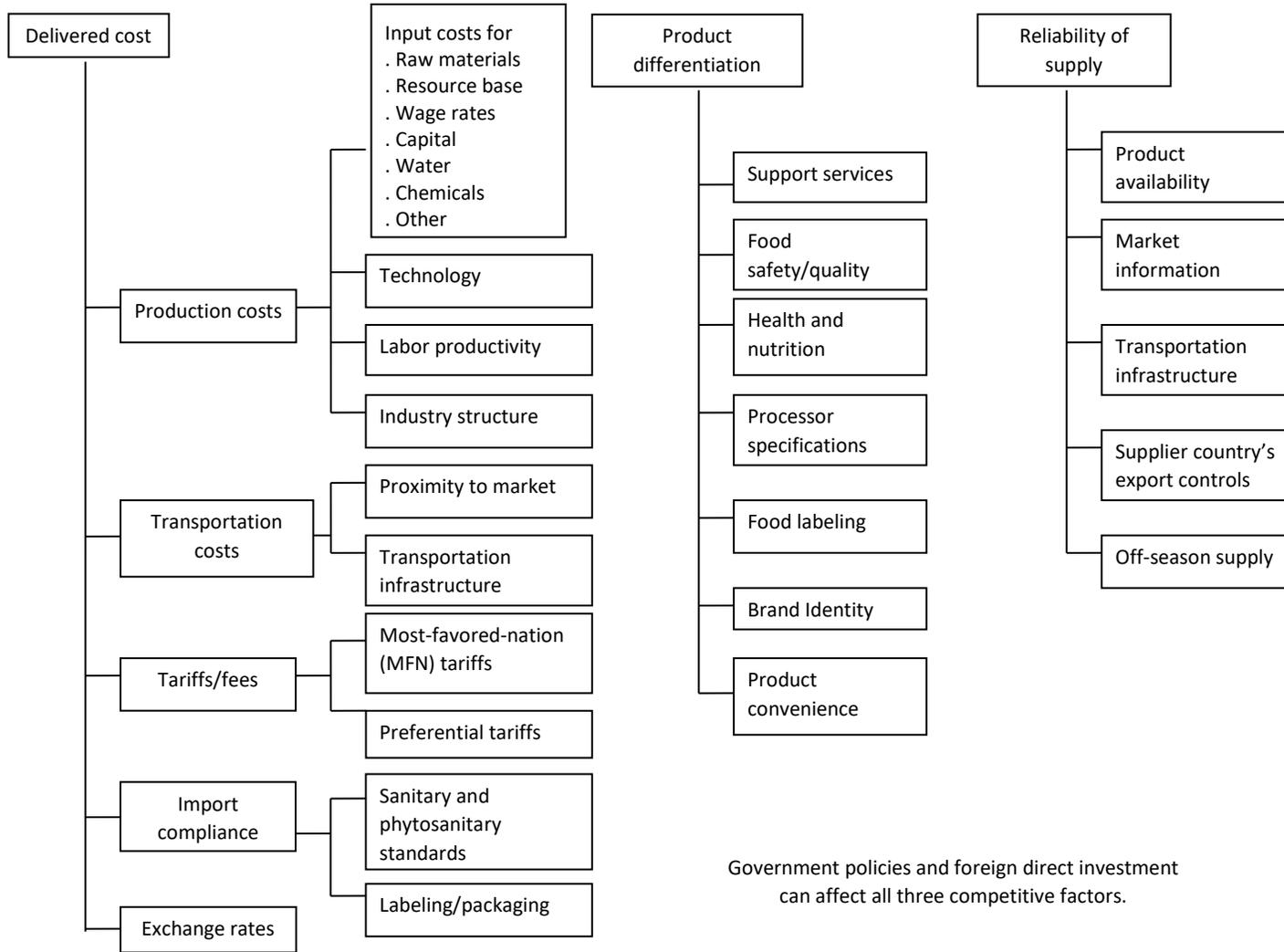
Washington focus on producing berries optimized for processing. They largely do not benefit from revenues generated from premium-priced sales in the fresh market.

Competitive Factor Comparison

To analyze the competitive factors affecting the processed raspberry sectors across the countries that are major suppliers to the U.S. market, the Commission used a framework drawing together the analytical assumptions, parameters, and structure that define competitive conditions in food and agricultural trade.¹³⁹ Competitive conditions encompass the economic, institutional, and regulatory environment in which firms compete. Agricultural competitiveness is measured by comparing delivered costs, product differentiation, and supplier reliability for domestically produced goods against those of imports. Figure 2.1 shows how these three characteristics are affected by several competitive factors for agriculture. Government policies and the regulatory environment can affect competitiveness under these categories and information about these are presented in the country profiles.

¹³⁹ The Commission uses Michael Porter's theory of competitive advantage as a starting point from which to develop a framework for analyzing competitive conditions affecting agricultural trade. For more information on this framework and its limitations, refer to USITC, *China's Agricultural Trade*, March 2011, E-3 to E-8.

Figure 2.1 Factors that affect competitiveness in agricultural markets



Source: Compiled by USITC.

The analysis in this report explores the relative importance of particular factors in determining the competitiveness of U.S. processed raspberry production vis-à-vis its foreign competitors in the U.S. market. In this industry, competition occurs among processed products (e.g., IQF, puree, straight pack, and juice). Therefore, factors of competitiveness affecting fresh raspberries used in producing the downstream processed products—whether grown for processing or seconds diverted from the fresh market—are expressed in terms of costs, product differentiation, and reliability of supply for processed raspberries.

The competitiveness of producers in each of the selected countries in terms of delivered cost, product differentiation, and reliability of supply of domestic processed raspberry production is summarized in table 2.2. Countries have been assigned one of three broad designations—high, medium, or low—on each factor in terms of their competitiveness in the U.S. market.

The competitive factor categories are based on data and information largely available for all countries, and further discussed in the country profiles in chapters 3–7. The assessment for the United States chiefly considers sales of Washington State processed raspberry products and excludes products from Oregon in the U.S. market for three reasons: nearly all U.S. raspberry processors are located in Washington, the majority of U.S. raspberries for processing are produced in Washington, and production data for Oregon are not available after 2017.¹⁴⁰ The assessments in this report also consider countries that are major export suppliers to the U.S. market, including Chile, Mexico, Serbia, and Canada. The competitiveness assessment for these countries focuses on their processed raspberry exports to the U.S. market. These assessments are inherently subjective, based on analysis by Commission staff of the factors described below using available data, hearing testimony, and communication with industry experts.

- **Delivered cost** assessments were largely based on input costs (the cost of acquiring or producing fresh raspberries); costs for freezing, processing, storing, and transporting the raspberries; and other transaction costs, such as tariffs and exchange rate effects.¹⁴¹ Labor costs are a significant component of input costs to produce fresh raspberries which affects the input costs for processed raspberry producers. A high delivered cost makes producers less competitive.
- **Product differentiation** was assessed based on producers' ability to deliver products desirable to buyers and end consumers, such as IQF berries and products with desirable traits, including high sugar content and favorable flavor and color profiles. The ability to supply different forms of processed berries (e.g., IQF, bulk products, or juice) and certified organic product was also considered, along with products' branding and packaging. High product differentiation makes producers more competitive.

¹⁴⁰ More details on California producers' role in the U.S. processed raspberry industry are provided in chapter 3 ("United States").

¹⁴¹ Although exchange rates were not found to be a major factor in delivered cost for processed raspberries, they can affect costs—for example, freight rates for shipments from Serbia are often priced in euros. Industry representatives, interviews by USITC staff, August 13, 2020, and December 3, 2020.

- **Reliability of supply** was evaluated by considering the volume of exported processed raspberries compared to domestic fresh and processed raspberry production and consumption; variability in year-to-year production and exports; the prevalence of year-round supply; off-season production; and the quality of market infrastructure and logistics chains. High reliability of supply makes producers more competitive.

Table 2.2 Comparison of competitive factor categories for processed raspberries in selected countries, 2015–20

Country	Delivered cost	Product differentiation	Reliability of supply
United States (WA)	High	High	Medium
Canada	High	Medium	Medium
Chile	Medium	High	High
Mexico	Low	Low	High
Serbia	Medium	High	Medium

Source: Compiled by USITC.

Note: The United States comparison is based on the processed raspberry industry in Washington and does not consider competitive factors of processed raspberry production in Oregon, California, or other regions in the United States. For Mexico, the competitive analysis considers exports of both processed raspberries and seconds from the fresh market channel that are exported for processing.

Assessing the product differentiation and reliability of supply of countries supplying processed raspberries to the U.S. market is complex. There is a wide range of product types within the category of processed raspberries, and reliability of supply can vary by product. U.S. buyers of different types of processed raspberries have different desired product specifications. For example, buyers of bulk raspberry products may place a greater emphasis on delivered cost than do buyers of IQF berries, who may see the physical appearance of berries as more important and, therefore, place a higher value on product differentiation. Table 2.3 shows processed raspberries and raspberries for processing supplied by Washington State and other U.S. market suppliers.¹⁴²

¹⁴² Countries may produce highly differentiated products but supply limited quantities of these, which would limit their level of product differentiation. For instance, Canada produces IQF raspberries and mixed IQF berries but focuses on exports of bulk products.

Table 2.3 Processed raspberries and raspberries for processing supplied to the U.S. market by country
A round bullet (•) in a column under a particular product means that this country’s product is supplied to the U.S. market.
— (em dash) = not applicable.

Country	IQF	Organic	Block frozen	Puree	Juice/juice concentrate	Fresh for processing
United States (WA)	•	—	•	•	•	•
Canada	•	—	•	•	•	•
Chile	•	•	•	—	•	—
Mexico	•	—	•	•	•	•
Serbia	•	•	—	—	—	—

Source: Compiled by USITC.

Note on fresh raspberries for processing: while Washington and Canadian fresh production is primarily focused on the processing market, Mexico exports seconds from the fresh market channel to the United States to be processed into bulk products such as block frozen, puree, and juice/juice concentrate.

Delivered Cost

Delivered cost for processed raspberries includes fixed and variable costs associated with producing, storing, and delivering the product to the specified location. Fixed capital costs include the cost of tunnel freezers and cold storage facilities, and variable costs include input costs (fresh raspberries), containers and labels, certifications, and shipping and storage costs. Delivered costs can also depend on the type of product being produced, as well as the location to which it is to be sent: for example, IQF raspberries may be sent to an ingredient manufacturer, to a repacker that uses IQF raspberries, or to a retail outlet that sells IQF berries.

Although strong comparisons of delivered cost are difficult to make, given the gaps and uncertainties in available data and differences in the types of frozen raspberries supplied, it is possible to rank the profiled industries in terms of delivered cost based on the in-depth analyses in chapters 3–7. Processed raspberry industries in Mexico and Serbia both feature low raw material costs (as evidenced by the market price for raspberries for processing) and low labor costs relative to the other profiled countries. Chile ranks above Serbia and Mexico in terms of delivered cost because its labor costs are higher, while the United States and Canada have the highest delivered costs.¹⁴³ The relatively low competitive position of the United States in terms of delivered cost is largely due to the higher cost of growing fresh raspberry inputs for processing in the United States relative to Mexico and Serbia. These countries have

¹⁴³ There is some evidence that Canada’s overall production costs for processing frozen raspberries are higher than those in the United States. Indications include the lack of new investment in Canada for such products as laser sorters, the purchase of U.S. land by Canadian growers, and the movement of certain assets from British Columbia to Washington, including the purchase of an aseptic line from a bankrupt British Columbia cooperative. Industry representatives, interviews by USITC staff, June 2, 2020, and March 1, 2021.

lower labor costs associated with growing fresh raspberries in those countries, which results in lower market prices for raspberries for processing in Mexico and Serbia.¹⁴⁴

Cost of Fresh Raspberries

As fresh raspberries are the raw material required to produce processed raspberries, raspberry growers' production costs and productivity both shape the input costs of raspberry processors. The costs of fresh raspberries are analyzed in a slightly different way for vertically integrated grower-processors than for independent processors. For the industry in Washington, where berry producers and processors tend to be vertically integrated, the cost of producing the fresh raspberries represents the input cost to processors. For other industry structures, like those in Mexico, and Serbia, where independent processors buy fresh berries from farmers, the input cost may be best represented as the market price of berries for processing, either by contract or on the spot market. Regardless, the cost of producing fresh berries is an important factor that can affect both total input costs and the supply of processed raspberries.

Comparing data on the costs of production across different countries for fresh raspberries poses several challenges. Data availability and reliability vary among the five countries. Government surveys on production costs are often not conducted for specialty crops such as raspberries, and such data were not available for any of the countries considered. Instead, for most countries, the Commission's analysis used "cost and return" worksheets (discussed below) for establishing and growing raspberries. Comparing costs internationally can be complicated by differences in cost definitions, in the treatment of establishment costs and time requirements, in the raspberry types and production systems used, and the year when the estimates were made.¹⁴⁵ The Commission had to obtain its data on the cost of production of fresh raspberries for each of the selected countries from separate sources, which likely made them less reliable for comparison purposes. Common surveys or data sources covering multiple countries were not available. In most cases, the cost of production was sourced from enterprise budgets or cost-and-return worksheets for producing fresh raspberries that were developed and published by universities, researchers, or government agencies.¹⁴⁶ For most countries, the cost of production data

¹⁴⁴ For example, in 2005 the average field price in Serbia was \$0.54 per kilogram, while the average field price in the U.S. was \$4.39 per kilogram. The average monthly wages in agriculture were \$820 in Serbia, \$1,221 in Poland, and \$1,776 in the United States that year. Djurkovic, "SWOT analysis of Serbia's Raspberry Sector," table 4, 2012, 23, 83.

¹⁴⁵ USITC, *Conditions of Competition for Certain Oranges and Lemons*, July 2006, 3-15 to 3-16, <https://www.usitc.gov/publications/332/pub3863.pdf>. For a broader discussion of challenges of international comparisons of costs of production, see USDA, Chapter 11 ("International Comparisons"), in *Commodity Costs and Returns Estimation Handbook: A Report of the AAEA Task Force on Commodity Costs and Returns*, February 2, 2000.

¹⁴⁶ Cost of production worksheets for the United States and Mexico are from university researchers; for Canada and Chile, from government agencies; and for Serbia, from an academic journal article. See Galinato and DeVetter, "2015 Cost Estimates of Establishing and Producing Red Raspberries," August 2016, 5; Government of British Columbia, "Enterprise Budgets: 2019 Raspberry, Meeker, Fraser Valley BC," accessed March 31, 2021; Government of Chile, ODEPA, "Ficha técnico-económica, frambuesa" (Raspberry cost spreadsheet), created 2019; industry representative, interview by USITC staff, September 16, 2020; UC Davis, "Guzman Berry Field Trip," accessed March 31, 2021; Wroblewska, Pawlak, and Paszko, "Economic Aspects in the Raspberry Production," 2019, 75, 77.

Raspberries for Processing

was in local currencies per hectare and converted to U.S. dollars per pound using appropriate yields and exchange rates. Because of the use of data from various sources, the costs of production given in table 2.4 are illustrative and not directly comparable.

Table 2.4 Costs of production and price estimates for raspberries for processing in selected countries
In U.S. dollars per pound; n.a. = not available.

Country	Fresh raspberry cost of production	Price for raspberries for processing (farm gate)	Processed raspberry prices
United States (WA)	0.49	0.60	IQF: 0.97 (seller price) and 1.52 (buyer price) (2019)
Canada	0.46 (no land cost included)	n.a.	Puree: 0.87 (AUV for products classified in HTS 0811.20.2025)
Chile	0.45	n.a.	IQF and whole and broken: 1.46 (AUV for products classified in HTS 0811.20.2025)
Mexico	1.80–2.00 grow, pick 3.00 total cost	Grade A: 0.40–0.50 Grade B: 0.15–0.20	IQF: 1.17 (seller) Puree: 0.60–0.65 (seller)
Serbia	0.44	1.58 (2015–17 average)	IQF and whole and broken: 1.24 (AUV for products classified in HTS 0811.20.2025)

Sources: Galinato and DeVetter, "2015 Cost Estimates of Establishing and Producing Red Raspberries," August 2016, 5; Government of British Columbia, "Enterprise Budgets: 2019 Raspberry, Meeker, Fraser Valley BC," accessed March 31, 2021; Government of Chile, ODEPA, "Ficha técnico-económica, frambuesa" (Raspberry cost spreadsheet), created 2019; industry representatives, interviews by USITC staff, September 16, 2020, November 25, 2020, and December 3, 2020; Wroblewska, Pawlak, and Paszko, "Economic Aspects in the Raspberry Production," 2019, 75, 77.

Notes: Processed raspberry prices for the United States reflect seller prices (factory gate prices) in Washington and buyer prices (buyer dock prices at the buyer's location) on the East Coast. For Canada and Chile, prices best reflect buyer prices on the U.S. West Coast; for Serbia, buyer prices on the U.S. East Coast; and for Mexico, the U.S. West Coast, and the southern U.S. border. The grow and pick price includes the cost of growing and harvesting fresh raspberries. The total cost includes packaging and transportation costs. To place the price for Mexican raspberries for processing in context, note that most Mexican fresh raspberry exports are sold for fresh market consumption for over \$3 per pound. USITC, hearing transcript, September 17, 2020, 23 (testimony of Ryan Commons, Driscoll's, Inc.).

Although the costs of production are not directly comparable across countries, some observations can be made about the estimates in table 2.4. Washington State and Canada have similar production methods. These production systems are open field and use mechanical harvesting, which reduces establishment costs (costs incurred for any growing structures and for planting) and labor costs compared to cost associated with production systems that rely on protective structures and handpicking. Also, the Canadian estimate does not include land costs, which are substantial in British Columbia.

Chile and Serbia have open field raspberry production, but they rely more heavily on manual harvesting.¹⁴⁷ It is worth noting that Serbian costs are based on farms averaging two acres in size using traditional production methods (i.e., handpicking) and may not be representative of larger Serbian

¹⁴⁷ Wróblewska, Pawlak, and Paszko, "Economic Aspects in the Raspberry Production," December 1, 2019, 76; USITC, hearing transcript, September 17, 2020, 46–47 (testimony of Pablo Herrera, Chilean Food Processing Companies Association); Djurkovic, "SWOT analysis of Serbia's Raspberry Sector," 2012, 84, 86, 89; McGuire, "Red Raspberry Production Cost Comparison in Oregon and Chile," 2011, 9, 10, 26.

farms, which may use more modern machinery. Also, Serbian farm gate prices are 2015–17 average prices received by two particular farms. Thus, the prices may not be representative of overall Serbian farm prices and are not comparable to processed raspberry prices, which are from a different year. The source used for Chilean production costs uses cost of production estimates for a scenario farm producing for the fresh market, so production practices and costs may differ somewhat for farms growing primarily for the processing market.¹⁴⁸

For Mexico, the price for raspberries for processing is more indicative of input costs incurred by raspberry processors.¹⁴⁹ Mexican growers focus production on raspberries for the fresh market and have highly capital-intensive production practices that use protected growing structures (hoop houses) and handpicking, which enable higher yields and more sales of fruit to the premium-priced fresh consumption market but also results in higher costs. The cultivars employed, developed by fresh berry marketers and used under contract with these firms, are especially suited for the fresh market channel.¹⁵⁰ They enable high yields and greater production of both raspberries for the fresh market and seconds that go into the processed market.

Market prices for raspberries for processing are also presented, as available. These prices may be a better indication of the input cost for the Mexican raspberry industry, where raspberries for processing are residual raspberries (“seconds”) from the premium fresh consumption market. Prices and average unit values for processed raspberries are likewise presented, as available. Where available, they provide some indication of delivered cost of raspberries for processing and of delivered cost of processed raspberry products (table 2.4).

Labor Costs

The cost of fresh berries is the largest contributor to the delivered cost of processed raspberries, and labor costs typically account for a large portion of the cost to produce raspberries.¹⁵¹ However, as with other cost comparisons, comparing labor costs across countries is not entirely straightforward. How labor costs are measured and valued is critical for establishing costs of production and for accurately portraying labor’s relative share of the total cost of production.¹⁵² Adjustments for currency valuation

¹⁴⁸ Often enterprise budgets, such as those used for this analysis, use costs of production for a “scenario farm” or a hypothetical farm that is similar to a typical farm for a specified crop and region.

¹⁴⁹ USITC, hearing transcript, September 17, 2020, 128 (testimony of John Tentomas, Nature's Touch); academic representative, interview by USITC staff, January 12, 2021.

¹⁵⁰ USITC, hearing transcript, September 17, 2020, 49 (testimony of Jean-Christophe Hestean, SunOpta Inc.) and 93–94 (testimony of Ryan Commons, Driscoll’s, Inc.); industry representatives, interviews by USITC staff, September 16, 2020, and December 3, 2020.

¹⁵¹ Fresh raspberries that are harvested by hand are very labor intensive. By contrast, raspberry processing is not especially labor intensive, and labor costs from raspberry processing were not identified as a major competitive factor, although they affect the volume of fresh raspberry seconds available for processing. A high-quality tunnel freezer can be operated by one person, with four to five people needed on the front line for systems with manual dump trays. Industry representatives, interviews by USITC staff, February 3, 2021, and March 1, 2021.

¹⁵² Discussion in the following two paragraphs is based on AAEA’s handbook on estimating commodity costs and returns. AAEA Task Force on Commodity Costs and Returns, *Commodity Costs and Returns Estimation Handbook*, February 1, 2000, 8-1. The American Agricultural Economics Association has since changed its name to the Agricultural and Applied Economics Association, which has kept the acronym AAEA.

and the cost of living are necessary. These labor cost comparisons face other data limitations, including: the highly heterogenous characteristics of farms, farmers, and agricultural wage workers; and the structure of the worker-employer relationship across and within countries.¹⁵³

The International Labour Organization (ILO) publishes data on average wages and earnings across broad employment categories among the countries highlighted in this study except Canada, which are presented in table 2.5.¹⁵⁴ Nominal hourly earnings are from 2017 for Chile and from 2018 for Mexico, Serbia, and the United States. Data were not available across countries for a common year.¹⁵⁵ As a point of reference for Canada, the average offered hourly wage for work in natural resources, agriculture, and related production occupations in the province of British Columbia was \$12.67 in 2018.¹⁵⁶

Table 2.5 Hourly earnings for skilled agricultural, forestry, and fishery workers in select countries, 2018 or most recent year available

In U.S. dollars. PPP = 2017 purchasing power parity.

Country	Hourly earnings (nominal)	Hourly earnings (PPP)
Chile	3.45	4.61
Mexico	1.29	2.40
Serbia	3.23	6.65
United States	14.49	14.49

Source: ILO, Mean Nominal Hourly Earning of Employees by Sex and Occupation, accessed March 31, 2021.

Note: Data for hourly earnings are from separate databases with different data sources and year availability. All countries except the United States use the International Standard Classification of Occupations. The ILO does not provide data for Canada in this data series. Nominal totals are converted to U.S. dollars using exchange rates. PPP totals are converted to U.S. dollars using 2017 purchasing power parity rates for private consumption expenditures. PPP rates are currency conversion rates that eliminate differences in price levels between countries to equalize purchasing power of different currencies.

Other Costs of Processed Raspberries

Other expenses beyond raw materials and labor also contribute to the delivered cost of processed raspberries. Some indication of these is provided in table 2.4, using the delivered cost or average unit value for processed raspberries. These include value-added costs, such as freezing, processing, refrigeration and storage, and transportation. Capital costs are also important factors in determining the final delivered cost of a product. The ability of a processor to run at full capacity year-round also lowers

¹⁵³ Labor costs comparisons are further complicated by countries' differing reliance on two distinct types of farm labor: (1) hired labor without farm ownership claims, and (2) unpaid farm labor and salaried farm labor having ownership claims. AAEA Task Force on Commodity Costs and Returns, *Commodity Costs and Returns Estimation Handbook*, February 1, 2000, 8-1.

¹⁵⁴ The terms and conditions of employment vary tremendously, with work categories that affect how waged agricultural workers are regulated and paid (e.g., permanent full-time workers, seasonal workers, piece-rate workers). Changes in the labor market structures along with variable and deficient application of labor laws, create a situation where employees may find themselves without the explicit and implicit protections of a worker-employee relationship. Hurst, *Agricultural Workers and their Contributions*, 2007, 23–32.

¹⁵⁵ Monthly data earnings are also available from the ILO. ILO, Mean Nominal Monthly Earning of Employees by Sex and Economic Activity, <https://ilostat.ilo.org/data/>, accessed March 31, 2021.

¹⁵⁶ Quarterly wages for “natural resources, agriculture and related production occupations” for British Columbia were averaged across the year and converted to from Canadian dollars to U.S. dollars. Statistics Canada, Table 14-10-0356-01 “Job Vacancies and Average Offered Hourly Wage by Occupation,” accessed April 19, 2021.

the production cost. Delivered cost differs between different types of processed raspberry products—for example, IQF and bulk raspberries.

Shipping and freight rates vary by supplier, destination, and shipping mode. Processed raspberries are generally transported in refrigerated containers. Sea freight is the lowest-cost mode, followed by rail and then road.¹⁵⁷ Comparative advantages for shipping costs can shift depending on the location of the point of delivery in the United States. Serbia may be more competitive when shipping to U.S. East Coast markets, while Chile may be more competitive shipping to the West Coast markets, since product can be primarily shipped by sea via more direct routes.¹⁵⁸ Serbian processed raspberries are shipped longer distances than processed raspberries from Mexico and Canada, although delivered cost, including sea freight, for Serbian product to the United States is competitive, as indicated by buyers' willingness to import product from Serbia.¹⁵⁹ Mexico has a cost advantage for sales to the U.S. market based on geographic proximity and well-established, low-cost transportation channels.¹⁶⁰ U.S. and Canadian raspberry processors are based in the Western United States and likely benefit from geographical proximity to the Western U.S. market.¹⁶¹

In addition to the variable costs discussed above, delivered cost can be affected by fixed costs from processing equipment as well as by the percentage of processing capacity that is being utilized. Processors in Mexico tend to benefit from a high degree of capacity utilization, which may lower the capital costs per unit of processed raspberries and increase the overall profitability of processors.¹⁶²

¹⁵⁷ Sea freight is considered to be the least expensive way to transport goods to customers. Rail freight has lower costs per unit compared to truck freight. For example, freight costs from Houston, TX, to Cleveland, OH, were estimated to be \$215 per mt by truck and \$70 per mt by rail. Smith, "Choosing the Most Cost-effective Transportation Method," 2017; RSI Logistics, "Comparing the Costs of Rail Shipping vs Truck," April 20, 2020. Based on the U.S. product costs in table 2.4, freight and associated costs to move product from Washington to the Eastern United States are \$0.55 per pound.

¹⁵⁸ Broken down by district, U.S. import data indicate that in 2020 frozen raspberries from Serbia primarily arrive by vessel through New York, NY (AUV \$1.48 per pound), and Seattle, WA (AUV \$1.55 per pound). Imports from Chile were more widely spread by district, with significant import volumes through Seattle, WA (AUV \$1.47 per pound), San Francisco, CA (AUV \$1.57 per pound), Houston/Galveston, TX (AUV \$1.61 per pound), New York, NY (AUV \$1.52 per pound), Philadelphia, PA (AUV \$1.52 per pound), and Los Angeles, CA (AUV \$1.65 per pound). Product mixes may differ by district, which could affect AUVs (e.g., IQF would likely be higher priced than puree, and organic IQF would likely be higher priced than conventional). IHS Markit, Global Trade Atlas database, U.S. imports of U.S. HTS 0811.20.2025 by United States Districts, by vessel, accessed April 14, 2021.

¹⁵⁹ Internal transportation infrastructure connecting Western and Central Europe with Southeastern Europe and the Middle East have facilitated trade between Serbia and importing countries. Such infrastructure connections are also relevant for exports to the United States. Djurkovic, "SWOT Analysis of Serbia's Raspberry Sector," 2012, 82. According to U.S. import data by district, the two primary U.S. districts importing frozen raspberries from Serbia in 2020 were New York, NY (AUV \$1.48 per pound), and Seattle, WA (AUV \$1.55 per pound). IHS Markit, Global Trade Atlas database, U.S. imports of U.S. HTS 0811.20.2025 by United States Districts, by vessel, accessed April 14, 2021.

¹⁶⁰ Industry representatives, interviews by USITC staff, September 16, 2020, and February 5, 2021.

¹⁶¹ USITC, hearing transcript, September 17, 2020, 9 (testimony of Henry Bierlink, Washington Red Raspberry Commission).

¹⁶² In Mexico, strawberries are processed January to May, and mangoes are processed May to September. Raspberries are typically processed from September to January, with more limited raspberry processing from January to May. USITC, hearing transcript, September 17, 2020, 81 (testimony of Jean-Christophe Hestea, SunOpta Inc. and Aneberries); industry representative, interview by USITC staff, December 1, 2020.

Most Mexican processors are diversified, with many other fruits in their product line. They use raspberries to fill capacity when strawberries and mangoes—more profitable processed fruits—are not in season.¹⁶³ Mexican processors also have year-round access to fresh raspberries for processing.¹⁶⁴ Processors in Washington, Canada, and Serbia, on the other hand, have limited input supplies, with access to fresh raspberries for only a few months of the year. U.S. processors, for example, try to offset the high capital costs of IQF processing equipment by extending the utilization of the equipment through a larger portion of the year by processing blueberries and some other fresh fruits.¹⁶⁵ In Washington, where IQF tunnels are typically used for raspberries and blueberries, processors have fresh fruit available only during harvest season, which runs from July to October.

Beyond the factors discussed above, several other components may affect delivered cost for some suppliers. Among these are industry structure and characteristics. For example, in contrast to the processed raspberry industry in other countries, the U.S. industry has a large degree of vertical integration, meaning the cost of acquiring its major input is often limited to the cost of producing fresh raspberries.¹⁶⁶ The U.S. industry also enjoys some benefits of scale, with several relatively large growers that are vertically integrated with processors. This aligns supplies of fresh raspberries with processing demand and may reduce risk from input price fluctuations. By contrast, Serbia and Canada have low levels of horizontal and vertical integration, meaning that growers and processors do not capture economies of scale or have cost benefits comparable to those often found in the United States.¹⁶⁷

Product Differentiation

A country's ability to supply a broader range of premium products with desirable characteristics increases its ability to compete via product differentiation (table 2.3). As shown previously in table 2.2, based on the qualitative information presented in the following chapters, the United States, Chile, and Serbia are suppliers of premium products (IQF and organic products)—i.e., products with the highest

¹⁶³ Industry representatives, interviews by USITC staff, November 20, 2020, November 25, 2020, and December 1, 2020.

¹⁶⁴ Government of Mexico, SIAP, Anuario estadístico de la producción agrícola (Agricultural production statistical yearbook), accessed December 4, 2020; Driscoll's, "Product Guide 2019–2020" accessed September 3, 2020; industry representatives, interviews by USITC staff, November 25, 2020, December 1, 2020, and December 3, 2020.

¹⁶⁵ U.S. processors have difficulty finding inputs in the off-season, which prevents them from using expensive IQF processing equipment on a year-round basis. This, in turn, can limit processing capacity, as processors invest less in IQF equipment because of its cost and limited utilization. Industry representatives, interviews by USITC staff, November 24, 2020, March 1, 2021, and March 11, 2021.

¹⁶⁶ One example of vertical integration is the North West Berry Co-op, which originally represented a higher share of production, over 15 percent, but that share has declined as overall production increased. Industry representative, interview by USITC staff, June 23, 2020; NW Berry Co-op, "About the Berry Co-op" accessed March 19, 2021, <https://www.nwberrycoop.com/>.

¹⁶⁷ Industry representatives, interviews by USITC staff, February 26, 2021, and March 1, 2021; Džagić et al., "Integrated Report on Performance and Value Chain Analysis," December 2017, 47.

level of product differentiation.¹⁶⁸ Meanwhile, Canada and Mexico are suppliers of less-premium products (non-IQF products).¹⁶⁹ Though the U.S. industry does not offer organic products, it maintains a competitive position based on its ability to supply high-quality traits in its IQF and non-IQF processed raspberry products.¹⁷⁰

Purchasers look at product characteristics as well as cost in making their buying decisions. The more differentiated the product, the more likely it is that product characteristics will be the basis of the purchasing decision, potentially making delivered cost less important. Similar products are differentiated from one another according to factors such as actual and perceived quality, brand identity, packaging, and labeling. Individually quick frozen (IQF) raspberries are considered premium products, while block frozen, purees, and juice concentrates and juices are considered lower value. Within IQF there are characteristics that can further differentiate a product, such as a fruit's ability to retain its shape when thawed. Other traits are generally desirable across product types, including high levels of sweetness (Brix) and the more subjective flavor and color profiles. Raspberry cultivars, including newer fee-for-use types, can be used to produce raspberries with characteristics desirable for processing.¹⁷¹ Organic certification is another factor that can differentiate processed raspberries. Although branding is not a significant source of product differentiation for processed raspberries, a small number of processors and repackers focusing on the retail market do use branding, primarily in the United States, Canada, and to some extent Chile.¹⁷²

Product differentiation is considered high in the United States (WA), Chile, and Serbia based on the industry's ability to supply processed raspberries in premium forms, particularly IQF, with desirable characteristics. In the United States, processors produce IQF berries and crumble that are particularly good at retaining their shape after thawing, a trait highly valued by buyers. Use of mechanical harvesting results in berries that are uniformly at peak ripeness.¹⁷³

¹⁶⁸ Industry representative, interview by USITC staff, July 24, 2020; Wróblewska, Pawlak, and Paszko, "Economic Aspects in the Raspberry Production," December 1, 2019, 78; USITC, hearing transcript, September 17, 2020, 49 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 9, 2020, 3.

¹⁶⁹ Industry representative, interview by USITC staff, February 24, 2020.

¹⁷⁰ Industry representatives, interviews by USITC staff, September 15, 2020, and October 20, 2020.

¹⁷¹ Stephens et al., "'NN08002' (Marketed as WakeHaven) Red Raspberry," September 1, 2017, 1320–23.

¹⁷² Several examples of branded, frozen raspberries available to U.S. consumers include frozen raspberries from Dole, Wyman's of Maine, Cascadian Farm, Earthbound Farm, and Nature's Touch. Amazon, "Most Wished for in Frozen Raspberries," https://www.amazon.com/gp/most-wished-for/grocery/6459168011/ref=zg_bs_tab_t_mw, accessed April 14, 2021; Safeway, search results for "frozen raspberries," <https://www.safeway.com/shop/search-results.html?q=frozen%20raspberries>, accessed April 14, 2021; Costco, search for "frozen raspberries," <https://www.costcobusinesscentre.ca/frozen-fruits-vegetables.html>, accessed April 14, 2021.

¹⁷³ Oregon's Fruit Growers, "Our Growers: Jon Maberry, 'Grown with Purpose,'" accessed February 17, 2021.

Raspberries for Processing

In addition, the United States, Chile, and Serbia all produce products with high sugar content and favorable flavor and color profiles.¹⁷⁴ This is because processing is the primary market for raspberry production in all three areas, so fresh berries have characteristics well suited for the processing market.

Other factors may also strengthen product differentiation. In the United States, the vertical integration between growers and processors results in berries particularly well suited for processing. Chile and Serbia have an added advantage in product differentiation based on their ability to produce and export certified organic processed raspberries, which account for a growing share of exports.

Product differentiation is lower in Canada (British Columbia) and Mexico. These countries produce primarily non-premium products like block frozen, purees, juice concentrates, and juices.¹⁷⁵ Nonetheless, Canadian products are better positioned for the U.S. market in terms of product characteristics than Mexican products. Their growers produce primarily for the processed market, resulting in preferred sweetness, color, and flavor profiles.¹⁷⁶ Although Mexican growers also supply significant quantities of fresh for processing raspberries to the United States, they focus on producing for the fresh market. As a result, the industry's characteristic varieties and harvest periods produce raspberries that are better suited to fresh consumption, with flavor and sweetness profiles that are less tailored to processing.¹⁷⁷ Canadian processors also re-export significant quantities of IQF raspberries that are sourced from Chile, Serbia, and the United States—countries with higher product differentiation—in retail packs of mixed berries (raspberries combined with other fruits, like blackberries, blueberries, and strawberries).¹⁷⁸ Mexico does not diversify its output in this way.

Organics are one industry area where Mexico holds an advantage. Canada does not produce certified organic raspberries for the processing market, while Mexico has some organic production.

¹⁷⁴ Industry representatives, interviews by USITC staff, September 15, 2020 and October 20, 2020; Government of British Columbia, Ministry of Agriculture, *A Global Export Market Overview*, 2010, 8; academic professional, interview by USITC staff, August 4, 2020; Stojanović et al., *SUFISA Raspberry Report an Extended Summary*, June 2018, 8; Stojanović et al., *Serbia National Report*, April 2018, 101–4.

¹⁷⁵ Mexican processed raspberries often do not have the desired deep red color and higher Brix-levels for processed raspberries and tend to break apart during the IQF process. USITC, hearing transcript, September 17, 2020, 137 (testimony of Rolf Haugen, Northwest Berry Co-op); industry representatives, interviews by USITC staff, October 20, 2020, November 20, 2020, and November 24, 2020; industry representative, email message to USITC staff, October 24, 2020.

¹⁷⁶ Canadian growers use cultivars that are excellent for machine harvesting, but rely heavily on the Meeker cultivar, which is not well suited for processing into IQF. Industry representative, interview by USITC staff, February 24, 2021; Government of Canada, *Crop Profile for Raspberry in Canada*, 2016, 2.

¹⁷⁷ Although not the focus of this report, product differentiation for the California raspberry processing industry would be ranked like that of Mexico because California also uses raspberry seconds as input. Industry representative, interview by USITC staff, July 24, 2020; Driscoll's, Inc., written submission to the USITC, September 24, 2020.

¹⁷⁸ USITC, hearing transcript, September 17, 2020, 14 (testimony of Brad Rader, Rader Farms); USITC, hearing transcript, September 17, 2020, 30 (testimony of John Tentomas, Nature's Touch); industry representatives, interviews by USITC staff, June 12, 2020, June 23, 2020, July 24, 2020, and October 20, 2020.

However, this limited advantage fails to offset Mexico's inability to produce high-quality IQF raspberries or processed raspberries with desirable flavor, sweetness, and color characteristics; as a result, product differentiation for Mexican processed raspberries is still considered low.¹⁷⁹

Reliability of Supply

Reliability of supply refers to the ability of a supplier to deliver a specified quantity of a product of a particular quality to a given location at a contracted time. The inherent risks in agricultural production, which can impact both the quantity and quality of supply, make this competitiveness factor particularly important for purchasers. Several aspects affect reliability of supply. Particularly important is the efficiency of the supply chain, including storage and transportation infrastructure as well as market information systems. To be a reliable supplier to the export market, a country must have an exportable surplus. In agriculture, several factors may disrupt reliability by shrinking a country's exportable surplus, including unstable quantities and quality (owing to poor weather) and poor transportation infrastructure.

All the profiled national industries (including that of the United States) are reliable suppliers to the U.S. market for processed raspberries, but not to an equal degree. Chile and Mexico are highly reliable exporters of processed raspberries to the United States. By comparison, Canada, Serbia, and the United States are moderately reliable suppliers. The supply of processed raspberries from Canada depends on Canada's ability to obtain IQF inputs for mixed berry products from Chile, Serbia, and the United States, as well as raspberries for processing from the United States.¹⁸⁰ For Serbia, the United States is a secondary market, with most producers of processed raspberries focused on the European market. Serbian growers also face growing weather challenges.¹⁸¹ That the United States is only a moderately reliable supplier is due in part to its concentrated growing region and the confinement of its harvest season to a few months of the year.¹⁸²

Direct competition in the processed raspberry industry occurs at the level of the processors (e.g., the companies that freeze, pack, and/or repack fresh fruit), whose reliability is affected by their ability to access enough high-quality fresh fruit inputs at a reasonable price. Both the geographic location of fresh raspberry production and the length of the growing season affect the reliability of supply of fresh raspberries for processing. If all the production of a country is concentrated in one small area, an adverse weather event may severely limit supplies. Most production of raspberries for processing in the United States and Canada occurs in relatively small regions in Washington State, Oregon, and British

¹⁷⁹ Industry representative, interview by USITC staff, February 26, 2021; Aneberries, written submission to the USITC, September 24, 2020, 4.

¹⁸⁰ Industry representatives, interviews by USITC staff, July 24, 2020, and February 26, 2021.

¹⁸¹ Djurkovic, "SWOT Analysis of Serbia's Raspberry Sector," 2012, 102, 111.

¹⁸² A number of buyers of processed raspberry products have noted that swings in U.S. production volume lead to volatility in pricing from year to year, leading to efforts to diversify their sourcing to include raspberries from other suppliers, including imports. Industry representatives, interviews by USITC staff, September 24, 2020; *Bellingham Herald*, "Last Winter Was Bad for Whatcom County," October 17, 2019.

Columbia.¹⁸³ Production in these areas is also limited to one harvest per year. In British Columbia, where fresh raspberry production is low and has been declining, the frozen market also relies on imported raspberries, partly mitigating this vulnerability.¹⁸⁴ Processors may be able to source fresh raspberries used as inputs from neighboring countries, as processors do for example in British Columbia and Washington and this diversity of sourcing may improve reliability. Processors may also be able to import frozen raspberries for blending and repacking, as is the case in Canada.¹⁸⁵ Serbia also has just one raspberry harvest per year, and although growing regions are spread throughout the country, growers are increasingly facing severe weather events.¹⁸⁶ By contrast, Mexico and Chile both grow raspberries in several regions, and both have extended raspberry-growing seasons as well.¹⁸⁷

Symmetric Revealed Comparative Advantage

Below we analyze the symmetric revealed comparative advantage index (SRCA) to add a quantitative aspect to the competitiveness comparison. This analysis provides a comparable measure across countries of comparative advantage based on actual trade flow values, encompassing all forms of processed raspberries and all factors that may be impacting comparative advantage between countries. The SRCA is based on the market's revealed comparative advantage index (RCA), which is calculated using observed export statistics to reveal the underlying pattern of comparative advantage for a certain country in a certain good.¹⁸⁸ A country would be said to have a revealed comparative advantage in processed raspberries when the ratio of its processed raspberry exports to its total goods exports is greater than the same ratio for the world.¹⁸⁹ The SRCA is then a mathematical manipulation of the RCA so that the index is on a scale of -1 to +1 around the symmetric base of 0, rather than on a scale of 0 to infinity. For more information on the SRCA and how it is calculated see appendix G.

¹⁸³ For example, Canada had a 40 percent crop loss caused by a 2019 cold spell in the Fraser Valley. *Bellingham Herald*, "Last Winter Was Bad for Whatcom County," October 17, 2019; industry representative, interview by USITC staff, September 24, 2020; Government of Canada, written submission to the USITC, December 4, 2020, 2.

¹⁸⁴ As Canadian acreage shifts out of fresh raspberries grown for processing and into other berries, Canada has continued its production of frozen raspberries by importing fresh raspberries from the United States. Industry representatives, interviews by USITC staff, August 7, 2020, and February 24, 2021.

¹⁸⁵ USITC, hearing transcript, September 17, 2020, 14 (testimony of Brad Rader, Rader Farms) and 30 (testimony of John Tentomas, Nature's Touch); industry representatives, interviews by USITC staff, June 12, 2020, June 23, 2020, July 24, 2020, and October 20, 2020.

¹⁸⁶ A series of weather events included snow, hail, stormy weather, and flooding in 2019, June 2010 (heavy rain and hail), and July 2020 (flooding). Serbian Monitor, "Raspberry Producers: 80% of Crop Destroyed," accessed February 8, 2021; FAO, "Restoring Farmers' Livelihoods," accessed February 8, 2021; Fresh Plaza, "Floods Devastate Serbian Crops," accessed February 8, 2021.

¹⁸⁷ Although not the focus of this report, the reliability of supply for the California processed raspberry industry would be like that of Mexico. Industry representatives, interviews by USITC staff, October 26, 2020, November 25, 2020, and February 11, 2021; industry representative, email message to USITC staff, October 24, 2020; Smucker's, written submission to the USITC, December 4, 2020, 1.

¹⁸⁸ Balassa, "Trade Liberalisation and 'Revealed' Comparative Advantage," 1965, 99–123; Laursen and Endegal, "The Role of the Technology Factor in Economic Growth," 1995.

¹⁸⁹ UNCTAD, "Revealed Comparative Advantage," accessed May 20, 2021.

SRCA Calculations and Data

To calculate competitiveness in the U.S. market, U.S. import values by source were used in place of exports by source. This allowed an analysis of competitiveness within the U.S. market using a more specific product definition, since detailed U.S. statistical breakouts could be used. Raspberry products considered for the U.S. market SRCA include IQF, block frozen, puree, juice and juice concentrate, raspberries in frozen berry mixes, and fresh raspberries for processing.¹⁹⁰ The country-specific RCA calculations consisted of dividing U.S. imports of processed raspberries (as described above) from a particular country by total U.S. imports (all goods) from that country. This ratio is then divided by the ratio of U.S. imports of processed raspberries from the world, divided by all U.S. imports from the world. A comparable proxy for the competitiveness of the U.S. processed raspberry industry within the U.S. market was not available.

Calculations of global market competitiveness considered exports values by source at the 6-digit subheading level in the HS.¹⁹¹ Export data used in the calculations included IQF, crumble, block frozen, and some puree. Because of data limitations, data used in the calculation do not include juice or juice concentrate, raspberries in frozen berry mixes, or fresh raspberries for processing. The country-specific RCA calculations consisted of dividing a country's exports of processed raspberries to the world by total exports from that country to the world. This ratio is then divided by the ratio of global exports of processed raspberries to the United States to total global exports.

Results

U.S. market SRCA scores indicate differences in country competitiveness in the processed raspberry industry, with Canada the least competitive and Serbia and Chile the most competitive (table 2.6). Although data for a comparable calculation for the United States were not available, the U.S. industry is considered competitive because it supplied about 57–64 percent of the U.S. market for raspberries for processing and processed raspberries from 2015 to 2019.¹⁹² Serbia and Chile have the highest SRCAs at

¹⁹⁰ The analysis of U.S. market competitiveness considers U.S. imports under several statistical reporting numbers in the Harmonized Tariff Schedule of the United States (HTS), including a share of 0810.20.1020 and 0810.20.9020, HTS 0810.20.1024, 0810.20.9024, 0811.20.2025, shares of 0811.90.8080 and 0811.90.8085, 2007.99.6510, 2008.99.2120, 2009.89.6055, and 2009.89.7055. The HTS is harmonized with the international HS.

¹⁹¹ The 6-digit level is the most specific subheading level available for processed raspberries in the HS. The analysis of global market competitiveness in this report considers trade under HS 0811.20, which covers, raspberries, blackberries, mulberries, loganberries, currants, and gooseberries.

¹⁹² For a calculation of U.S. and import shares of consumption by quantities, including for California and Oregon, please see chapter 3 (“United States”), table 3.6. WRRRC, email message to USITC staff, December 18, 2021; USITC calculations based on USDA NASS Raspberry Production, accessed November 27, 2020; USITC DataWeb/Census, HTS statistical reporting numbers 0810.20.1020, 0810.20.1022, 0810.20.1024, 0810.20.9020, 0810.20.9022, 0810.90.9024, 0811.20.2025 and schedule B number 0811.20.0000, accessed March 30, 2021.

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1.00 and 0.97, followed by Mexico at 0.44, and Canada at -0.02 .¹⁹³ The relative order of competitiveness aligns with discussion of competitive factors presented in this chapter.

A variety of factors are likely reflected in the differences among the national scores. For Serbia and Chile, the high trade values from large quantities of U.S. imports of high-value IQF raspberries largely account for their high SRCAs. The United States imports significant quantities of low-cost seconds from Mexican production for the fresh market at lower values, which contributes to Mexico's midrange SRCA. U.S. imports from Canada—chiefly lower-value bulk products, such as block frozen and purees, plus some IQF raspberries—are small compared to total U.S. imports from Canada, contributing to their slightly negative SRCA.

Table 2.6 Symmetric revealed comparative advantage, 2018–19 average (scale of -1 to $+1$)

n.c. = not calculable.

Country	U.S. market	Global market
Canada	-0.02	-0.43
Chile	0.97	0.94
Mexico	0.44	-0.14
Serbia	1.00	0.99
United States	n.c.	-0.55

Source: Calculated by USITC.

Competitiveness in the global market depends on factors that vary from those in the U.S. market, resulting in differences in country SRCA indicators. Serbia and Chile are major global exporters and highly competitive in the global market with SRCA values of 0.99 and 0.94 , respectively (table 2.6). Serbia and Chile are leading suppliers of premium, high-value IQF raspberries to the global market, contributing to their high global SRCA scores.

Mexico, Canada, and the United States are less competitive in the global market, with SRCA values of -0.14 , -0.43 , and -0.55 , respectively. Mexican processed raspberry exports are primarily low-value products that depend on delivered-cost advantages from geographic proximity to major markets. However, the global market SRCA calculation does not include exports of fresh raspberries for processing, which may have raised Mexico's score. Canada and the United States are both net importers of processed raspberries and export small amounts of processed raspberries, limiting their competitiveness in the global market. Canada and Mexico export limited amounts of processed raspberries outside of the U.S. market. As a result, when exports to all destinations are used for SRCA calculations, their scores are lowered.

¹⁹³ Canada's slightly negative score does not indicate a lack of competitiveness for Canada's processed raspberry industry in the U.S. market. SRCA scores should be considered in terms of a relative continuum of comparative advantage from -1 to $+1$ and relate the competitiveness of an industry to that of other industries in that country based on trade flows. Chile's SRCA of 1.00 does not indicate a perfect comparative advantage. There is a large degree of variation among RCA scores that is reduced in the calculations to derive a symmetric index.

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Chapter 3

U.S. Industry

Summary

The United States is the fourth-largest producer of raspberries in the world, producing over 100,000 metric tons (mt) in 2019, more than 10 percent of global production.¹⁹⁴ Approximately one-third of the volume of total U.S. production of raspberries is of raspberries for processing, valued at over \$60 million in 2020.¹⁹⁵ Nearly all of this production occurs in Washington State. Washington is also a major producer of processed raspberry products, the state's processed industry's yearly output reported over \$90 million.¹⁹⁶ Washington producers held about 40 percent of the U.S. processed raspberry market from 2015 to 2020, measured by the value of Washington sales of processed raspberries and U.S. imports of processed raspberries and fresh raspberries for processing.¹⁹⁷ Alternatively, if measured by the quantity of fresh raspberries for processing produced by Washington and California, U.S. producers are estimated to have held at most 57 to 64 percent of the U.S. processed raspberry market over the 2015 to 2019 period, with imports comprising the remainder (table 3.6). As discussed below, however, this estimated share is likely overstated due to data limitations. In recent years, raspberry seconds have made up about one-third of total U.S. imports of raspberries for processing.

Two aspects of the U.S. processed raspberry industry make it stand out among other major producers of this product. First, the U.S. processed raspberry industry machine-harvests raspberries. Second, most of the U.S. industry is made up of vertically integrated firms that do both growing and processing. These two characteristics allow the quick harvesting and processing of large volumes of raspberries in a highly localized area. However, two factors weaken U.S. competitiveness vis-à-vis imports, particularly in lower-value processed products. One factor is geographic concentration, which exposes the majority of the U.S. raspberries grown for processing to the same weather events. Also, the United States' relatively

¹⁹⁴ USDA, NASS, Quick Stats, Raspberry Production, accessed November 27, 2020; FAO, FAOSTAT, total raspberry production, accessed January 21, 2021. The Food and Agriculture Organization of the United Nations (FAO) statistics do not break out raspberries by end use; for more information, refer to the *Data Availability and Limitation* section of chapter 1 ("Introduction").

¹⁹⁵ USDA, NASS Quick Stats, Utilized Raspberry Production, accessed September 2020–June 2021.

¹⁹⁶ WRRRC, email message to USITC staff, December 18, 2020.

¹⁹⁷ USITC staff calculations of the U.S. processed raspberry market are based on Washington sales of processed raspberry products and U.S. imports of fresh raspberries for processing and processed raspberry products; however, this U.S. processed raspberry market calculation does not include U.S. sales of fresh raspberries for processing or processed product produced in California and Oregon, due to limited availability of state level data, or fresh raspberries for processing produced in Washington to avoid double counting those raspberries that are then transformed into a processed raspberry product. U.S. import values also include shipping costs, which may overestimate import market share. For a calculation of U.S. and import shares of consumption by quantities including for California and Oregon please see chapter 3 ("United States"), Table 3.6. WRRRC, email message to USITC staff, December 18, 2021; USITC DataWeb/Census, HTS statistical reporting numbers: a share of 0810.20.1090 and 0810.20.2090, 0810.20.1024, 0810.20.9024, 0811.20.2025, a share of 0811.90.8080, 0811.90.8085, 2008.99.2120, 2007.99.6510, and 2009.89.7055, accessed February 4, 2021.

high production costs, driven by high labor costs, can limit the competitiveness of U.S. products relative to imports. In addition, the highly concentrated growing region in Washington has climate and pest pressures that make producing organic raspberries on a commercial scale difficult and expensive.

Industry Structure

Most U.S. commercial production of raspberries is in California, Washington, and Oregon. Growers in Washington and Oregon grow raspberries exclusively for processing, while growers in California grow for the fresh market. Raspberries grown in Washington and Oregon are predominantly used by the processed raspberry industry in that region, but processors in other regions, including California, use raspberries grown for fresh consumption that do not meet fresh market requirements (and are sold as raspberry seconds).¹⁹⁸ The U.S. processed raspberry industry primarily serves the domestic market and produces several different types of products, including individually quick frozen (IQF) whole raspberries and pieces, purees, and juice concentrate, among others. The bulk of processing occurs in Washington, Oregon, and California, but there are facilities that process raspberries into further processed raspberry products throughout the country.¹⁹⁹

Regions

While many states may produce fruit for local markets or self-picking, U.S. commercial production of fresh raspberries is centered in three states (figure 3.1).²⁰⁰ California accounts for more than half of the United States' total production of raspberries, with most grown for the fresh market.²⁰¹ Washington accounts for about one-third of U.S. total raspberry production, virtually all for processing, and the state accounts for about 90 percent of U.S. production of raspberries grown for processing.²⁰² Oregon contributes the remainder of raspberries grown for processing after Washington and California. Washington and Oregon are part of the Pacific Northwest (PNW) raspberry-growing region along with British Columbia, Canada. Within Washington, Whatcom County has been responsible for as much as 99 percent of the state's production and grows an estimated 85 percent of U.S. raspberries for processing.²⁰³ The country's 2020 harvest supplied an estimated value of over \$60 million.²⁰⁴ Whatcom

¹⁹⁸ Miller, written testimony to USITC, September 8, 2020, 4; USITC, hearing transcript, September 17, 2020, 69, 142 (testimony of Tony Miller, Cascade International Foods); industry representatives, interviews by USITC staff, September 15, 2020, and October 26, 2020.

¹⁹⁹ Miller, written testimony to USITC, September 8, 2020, 4; USITC, hearing transcript, September 17, 2020, 142 (testimony of Tony Miller, Cascade International Foods); industry representatives, interviews by USITC staff, September 15, 2020, and October 26, 2020.

²⁰⁰ NARBA, "Overview of the Caneberry Industry," accessed August 16, 2020.

²⁰¹ USDA, NASS, Quick Stats, Raspberry Production, Area Harvested, and Yield, accessed November 27, 2020.

²⁰² Oregon is the third-largest raspberry-producing state, accounting for less than 3 percent of U.S. production in 2017, the last year for which data for Oregon were collected. USDA, NASS, Quick Stats, Raspberry Production, Area Harvested, and Yield, accessed November 27, 2020; U.S. industry representative, email message to USITC staff, June 1, 2020.

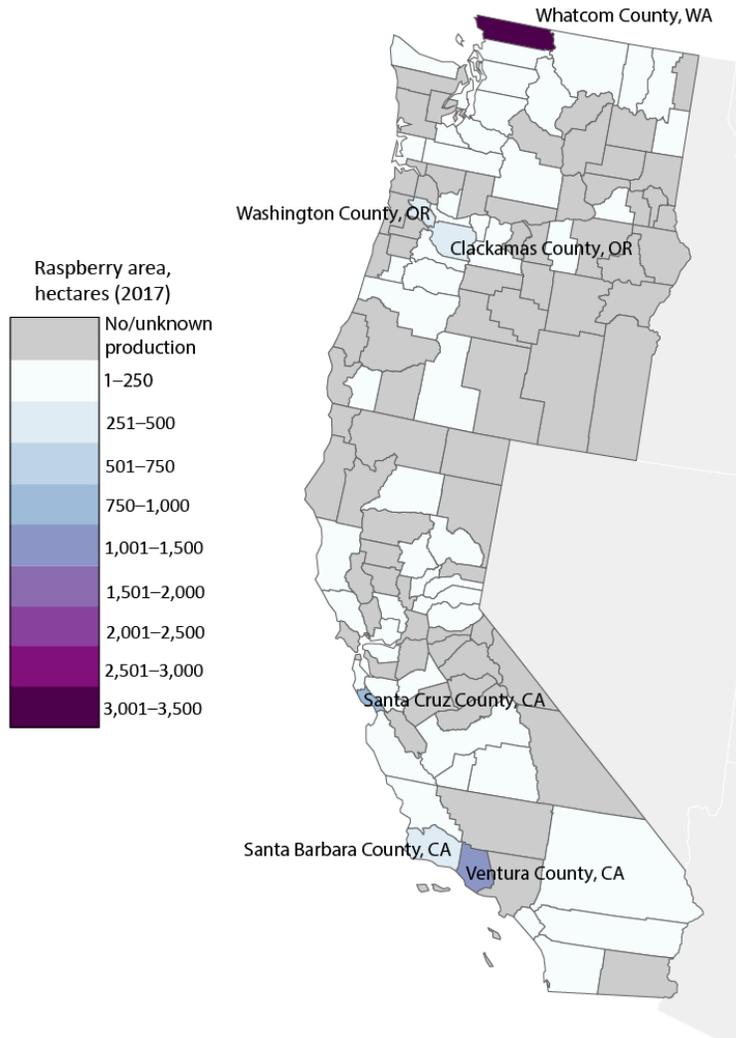
²⁰³ WRRRC, *Newsletter*, November 2019; NASS Quick Stats, accessed January 22, 2021.

²⁰⁴ Industry representative, email message to USITC, December 18, 2020.

County has the highest number of growers in Washington, with around 75 growers producing raspberries.²⁰⁵

Figure 3.1 Raspberry production in California, Oregon, and Washington, by county and hectares

Underlying data for this figure appear in [appendix table H.8](#).



Source: USDA, NASS, Quick Stats, Raspberries, Acres Grown, accessed March 3, 2021.

The majority of raspberries for processing that are grown in United States are processed in Washington, near the major raspberry-growing areas in and around Whatcom county. This allows for quick processing after harvest.²⁰⁶ While data on the value of the entire processed raspberry industry in the United States are limited, the Washington Red Raspberry Commission (WRRRC) estimates that the total value of Washington processed red raspberries was \$93 million in 2020.²⁰⁷ Processors that handle the

²⁰⁵ WRRRC, *Newsletter*, November 2020; USDA, NASS, Quick Stats, Red Raspberries, Operations with Area Grown, accessed June 22, 2020.

²⁰⁶ USITC, hearing transcript, September 17, 2020, 11, 68 (testimony of Jon Maberry, Maberry Packing).

²⁰⁷ WRRRC, email message to USITC, December 18, 2020.

bulk of the processing generally specialize in raspberry and blueberry processing, but may process other fruits to a lesser degree.²⁰⁸ California's processing industry also processes raspberry seconds from its production for fresh consumption as well as imported seconds, mainly from Mexico. These processors differ from those in Washington in that the facilities in California mainly process other fruits grown in the region and raspberry processing makes up a small share of total processing.²⁰⁹

Industry Composition

The U.S. raspberries for processing and processed raspberry industry is composed of a small number of large grower-processors, a processing cooperative (co-op), and smaller growers that generally do not have processing capacities. According to WRRRC, there were less than 100 Washington red raspberry growers in 2019. These numbers declined from over 200 in the 1970s and dropped by over one-third in the last five years.²¹⁰

Northwest Berry Cooperative, a raspberry co-op established in 2007 by some smaller growers of raspberries for processing, is currently the only major co-op in North America for growers of processed raspberries. It was established in order to create a more vertically integrated system accessible to smaller-scale growers, and it currently supplies nearly 10 percent the production of raspberries for processing in Washington State.²¹¹ The co-op receives fruit from the growers and then markets and sells raw fruit, sieved raspberries, seedless raspberry puree, pasteurized seedless puree, concentrated puree, and raspberry concentrate.²¹² Before the creation of the co-op, it was reported that the ability of smaller growers to market their products was limited by the capacity constraints of the approximately four major processors in operation at the time.²¹³

Industry representatives indicate that approximately one dozen growers have the capacity to produce all forms of processed raspberries, including for IQF, and that five to six of these grower-processors in Washington supply nearly three-quarters of the Washington processed raspberry market. Smaller growers and the berry co-op contribute the remaining 25 percent of Washington production.²¹⁴ While some smaller U.S. growers of fresh raspberries for processing may have access to processing equipment to minimally process the berries, many rely on the co-op to process their berries. Because of the high

²⁰⁸ Industry representatives, interviews by USITC staff, November 24, 2020, and January 27, 2021.

²⁰⁹ USITC, hearing transcript, September 17, 2020, 69, 142 (testimony of Tony Miller, Cascade International Foods); industry representatives, interviews by USITC staff, September 15, 2020, and September 24, 2020.

²¹⁰ USITC, hearing transcript, September 17, 2020, 9 (testimony of Henry Bierlink, WRRRC) and 12 (testimony of Jon Maberry, Maberry Packing); industry representative, interview by USITC staff, December 18, 2020.

²¹¹ The NW Berry Co-op originally represented a higher share of production, over 15 percent, but that share has reportedly declined as smaller growers have left the industry. USITC, hearing transcript, September 17, 2020, 15–16 (testimony of Rolf Haugen, NW Berry Co-op); industry representative, interview by USITC staff, June 23, 2020; NW Berry Co-op, “About the Berry Co-op,” accessed March 19, 2021, <https://www.nwberrycoop.com/>.

²¹² NW Berry Co-op, “About the Berry Co-op: Products,” accessed March 19, 2021.

²¹³ Industry representative, interview by USITC staff, June 23, 2020.

²¹⁴ Industry representatives, interviews by USITC staff, October 19, 2020, November 24, 2020, December 18, 2020, and February 26, 2021.

cost of processing equipment, only the larger growers had been able to afford the machinery that allows them to individually quick-freeze their raspberries as well as purchased raspberries.²¹⁵

Industry Organization

Industry organizations serve to represent the interests of the growers and support research to expand domestic and international markets, among other functions. The main organization that represents U.S. commercial growers of fresh raspberries for processing is the state-level WRRRC. As discussed below, a marketing “checkoff” fund—a means for agricultural industries to collect financial resources to conduct research and expand and strengthen markets—was organized and effective by 2012 but was terminated in 2018.²¹⁶ The U.S. industry in Washington is also a member of the International Raspberry Organization.

The WRRRC is a grower-funded and -operated organization that was founded in 1976. Its membership currently includes over 40 suppliers of red raspberry products. Member growers are based in Washington as well as Oregon. The WRRRC oversees programs that include research, advocacy, and activities that improve farming and harvesting. It also undertakes advertising and promotion for the industry. The WRRRC reports that its members account for about 90 percent of U.S. production of red raspberries for processing and freezing.²¹⁷

For a number of years, the industry pursued the establishment of a Processed Raspberry Promotion, Research, and Information Order, a type of research and promotion board authorized by the U.S. Department of Agriculture (USDA), which became effective on May 9, 2012.²¹⁸ The resulting program operated as the National Processed Raspberry Council. It was based in Lynden, Washington, and was composed of producers, importers, foreign producers, and an at-large member.²¹⁹ The order implemented an assessment of one cent per pound on U.S. producers’ sales of raspberries for processing and on imports of processed raspberries.²²⁰ The purpose of the program was, among other things, to (1) develop and finance coordinated research, promotion, industry information, and consumer education about processed raspberries, (2) strengthen the position of the processed raspberry industry,

²¹⁵ WRRRC, written submission to the USITC, September 8, 2020, 4; USITC, hearing transcript, September 17, 2020, 68 (testimony of Jon Maberry, Maberry Packing); industry representatives, interviews by USITC staff, June 23, 2020, October 20, 2020, and November 24, 2020.

²¹⁶ A “checkoff fund” is a common term for the commodity research and promotion programs of the U.S. Department of Agriculture’s Agricultural Marketing Service (AMS). Funds are typically collected via per-unit assessment, i.e., by deductions from sales of importers, producers, and marketers. USDA, AMS, “Research and Promotion Programs,” accessed March 17, 2021.

²¹⁷ WRRRC, written submission to the USITC, September 8, 2020, 2–3.

²¹⁸ USDA, AMS, “Processed Raspberry Promotion, Research, and Information Order,” May 8, 2012. These programs are authorized by the 1996 Commodity Promotion, Research, and Information Act. 84 Fed. Reg. 49942 (September 25, 2019).

²¹⁹ The order covered anyone who grew 20,000 pounds or more of raspberries for processing in the United States or who imported 20,000 pounds or more of processed raspberries into the United States. USDA, AMS, “Processed Raspberry Promotion, Research, and Information Order,” May 8, 2012; Lynden Tribune, “National Raspberry Program Ending,” November 21, 2018.

²²⁰ USDA, AMS, “Processed Raspberry Promotion, Research, and Information Order,” May 8, 2012.

and (3) maintain, develop, and expand existing markets for processed raspberries.²²¹ In 2017, the Council is said to have collected about \$1.2 million from just over 200 producers.²²²

While some report that the program showed promise, they also state that the research and promotion efforts of the Council were too short-lived to demonstrate effectiveness.²²³ Sentiment about the value of the program turned negative over time, in part, reportedly, as a result of prices of raspberries for processing that industry representatives indicated were below break-even levels. USDA received a petition for early termination of the program in March 2018.²²⁴ In the referendum that followed, 57 percent were in favor of ending the program.²²⁵ The program was terminated effective September 2019.²²⁶

The United States is also 1 of 14 members of the International Raspberry Organization (IRO), which was created in the 1990s. The IRO's purpose is to bring representatives from the raspberry industry together to share information on raspberry production and food safety. To that end, the organization consists of members from the major raspberry-producing markets and meets every two years.²²⁷

Cultivars

As noted in chapter 1, grower selection of raspberry cultivars generally depends on the intended use of the raspberry.²²⁸ Raspberries grown for processing in the United States are mechanically harvested. To do so, they must be easy to remove when ripe and firm enough to withstand shaking and dropping by the harvester. The raspberries must also maintain a suitable flavor, shape, and color for the intended processed product. High sugar content and bright red coloring are generally preferred traits for processed products, though these traits vary in importance according to end use. Other important traits for varieties for processing include the time when the fruit ripens, their degree of resistance to root rot and raspberry bushy dwarf virus, and their yields.²²⁹

²²¹ USDA, AMS, "Processed Raspberry Promotion, Research, and Information Order," May 8, 2012.

²²² 84 Fed. Reg. 49942 (September 25, 2019).

²²³ Industry representatives, interviews by USITC staff, October 19, 2020, October 20, 2020, and December 18, 2020.

²²⁴ 84 Fed. Reg. 49942 (September 25, 2019); Lynden Tribune, "National Raspberry Program Ending," November 21, 2018.

²²⁵ Lynden Tribune, "USDA Raspberry Order Officially Ends," March 13, 2019.

²²⁶ 84 Fed. Reg. 49942 (September 25, 2019).

²²⁷ IRO, "About Us," accessed August 26, 2020; USITC, hearing transcript, September 17, 2020, 52–56 (testimony of Antonio Dominguez, IRO).

²²⁸ A cultivar is a "cultivated variety" and is generally distinguished from a variety because it does not typically occur in nature, and seedlings grown from the parent plant of a cultivar may not have the same characteristics as the cultivar. The terms are often used interchangeably. Haynes, "Cultivar versus Variety," accessed January 13, 2021; WRRC, written submission to the USITC, September 8, 2020, 3; USITC, hearing transcript, September 17, 2020, 21–23 (testimony of Ryan Commons, Driscoll's, Inc.).

²²⁹ Raspberry bushy dwarf virus is a common plant disease that impacts raspberries grown in the Pacific Northwest. WRRC, "Cultivars," accessed March 11, 2021; USITC, hearing transcript, September 17, 2020, 21–23 (testimony of Ryan Commons, Driscoll's, Inc.); industry representative, interview by USITC staff, November 20, 2020; Funt and Hall, *Raspberries*, 2013, 57.

While one cultivar, Meeker, is responsible for most raspberry production in Washington and Oregon, there are over 20 raspberry cultivars grown in Whatcom County in Washington, only some of which require fees for use.²³⁰ The Meeker cultivar, which was developed by Washington State University and released for use in 1967, is one of the most widely grown cultivars in the region with no associated fees for use. Meeker plants produce large, sweet berries that can be used in any type of processed product and are able to withstand mechanical harvesting.²³¹ Meeker is now the most common cultivar grown for commercial production in Washington and is estimated to make up about half of total Washington raspberry acreage.²³² While the Meeker cultivar accounted for nearly 70 percent of Washington State's production during 2001–08, this share has declined as some growers have shifted to newer, fee-for-use varieties.²³³

Other cultivars that do not have associated fees for use include Chemainus, Rudi, Tulameen, and Willamette, but these are grown on much more limited acreage than the Meeker.²³⁴ Washington State University has more recently developed and released some new cultivars for use without fees and has grouped these under the Cascade name, including Cascade Bounty, Cascade Delight, and Cascade Harvest. The newest, Cascade Premier, which was released in 2018, is reported to have improved resistance to root rot (a problem in the Pacific Northwest), increased yields, and have higher shares of whole harvested berries best suited for IQF processing; its first full harvest is expected in 2021.²³⁵

Among the fee-for-use cultivar varieties are WakeField, released in 2012, and WakeHaven, released in 2017.²³⁶ Both are high-yielding raspberry plant types reported to produce sturdy berries that are well suited to mechanical harvesting and that yield higher shares of whole IQF berries than those of other cultivars.²³⁷ The two cultivars reportedly have resistance to root rot and raspberry bushy dwarf virus.²³⁸ Another important favorable characteristic of the Wake cultivars is said to be that their fruit can ripen

²³⁰ Generally, various licensing arrangements govern fee-for-use cultivars in order to protect the associated intellectual property rights. WRRRC, "Cultivars," accessed March 11, 2021; industry representative, interview by USITC staff, March 11, 2021; industry representative, interview by USITC staff, November 24, 2020.

²³¹ WRRRC, "Cultivars," accessed March 11, 2021.

²³² WRRRC, "Cultivars," accessed March 11, 2021; industry representative, interview by USITC staff, December 18, 2020.

²³³ WRRRC, "Cultivars," accessed March 11, 2021; industry representatives, interviews by USITC staff, October 20, 2020, November 20, 2020, and March 11, 2021.

²³⁴ Industry representatives, interviews by USITC staff, October 20, 2020, and November 20, 2020; WRRRC, "Cultivars," accessed March 11, 2021; Funt and Hall, "Chapter 5: Cultivar Development and Selection," 2013, 58–65.

²³⁵ Truscott, "WSU Debuts Flavorful, Easy-to-Harvest New Raspberry, Cascade Premier," July 30, 2019; WSU, "Small Fruit Breeding and Genetics: Raspberries," accessed December 2, 2020.

²³⁶ WRRRC, "Cultivars," accessed March 11, 2021; Stephens et al., "'NN08002' (Marketed as WakeHaven) Red Raspberry," September 1, 2017, 1320–23; Stephens, Enfield, and Hall, "'Wakefield' Red Raspberry," October 1, 2012, 1556–58.

²³⁷ Stephens et al., "'NN08002' (Marketed as WakeHaven) Red Raspberry," September 1, 2017, 1320–23; industry representatives, interviews by USITC staff, October 20, 2020, February 26, 2021, and March 11, 2021.

²³⁸ Stephens et al., "'NN08002' (Marketed as WakeHaven) Red Raspberry," September 1, 2017, 1320–23.

earlier than Meeker; the latter is ready for harvest around July 4 in Lynden, Washington, and around June 20 in the Oregon growing region.²³⁹

Some industry representatives suggest that these newer cultivars result in higher overall yields as well as a greater share of IQF raspberries, though estimates vary.²⁴⁰ Others suggest that the yield rates between the Wake and other cultivars are closer in practice and that these shares vary by year, depending on climate conditions.²⁴¹ Unlike most other cultivars in use, the two cultivars require substantial fees for use.²⁴² These high fees have reportedly limited their widespread planting; many growers choose to wait for more data on their profitability before replacing their plants with these cultivars. The other cultivars, those without fees for use, are considered by some industry representatives to have lower initial costs than the Wake cultivars but may have higher associated costs resulting from their lack of disease resistance as well as their lower contribution to the share of whole IQF berries.²⁴³

Production System

In the United States, raspberries grown for processing use different production methods than those grown for the fresh market (table 3.1). Raspberry bushes in the Pacific Northwest are generally planted in open fields (see figure 3.2). This allows growers to harvest the berries mechanically, reducing labor costs and increasing the speed of harvest.²⁴⁴ The raspberries are then processed and frozen in nearby facilities within hours of being picked.²⁴⁵ The United States and Canada are the only major processed raspberry producers to predominantly harvest raspberries mechanically.²⁴⁶ The raspberry harvest in the Pacific Northwest typically occurs in June or July and lasts four to six weeks, depending on the varieties grown and weather conditions.²⁴⁷

By contrast, raspberries that are grown in California for the fresh market are generally grown under hoop houses, which protect the raspberries from excessive moisture and extreme temperatures (see figure 3.3).²⁴⁸ As a result, raspberries can be grown and harvested in California nearly year-round.²⁴⁹

²³⁹ Finn, Strik, and Moore, “Raspberry Cultivars for the Pacific Northwest,” February 2014, 4; industry representatives, interviews by USITC staff, January 28, 2021, and March 11, 2021.

²⁴⁰ Industry representatives, interviews by USITC staff, October 20, 2020, November 20, 2020, January 27, 2021, and March 11, 2021.

²⁴¹ Industry representatives, interviews by USITC staff, November 24, 2020, and January 27, 2021.

²⁴² Some industry reports list a price of \$1,500 per acre. Industry representative, interview by USITC staff, October 20, 2020.

²⁴³ Industry representative, interview by USITC staff, March 11, 2021.

²⁴⁴ WRRC, written submission to the USITC, September 8, 2020, 3; industry representative, interview by USITC staff, October 20, 2020; USITC, hearing transcript, September 17, 2020, 11 (testimony of Jon Maberry, Maberry Packing).

²⁴⁵ WRRC, written submission to the USITC, September 8, 2020, 3.

²⁴⁶ USITC, hearing transcript, September 17, 2020, 55 (testimony of Antonio Dominguez, IRO).

²⁴⁷ WRRC, written submission to the USITC, September 8, 2020, 4.

²⁴⁸ Hoop houses are sometimes referred to as “high tunnels.” See chapter 1 for more information. WRRC, written submission to the USITC, September 8, 2020, 3; USITC, hearing transcript, September 17, 2020, 39 (testimony of Tony Miller, Cascade International Foods) and 21–23 (testimony of Ryan Commons, Driscoll’s, Inc.).

²⁴⁹ Driscoll’s, “Product Guide: 2019–2020,” accessed March 11, 2021; industry representative, interview by USITC staff, October 26, 2020.

These raspberries are harvested by hand, which is the predominant method of harvesting raspberries in other major producing markets internationally.²⁵⁰

Table 3.1 Characteristics of raspberries for processing and for fresh consumption in the United States

Type	Raspberries for processing	Raspberries for fresh consumption
Production method	Grown in open fields	Grown in hoop houses
Primary growing region	Washington and Oregon	California
Harvesting method	Machine harvested	Handpicked
Cultivars	Less than half of production uses fee-for-use cultivars	More than half of production uses fee-for-use cultivars
Production costs	Lower than fresh market raspberries/higher than other berries	Higher than processed raspberries and other berries
Profit margins	Lower margins than fresh market raspberries	Higher margins than processed raspberries
U.S. wholesale price	Average U.S. price per pound, 2019: \$0.54	Average U.S. price per pound, 2019: \$2.90
Harvest season	July/August	Year-round
End user	Food manufacturing, retail sale, commercial/food service sale	Retail sale

Source: Compiled by USITC.

Harvesting raspberries is time consuming, and mechanical harvesting must be timed carefully. Because the raspberries on each plant do not ripen all at once but do so over several weeks, harvesters, whether by hand or machine, must go through fields multiple times during the harvest season to pick the berries as they ripen.²⁵¹ Raspberries reportedly must be harvested more often than most berries, with some industry representatives reporting that each cane must be picked up to 13 times per season, while blueberries are picked about 3 times per season.²⁵² If a grower intends for their raspberries to be processed into IQF products, each of those canes generally must be picked every other day (with some variance by cultivar)—or, in the height of the season, every day.²⁵³ Further, when raspberries are picked mechanically, they are harvested by shaking them off the plant. Therefore, the berries must be riper than when picked by hand, or they will not fall off the plant when shaken. Riper berries are softer and more susceptible to damage.²⁵⁴ Growers have a window of about 48 hours from the time a raspberry is ripe enough to be picked with a mechanical harvester until it becomes too ripe and too soft to use for IQF products (figure 3.2).²⁵⁵

²⁵⁰ USITC, hearing transcript, September 17, 2020, 22–23 (testimony of Ryan Commons, Driscoll’s, Inc.), 34 (testimony of Lance Jungmeyer, FPAA), and 55 (testimony of Antonio Dominguez, IRO).

²⁵¹ Industry representatives, interviews by USITC staff, October 20, 2020, November 24, 2020, and January 27, 2021.

²⁵² Industry representatives, interviews by USITC staff, October 20, 2020, and March 5, 2021.

²⁵³ Industry representatives, interviews by USITC staff, November 24, 2020, and December 18, 2020.

²⁵⁴ Industry representative, interview by USITC staff, November 24, 2020.

²⁵⁵ Industry representative, interview by USITC staff, November 24, 2020.

Figure 3.2 Mechanical harvesting in open fields



Source: WRRRC photos by Brian Beadle of Wild Hive, 2020 (permission to use with attribution).

Figure 3.3 Handpicking raspberries under hoop houses



Source: Photo courtesy of Jornamex, Farm Workers in Mexico's Export Agriculture. Author: Emilie de la Croix.

Raspberries for Processing

The containers used in the harvesting of raspberries for processing differs based on the intended final use of the raspberries. For example, when raspberries are harvested for non-IQF products (e.g., B-grade products) they are generally placed into a flat (tray) that is filled to hold up to 20 pounds of fruit.²⁵⁶ B-grade raspberries can also be harvested directly into pails (buckets) or barrels (drums), and then chilled or frozen in these containers. This lowers the costs of harvesting but also results in a lower-value processed product.²⁵⁷ The latter method is used for raspberries that are intended for products such as juice concentrate.²⁵⁸

Because ripe raspberries are very delicate, berries that are intended for IQF products cannot be harvested into large containers or they will be bruised and crushed. To maintain the quality of the whole berry, flats of raspberries intended for IQF products can only be filled with 7 to 8 pounds of berries (figure 3.4). As a result, the flats fill more quickly, and the harvester must be unloaded frequently. This slows the speed of harvest and requires more laborers on the harvester—only three laborers are typically needed when machine harvesting raspberries that will be processed into non-IQF products.²⁵⁹ The flats containing the harvest intended for IQF products are then emptied into a sorter, where the berries will be sorted, washed, and inspected. These raspberries are then individually quick frozen through a “tunnel,” a machine that quickly freezes the raspberries while moving them on a conveyor belt.²⁶⁰ The tunnel freezing method reportedly prevents large ice crystals from forming and causes less cellular damage to the berry, so that the final berry is firmer and the berries are less likely to clump together.²⁶¹ However, as the berries travel through the tunnel, they are shaken and dropped at various stages of freezing, which can break the brittle raspberries. In the United States, whole berries and larger pieces are frozen into whole IQF berries, whole and broken IQF, or IQF crumble through tunnel freezing and packed in bulk packaging.²⁶² Any raspberries that do not meet the specifications for IQF, as well as pieces and juice, are separated and placed in pails or drums. Some of these raspberries are processed immediately, and the rest are frozen to be processed later into puree or juice concentrate.²⁶³

²⁵⁶ “B-grade” is a designation used by USDA in grading raspberries according to a scoring system and applies to raspberries with scores above 70 and below 85. IQF raspberries use A-grade berries, while raspberries used for puree must be B-grade or higher. See chapter 1 for more information on USDA marketing standards. USDA, AMS, “Frozen Berries Grades and Standards,” accessed March 31, 2021; USDA, AMS, *Commodity Specification for Frozen Fruit*, April 2020, 11; industry representative, interview by USITC staff, October 20, 2020.

²⁵⁷ Industry representatives, interviews by USITC staff, October 20, 2020, November 20, 2020, November 23, 2020, November 24, and December 18, 2020.

²⁵⁸ Industry representatives, interviews by USITC staff, November 23, 2020, and December 18, 2020.

²⁵⁹ Industry representatives, interviews by USITC staff, October 20, 2020, November 20, 2020, and November 23, 2020.

²⁶⁰ WRRRC, written submission to the USITC, September 8, 2020, 4; industry representatives, interviews by USITC staff, September 24, 2020, and February 3, 2021.

²⁶¹ WRRRC, written submission to the USITC, September 8, 2020, 4–5; Barbosa-Cánovas, Altunakar, and Mejía-Lorio, *Freezing of Fruits and Vegetables*, 2005, chapter 1.

²⁶² As noted in chapter 1, IQF berries can be sold with varying shares of whole berries to crumbles, with higher shares of whole raspberries leading to higher prices received. Industry representatives, interviews by USITC staff, November 20, 2020, and November 24, 2020.

²⁶³ Industry representatives, interviews by USITC staff, November 20, 2020, and November 24, 2020.

Figure 3.4 Harvested raspberries in flats intended for IQF

Source: WRRRC photos by Brian Beadle of Wild Hive, 2020 (permission to use with attribution).

Products and Supply Chain

Regardless of the end use, the majority of raspberries grown for processing will be initially processed by a grower or co-op that owns processing equipment, and the remainder may be processed by independent processors or the end user. For most processed products, once the raspberries have been harvested, the flats filled with the raspberries are taken to be processed by the “first processor” and/or “handler.” In the United States, production of processed raspberries falls into three main product groups: (1) whole IQF, whole and broken IQF, and IQF crumble; (2) straight pack (block frozen in drums or pails), sieved, and puree; and (3) juice stock and juice concentrate.²⁶⁴ Approximately 40 percent of Washington State’s red raspberry production is used for IQF products, which offer growers the highest profit margin.²⁶⁵ Another 40 percent of Washington State red raspberry production is reportedly

²⁶⁴ USITC, hearing transcript, September 17, 2020, 11 (testimony of Jon Maberry, Maberry Packing); industry representative, email message to USITC staff, June 1, 2020; industry representative, interview by USITC staff, September 15, 2020.

²⁶⁵ WRRRC, written submission to the USITC, September 8, 2020, 4; USITC, hearing transcript, September 17, 2020, 27 (testimony of John Tentomas, Nature’s Touch) and 144 (testimony of Jon Maberry, Maberry Packing); industry representative, interview by USITC staff, September 24, 2020.

Raspberries for Processing

processed into “straight pack,” or block frozen raspberries. These are raspberries that have been washed and sorted before being frozen in tubs, buckets, or barrels.²⁶⁶ The price that growers receive for this product is generally lower than that received for IQF berries.²⁶⁷ The final 20 percent of Washington State production is used as juice stock. These berries are generally minimally processed and can be the raspberries that have been sorted out of IQF or straight pack for various quality/grading reasons, or those that have been harvested directly into drums for freezing, without being washed and sorted. This stock will be used to produce raspberry concentrate and raspberry juice. The price for this processed product is typically the lowest of those for processed raspberry products.²⁶⁸

Raspberries for processing are harvested when fully ripe, so they must be frozen almost immediately. After the raspberries are frozen as quickly as possible, they are processed further, as needed. Freshly harvested raspberries may be frozen into IQF berries or bulk frozen product (figure 3.5). Some firms have equipment that either bags bulk IQF product into packaging for retail sale or industrial use, or further processes the block frozen product into other products, including puree or juice concentrate.²⁶⁹ Firms that can perform additional processing and packaging of frozen raspberries may sell the processed raspberry product directly to the end users, which can be retailers, food service firms, or a food manufacturer. Alternatively, they might sell the product to “ingredient” firms, which process and supply ingredients to the specifications of processed food manufacturers (figure 3.6).²⁷⁰

²⁶⁶ WRRRC, written submission to the USITC, September 8, 2020, 5.

²⁶⁷ WRRRC, written submission to the USITC, September 8, 2020, 4; industry representative, interview by USITC staff, October 20, 2020; industry representative, interview by USITC staff, October 20, 2020; industry representative, interview by USITC staff, July 24, 2020.

²⁶⁸ WRRRC, written submission to the USITC, September 8, 2020, 5; industry representative, interview by USITC staff, September 15, 2020; industry representative, interview by USITC staff, October 20, 2020.

²⁶⁹ Industry representative, interview by USITC staff, October 20, 2020; industry representative, interview by USITC staff, September 15, 2020; industry representative, interview by USITC staff, November 24, 2020; industry representative, interview by USITC staff, October 20, 2020; WRRRC, written submission to the USITC, September 8, 2020, 4.

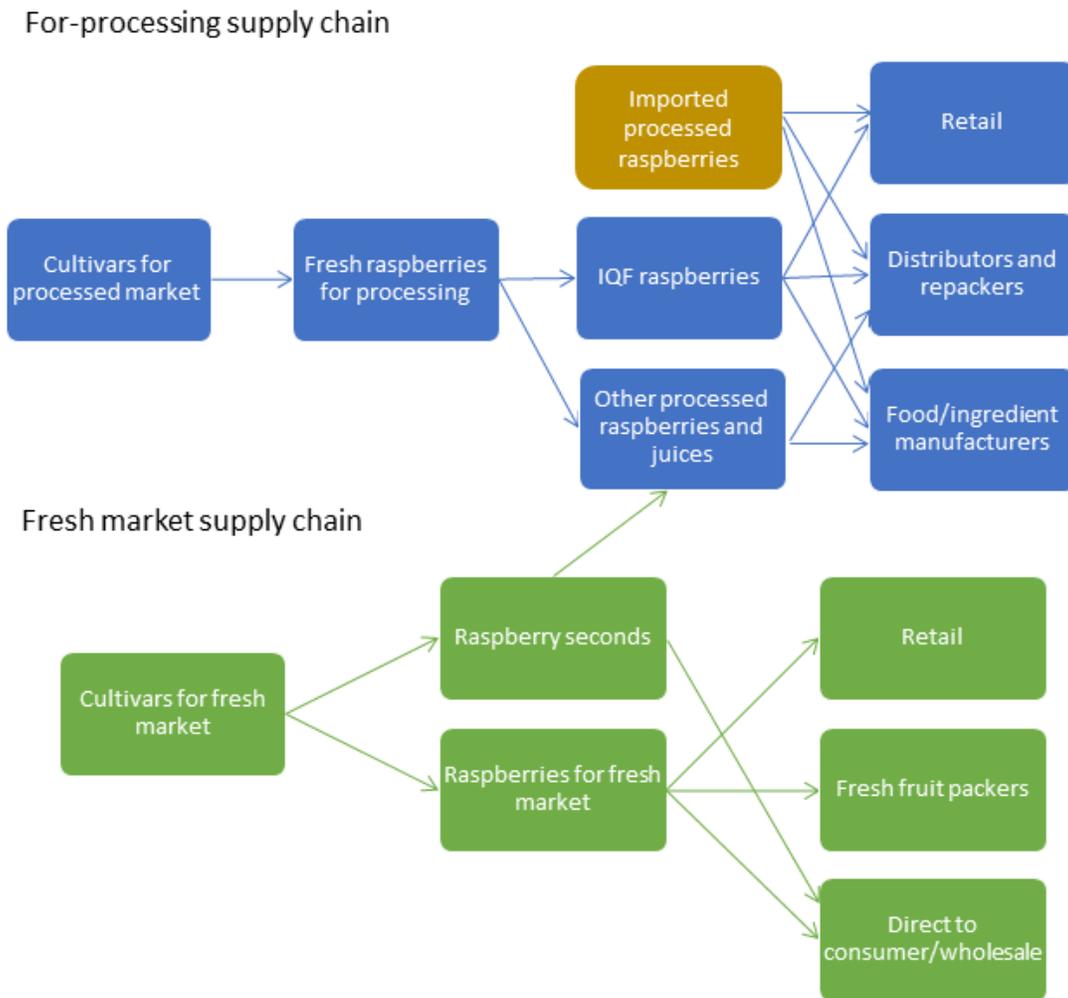
²⁷⁰ Industry representative, interview by USITC staff, November 24, 2020.

Figure 3.5 IQF raspberries packed in bulk containers



Source: WRRRC photos by Brian Beadle of Wild Hive, 2020 (permission to use with attribution).

Figure 3.6 Supply chains for raspberries for processing and for fresh consumption



Source: Compiled by USITC.

Once the berries are frozen, most processors store the bulk of their product in rented freezer space. Some processors may have their own freezers that can store a portion of the harvest so they can have readily available product for further processing as orders arrive. However, the cost of freezers and the size and variability of each harvest may make renting freezer space more cost-effective.²⁷¹

²⁷¹ Industry representatives, interviews by USITC staff, November 20, 2020, and November 24, 2020.

Production, Consumption, and Trade

Production and Processing

Fresh raspberries are the primary input into processed raspberry products. Total U.S. production of raspberries, for fresh market and processing combined, declined from 140,065 mt in 2015 to 102,512 mt in 2019 (table 3.2).²⁷² The 36 percent decline in California production over the period drove the national trend, while Washington production increased slightly from a much lower base. In 2019, despite similar levels of harvested acreage, California production was nearly twice that of Washington, owing to higher yields in California.²⁷³ A number of factors may have contributed to this difference in yield, including the types of cultivars and the use of hoop houses in California.²⁷⁴

Table 3.2 United States: Total raspberry production by state, area harvested, and yield, 2015–19
Production is in metric tons (mt), area harvested is in hectares (ha), and yield is in mt/ha. Percent change is in percentage. n.a. = not available; n.c. = not calculable. 2017 was the last year in which NASS collected data on raspberry production for Oregon.

Item	Unit	2015	2016	2017	2018	2019	Absolute	Percent
							change,	change,
							2015–19	2015–19
Production	mt	140,065	117,176	102,843	99,246	102,512	-37,553	-26.8
California	mt	102,194	76,961	64,991	64,864	65,090	-37,104	-36.3
Washington	mt	33,611	36,337	35,403	34,382	37,421	3,810	11.3
Oregon	mt	4,259	3,878	2,449	n.a.	n.a.	n.c.	n.c.
Area harvested	ha	9,288	8,017	8,078	6,839	6,758	-2,529	-27.2
Yield	mt/ha	15.1	14.6	12.7	14.5	15.2	0.1	0.6

Source: USDA, NASS, Raspberry Production, Area Harvested and Yield, accessed November 27, 2020.

Note: USDA data do not include area harvested and yields specific to end use, i.e. raspberries meant for processing versus raspberries meant for consumption (fresh market).

Raspberries for processing accounted for less than half of total U.S. production of raspberries during 2015–19 and were primarily supplied by Washington (table 3.3). Nationwide, production of fresh raspberries for processing declined by 19 percent over the period, dropping from 52,909 mt in 2015 to 42,810 mt in 2019. However, USDA statistics indicate that Washington state production increased from 2015 to 2017 (the latest individual state data available). Data collected by the WRRC show that production increased for the remainder of the period as well.²⁷⁵ Although individual state level production data have not been available from USDA since 2017, earlier data suggest California’s production of raspberries for processing, which are seconds from its fresh market production, constitute less than 15 percent of its total production, on average. California’s share of fresh raspberries for

²⁷² Production data in this chapter are from USDA NASS unless otherwise noted. USDA NASS reports U.S. production at greater levels of disaggregation than is reported in FAO global production data, including by intended end use and at the state and county levels.

²⁷³ USDA, ERS, *Fruit and Tree Nuts Yearbook*, table D5: Red raspberries: Commercial acreage, yield per acre, utilized production, and season-average grower price, Oregon, Washington, and California,” October 29, 2020.

²⁷⁴ USITC, hearing transcript, September 17, 2020, 22 (testimony of Ryan Commons, Driscoll’s, Inc.).

²⁷⁵ WRRC, Newsletter, November 2020.

processing declined from 2015 to 2017, reflecting the decline in overall production in California during that period.

Table 3.3 United States: Production of fresh raspberries for processing, by state, 2015–19

In metric tons (mt). n.a. = not available; n.c. = not calculable. 2017 was the last year in which NASS collected data on raspberry production for Oregon; NASS has combined data for Washington and California production in 2018 and 2019.

State	2015	2016	2017	2018	2019	Absolute change, 2015–19	Percent change, 2015–19
Washington	30,150	31,416	33,611	n.a.	n.a.	n.c.	n.c.
California	19,146	10,977	6,400	n.a.	n.a.	n.c.	n.c.
Subtotal	49,296	42,393	40,011	38,546	42,810	-6,486	-13.2
Oregon	3,613	3,239	2,028	n.a.	n.a.	n.c.	n.c.
Total	52,909	45,631	42,039	38,546	42,810	-10,099	-19.1

Source: USDA, NASS, Raspberries for Processing, Production, accessed June 20, 2021.

Note: Data collection for Oregon was discontinued after 2017; California and Washington data were aggregated as “other states” in 2018 and 2019, which is reported as the subtotal. The 2015–17 Washington and California subtotal is summed from the individual state data.

Although its production of fresh raspberries is less than California’s total production of fresh raspberries (table 3.2), Washington State accounts for nearly half of the total raspberry growing area harvested in the United States and is home to the largest farms, followed by California and Oregon. The planted acreage in Washington remained relatively stable at approximately 9,500 acres (3,800 hectares) since the early 2000s, peaking at 9,900 acres (4,000 hectares) in 2013 but dropping to 9,200 acres in 2019.²⁷⁶ Some industry representatives suggest that planted acreage in Washington has declined more than is reflected in the data. However, others report that although many growers are exiting the industry, some of their fields have been taken over by other raspberry growers, resulting in increasing consolidation in the industry. Some industry representatives expect that reported acreage will begin to decline in the coming years as the number of growers falls.²⁷⁷

While acreage remained relatively stable in Washington, yields varied during 2015–19 (table 3.4), largely as a result of weather events, including late rains and freezes.²⁷⁸ However, yields increased in Washington between 2015 and 2019, likely as a result of a number of factors, including the increase in use of newer varieties as well as improved horticultural practices.²⁷⁹ Some industry representatives

²⁷⁶ USDA, ERS, *Fruit and Tree Nuts Yearbook*, table D5, “Red Raspberries: Commercial Acreage, Yield per Acre, Utilized Production, and Season-Average Grower Price, Oregon, Washington, and California,” October 29, 2020.

²⁷⁷ Despite relatively stable acreage, raspberry plant sales have fluctuated. They declined overall from 2014 to 2019, falling to a period low of less than 1.5 million plants sold in 2019 after a high of over 3 million plants sold in 2016. The sales of Meeker and WakeField, two of the major processing cultivars, have fallen sharply since 2016, and do not appear to have been completely replaced by sales of WakeHaven, the only variety with a substantial increase in sales. USITC, hearing transcript, September 17, 2020, 9 (testimony of Henry Bierlink, WRRRC); industry representative, interview by USITC staff, October 20, 2020; Bierlink, “USA Raspberry Industry: Trends,” accessed February 16, 2021.

²⁷⁸ USDA, ERS, *Fruit and Tree Nuts Yearbook*, table D5: “Red raspberries: Commercial acreage, yield per acre, utilized production, and season-average grower price, Oregon, Washington, and California,” October 29, 2020; Gallagher, “Last Winter Was Bad for Whatcom County,” October 17, 2019.

²⁷⁹ Industry representatives, interviews by USITC staff, September 24, 2020, and February 26, 2021; J.M. Smucker Co., written submission to the USITC, December 4, 2020, 1.

indicate that growers of raspberries solely for juice stock have been leaving the industry. In some cases, these fields have been purchased by larger growers and planted with newer and higher-yielding varieties.²⁸⁰ California accounts nearly half of the acreage harvested in the United States and its raspberry production is almost exclusively destined for the fresh market. However, its area harvested, and production have both decreased in recent years as production shifted from California to Mexico.²⁸¹ Commercial acreage in Oregon has been in decline since the mid-1990s and dropped from 445 hectares in 2015 to 300 hectares in 2017, the last year for which data were collected.²⁸²

Table 3.4 Washington and Oregon: Production of raspberries, area harvested, and yield, 2015–19
Production is in metric tons (mt), area harvested is in hectares (ha), and yield is in mt/ha. Percent change is in percentage.

Item	Unit	2015	2016	2017	2018	2019	Absolute change, 2015–19	Percent change, 2015–19
Production	mt	37,870	40,215	37,852	34,382	37,421	-449	-1.2
Area harvested	ha	4,674	4,597	4,617	3,845	3,723	-951	-20.3
Yield	mt/ha	8.1	8.7	8.2	8.9	10.1	1.9	24.1

Source: USDA, NASS, *Raspberry Production, Area Harvested and Yield*, accessed November 27, 2020.

Note: Data collection for Oregon was discontinued in 2017; 2018 and 2019 data are Washington only.

Consumption

Estimates of U.S. consumption of processed raspberry products vary by source and cannot account for all products due to limitations in data collection and availability. Commission estimates indicate that apparent U.S. consumption, measured by quantity, was 68,314 mt in 2019, the latest year for which data are available (table 3.5).²⁸³ This estimate is based on USDA NASS data on production in Washington and California of raspberries for processing less most U.S. exports plus U.S. imports of fresh for processing and processed raspberries. Based on this estimate, during 2015–19, while total consumption

²⁸⁰ Industry representatives, interviews by USITC staff, October 20, 2020, November 20, 2020, and November 23, 2020.

²⁸¹ USITC, hearing transcript, September 17, 2020, 13 (testimony of Jon Maberry, Maberry Packing), 54–55 (testimony of testimony of Antonio Dominguez, IRO), and 152, 167 (testimony of Rolf Haugen, Northwest Berry Co-op).

²⁸² USDA, ERS, *Fruit and Tree Nuts Yearbook*, table D5: Red raspberries: Commercial acreage, yield per acre, utilized production, and season-average grower price, Oregon, Washington, and California,” October 29, 2020.

²⁸³ USITC estimates are close to but higher than some USDA estimates that might be used as rough proxies for consumption. USDA reported per capita use of frozen raspberries of 0.48 pounds in 2019, which would indicate approximately 70,000 metric tons in annual consumption of frozen raspberries. USDA also calculates the role of imports in the share of “food disappearance,” which is defined as the amount of the food supply that “disappears” from farms, net imports, and storage facilities into the food marketing system and that is available for consumption. In 2019, USDA reports that that imports accounted for nearly 30 percent of U.S. frozen raspberry food disappearance, which would suggest consumption of approximately 60,000 mt. USDA, ERS, Table G38, “Frozen Fruit: Per Capita Use, Product-Weight Basis, 1980 to Date,” October 29, 2020; NAP, *Data and Research*, 2015; USDA, ERS, Table H3, “Imports as a Share of Domestic Frozen Fruit Disappearance,” October 29, 2020; USDA, NASS, Quick Stats, Raspberries for processing, production in lb., other states, 2019.

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declined in years that U.S. production declined, there was no clear relationship between changes in imports and changes in consumption.

Table 3.5 Apparent U.S. consumption of processed raspberry products by source, 2015–19
In metric tons (mt).

Source	2015	2016	2017	2018	2019
Estimated U.S. producers' U.S. shipments	52,909	45,631	42,039	38,546	42,810
Mexico	11,906	10,102	11,075	10,498	10,790
Chile	12,445	11,009	8,702	10,696	8,724
Serbia	4,240	4,216	5,026	6,049	3,562
Canada	2,080	1,803	1,589	2,376	2,933
All other import sources	991	239	447	156	37
Re-exports	-1,508	-908	-575	-443	-542
All import sources, net of re-exports	30,154	26,461	26,264	29,332	25,504
Apparent U.S. consumption	83,063	72,092	68,303	67,878	68,314

Source: USITC calculations based on USDA, NASS, Raspberry Production, accessed November 27, 2020; USITC DataWeb/Census, HTS statistical reporting numbers 0810.20.1020, 0810.20.1022, 0810.20.1024, 0810.20.9020, 0810.20.9022, 0810.90.9024, 0811.20.2025 and schedule B number 0811.20.0000, accessed March 30, 2021.

Note: "Estimated U.S. producers' U.S. shipments" shows USDA data on production of raspberries for processing from Washington and California. Since imports of juice concentrate are recorded in liquid volumes, and exports of U.S. raspberries (fresh and processed) are combined with those of other berries or fruits, neither has been included in these estimates. Similarly, due to data limitations, the raspberry content of U.S. imports and exports of frozen mixed berries are not included in the U.S. raspberry apparent consumption estimates. However, USITC estimates that frozen raspberry imports entering under HTS 0811.90.8080 (fruit and nut mixes) and 0811.908085 (frozen mixed berries) would be relatively small, less than 3,000 mt each year over the period.

According to Commission estimates in table 3.5, imports made up a minimum of between 36 and 43 percent of total U.S. consumption from 2015 to 2019 (table 3.6). However, the actual share of imports is likely to be higher, as imports of juice concentrate could not be included in these calculations due to unit conversion limitations. U.S. production made up at most 57 to 64 percent of total U.S. consumption from 2015 to 2019 but was likely lower due to the lack of inclusion of imports of juice concentrate. As noted earlier, when measured by the value of Washington's sales of processed raspberry products and U.S. import values of processed raspberries and fresh raspberries for processing, the Washington industry holds an approximately 40 percent share of the U.S. processed raspberry market.

Table 3.6 Share of apparent U.S. consumption by quantity of processed raspberry products by source, 2015–19

Source	2015	2016	2017	2018	2019
Estimated U.S. producers' U.S. shipments	63.7	63.3	61.5	56.8	62.7
Mexico	14.3	14.0	16.2	15.5	15.8
Chile	15.0	15.3	12.7	15.8	12.8
Serbia	5.1	5.8	7.4	8.9	5.2
Canada	2.5	2.5	2.3	3.5	4.3
All other import sources	1.2	0.3	0.7	0.2	0.1
Re-exports	-1.8	-1.3	-0.8	-0.7	-0.8
All import sources, net of re-exports	36.3	36.7	38.5	43.2	37.3
Apparent U.S. consumption	100.0	100.0	100.0	100.0	100.0

Source: Calculations based on USDA NASS; USITC DataWeb/Census, HTS statistical reporting numbers 0810.20.1020, 0810.20.1022, 0810.20.1024, 0810.20.9020, 0810.20.9022, 0810.90.9024, 0811.20.2025 and schedule B number 0811.20.0000, accessed March 30, 2021. See footnote to previous table.

Tariffs Lines and Rates

Analysis of trade in fresh raspberries for processing and processed raspberry products is complicated by the level of aggregation of trade data for both imports and exports. Recent changes to the Harmonized Tariff Schedule of the United States (HTS) have allowed the trade data to include a greater level of detail for fresh and processed raspberry trade data, but such detail only provides for one or two years of analysis. The statistical reporting numbers and associated tariff rates for fresh and processed raspberries are presented below (table 3.7). Before July 2018, U.S. imports of fresh raspberries for consumption and fresh raspberries for processing were reported under the same reporting number. In July 2018, the HTS was amended to record imports of fresh raspberries in units of 5 kg or less and imports of fresh raspberries in units over 5 kg.²⁸⁴ Because of the fragile nature of fresh raspberries, imports in units above 5 kg are typically only used for processing. All fresh raspberries, whether for the fresh market or for processing, that are imported into the United States from September 1 to June 30 of the following year are subject to a general most-favored nation (MFN) tariff rate of 0.18¢/kg, but enter duty free for the remainder of the year.²⁸⁵ However, the three main country sources of fresh raspberry imports (Mexico, Canada, and Guatemala) are subject to special tariff treatment programs under U.S. free trade agreements and thus come into the United States duty free year-round.

²⁸⁴ Fresh raspberries imported in units over 5 kg enter under 0810.20.1024 (Sept 1–June 30) and 0810.20.9024 (July 1–Aug 31). Fresh raspberries imported in units not greater than 5 kg are 0810.20.1022 (Sept 1–June 30) and 0810.20.9022 (July 1–Aug 31). Before July 2018, all fresh raspberries entered under 0810.20.1020 and (Sept 1–June 30) and 0810.20.9020 (July 1–Aug 31).

²⁸⁵ Driscoll's, written submission to the USITC, September 24, 2020, 3; USITC, hearing transcript, September 17, 2020, 24–25 (testimony of Ryan Commons, Driscoll's, Inc.) and 156 (testimony of Tony Miller, Cascade International Foods). GATT 1947, Article 1; CBP, "Countries Ineligible for NTR / MFN Duty Rates," November 2, 2020.

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Table 3.7 U.S. statistical reporting numbers and tariff rates for fresh and processed raspberries

MFN = most favored nation.

HTS statistical reporting numbers	Date of changes	Description	General (MFN) rate	Special rates (selected top U.S. suppliers)
0810.20.1020	Ended in June 2018	Discontinued – Fresh raspberries entered from September 1 to June 30 of the following year	0.18¢/kg	Free—Canada, Chile, Mexico
0810.20.1022	July 2018– present	Fresh raspberries entered from September 1 to June 30 of the following year packed in units weighing (with the immediate container, if any) not more than 5.0 kg	0.18¢/kg	Free—Canada, Mexico
0810.20.1024	July 2018– present	Fresh raspberries entered from September 1 to June 30 of the following year packed in units weighing more than 5.0 kg	0.18¢/kg	Free—Mexico
0810.20.9020	Ended in June 2018	Discontinued—Fresh raspberries entered from July 1 to August 31	Free	Free
0810.20.9022	July 2018– present	Fresh raspberries entered from July 1 to August 31 packed in units weighing (with the immediate container, if any) not more than 5.0 kg	Free	Free
0810.20.9024	July 2018– present	Fresh raspberries entered from July 1 to August 31 packed in units weighing more than 5.0 kg	Free	Free
0811.20.2025	No change	Red raspberries, uncooked or cooked, frozen, whether or not containing sugar or other sweetening matter	4.5%	Free—Canada, Chile, Mexico, Serbia

HTS statistical reporting numbers	Date of changes	Description	General (MFN) rate	Special rates (selected top U.S. suppliers)
0811.90.8080	Ended in June 2019	Fruit and nuts, uncooked or cooked by steaming or boiling in water, frozen, whether or not containing added sugar or other sweetening matter	14.5%	Free—Canada, Chile, Mexico
0811.90.8085	July 2019—present	Frozen mixes only of combinations of blackberries, blueberries, red raspberries, or strawberries	14.5%	Free—Canada, Chile, Mexico
2007.99.6510	No change	Red raspberry jams, fruit jellies, marmalades, fruit puree and fruit pastes, obtained by cooking, whether or not containing added sugar or other sweetening matter	10%	Free—Canada, Chile, Mexico
2008.99.2120	No change	Red raspberries, otherwise prepared or preserved, whether or not containing added sugar or other sweetening matter or spirit	4.5%	Free—Canada, Chile, Mexico
2009.89.6055	Ended in October 2018	Red raspberry juice, including concentrate	0.5¢/liter	Free—Canada, Chile, Mexico, Serbia
2009.89.7055	November 2018—present	Red raspberry juice, including concentrate	0.5¢/liter	Free—Canada, Chile, Mexico

Source: USITC, HTS 2021, Basic Revision 1, March 2021, General Notes, chapters 8, chapter 20; USITC, HTS 2019, Revision 8, July 2019, chapter 8; USITC, HTS 2018, Revision 14, November 2018, chapter 20; USITC, HTS 2018, Revision 6, July 2018, chapter 8.

Note: Selected trading partners include those with special rates that are currently top import sources of each product. Tariff rates are applied at the HTS 8-digit subheading level, and all subordinate 10-digit statistical reporting numbers carry the tariff rates of their superior 8-digit subheading.

Processed raspberry products imported into the United States are reported under several HTS statistical reporting numbers, many of which do not exclusively cover raspberries but also include other processed fruit or food products. However, the bulk of processed red raspberry imports are classified under the statistical reporting number containing frozen red raspberries that are cooked or uncooked, and that can contain sugar or other sweetening matter.²⁸⁶ Unlike in the global trade data, in U.S. trade data processed red raspberries are broken out from other berries. The four main country sources of frozen

²⁸⁶ These products all enter the United States under HTS 0811.20.2025, with a general (MFN) tariff rate of 4.5 percent. However, they are duty free from some major source countries of processed raspberries, including free trade agreement partners Canada, Chile, and Mexico and Serbia, a GSP country.

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red raspberry imports are subject to special tariff treatment programs under U.S. free trade agreements (Mexico, Canada, and Chile) or in accordance with Generalized System of Preferences (GSP) benefits (Serbia) and thus come into the United States duty free and quota free. In July 2019, a new 10-digit HTS statistical reporting number was created for frozen berry mixes that include blackberries, blueberries, red raspberries, or strawberries, with an applicable tariff of 14.5 percent.²⁸⁷ Imports of these mixes come into the U.S. market duty free under the United States-Mexico-Canada Agreement (USMCA) and the United States-Chile Free Trade Agreement.²⁸⁸ Before July 2019, frozen berry mixes of blackberries, blueberries, red raspberries, or strawberries were reported under a broader HTS category that included any other frozen fruit and nut mixes, also with a 14.5 percent general (MFN) rate.²⁸⁹

Three other classification categories of raspberry product imports include cooked red raspberry pastes and purees,²⁹⁰ other preparations of red raspberries,²⁹¹ and red raspberry juice (including concentrate).²⁹² Further-processed raspberry products, such as raspberry jams, are not considered “processed raspberry products” for the purpose of this report.

Trade

Imports of Raspberries and Raspberry Products

Nearly all (99.3 percent) fresh raspberries imported into the United States come from Mexico (table 3.8). Imports of fresh market raspberries from Mexico rose by over 50 percent from 2015 to 2020 as a result of increased production in Mexico. Some of this increase was a result of a shift in production from California to Mexico, while an increase in U.S. demand for fresh market raspberries also drove up imports.²⁹³

²⁸⁷ HTS 0811.90.8085. USITC, *HTS 2019*, Revision 8, July 2019, chapter 8.

²⁸⁸ USITC, *HTS 2021*, Basic Revision 1, March 2021, chapter 8, chapter 18.

²⁸⁹ HTS 0811.90.8080.

²⁹⁰ HTS 2007.99.6510.

²⁹¹ HTS 2008.99.2120.

²⁹² HTS 2009.89.7055. This statistical reporting number changed in 2019; it was previously 2009.89.6055 but covered the same products. USITC, *HTS 2018*, Revision 14, November 2018, chapter 20.

²⁹³ USITC, hearing transcript, September 17, 2020, 13 (testimony of Jon Maberry, Maberry Packing), 54–55 (testimony of testimony of Antonio Dominguez, IRO), and 152, 167 (testimony of Rolf Haugen, Northwest Berry Co-op).

Table 3.8 United States: Imports of fresh raspberries by source, 2015–20

In metric tons (mt) and percentages. n.c. = not calculable.

Sources	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute	Percentage
							change, 2015–20 (mt)	change, 2015–20
Mexico	68,730	61,200	87,103	80,161	90,856	106,517	37,787	55.0
Canada	654	992	881	416	472	442	-212	-32.4
Guatemala	0	5	32	68	80	251	251	n.c.
Serbia	0	0	0	0	0	16	16	n.c.
Chile	5	24	50	4	0	0	-5	-100.0
Netherlands	0	0	0	0	3	0	0	n.c.
Total	69,389	62,221	88,066	80,650	91,411	107,227	37,838	54.5

Source: USITC DataWeb/Census; imports for consumption; first unit of quantity, HTS 0810.20.1020, 0810.20.1022, 0810.20.1024, 0810.20.9020, 0810.20.9022, 0810.20.9024; accessed February 4, 2021.

Total U.S. imports of fresh raspberries include raspberries for fresh consumption as well as for processing. The latter are nearly all sourced from Mexico as well, with a small share supplied by Canada (table 3.9).²⁹⁴ In the two full years of data available for the recent change in statistical reporting numbers, the volume of these imports of fresh raspberries for processing from Mexico has increased, and their share in total imports of fresh raspberries has risen slightly to reach 11 percent in 2020. These raspberries are imported fresh from Mexico but are intended for processing in the United States; generally, they are frozen in large drums to be further processed into juice concentrate, puree, jams, or other further-processed raspberry products.²⁹⁵

Although raspberry producers in Mexico attempt to maximize raspberries for the lucrative fresh market and minimize the share of their fresh raspberry production that becomes seconds, the volume of seconds they produce is expected to rise as their fresh market production increases overall.²⁹⁶ Fresh raspberries for processing from Mexico accounted for nearly all (99 percent) U.S. imports of fresh raspberries for processing, and in the two full years of available data, fresh raspberries for processing accounted for an average of 13 percent of total U.S. imports of fresh raspberries.²⁹⁷

²⁹⁴ USITC DataWeb/Census, HTS 0810.20.1024 and 0810.20.9024, accessed February 4, 2021.

²⁹⁵ Fresh raspberries for processing include HTS statistical reporting numbers 0810.20.1024 and 0810.20.9024. Fresh raspberries for consumption include HTS statistical reporting numbers 0810.20.1022 and 0810.20.9022. Before July 2018, fresh raspberry imports for consumption and processing were reported in the same HTS statistical reporting numbers: 0810.20.1020 and 0810.20.9020. USITC DataWeb/Census, accessed October 7, 2020. Industry representatives, interviews by USITC staff, July 30, 2020, and October 20, 2020.

²⁹⁶ WRRC, written submission to the USITC, September 24, 2020, 7; industry representatives, interviews by USITC staff, September 16, 2020, October 26, 2020, November 20, 2020, November 25, 2020, and December 1, 2020, December 3, 2020; industry representative, email message to USITC staff, October 24, 2020.

²⁹⁷ USITC DataWeb/Census, HTS 0810.20.1024 and 0810.20.9024, accessed February 4, 2021.

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Table 3.9 United States: Imports of fresh raspberries from Mexico, by type, 2015–20

In metric tons (mt). n.a. = data are not available due to changes in the statistical reporting numbers implemented in July 2018.

Type of fresh raspberry	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)
For processing	n.a.	n.a.	n.a.	2,090	6,596	10,624
For fresh market	n.a.	n.a.	n.a.	26,346	84,261	95,894
All fresh raspberries (before breakout)	68,730	61,200	87,103	51,725	n.a.	n.a.
Total	68,730	61,200	87,103	80,161	90,856	106,517

Source: USITC DataWeb/Census, imports for consumption as follows, accessed February 4, 2021. “For processing” consists of HTS 0810.20.1024 and 0810.20.9024, “For fresh market” consists of HTS 0810.20.1022 and 0810.20.9022, 2018 data for both are partial year, from July to December 2018. “All fresh raspberries (before breakout)” consists of HTS 0810.20.1020 and 0810.20.9020, both of which were discontinued as of July 2018.

Note: U.S. import data for fresh raspberries for processing— “Fresh raspberries in containers other than those under 5kg” under 0810.20.1024 and 0810.20.9024—were revised downward in early 2021 after the U.S. Census Bureau clarified container weight with importers of record.

Data on fresh raspberries for processing in this report reflect these revisions. Staff at the U.S. Census Bureau expect further downward revisions.

U.S. imports of frozen red raspberries fell overall from the period high of 25,259 mt in 2015 to 23,735 in 2020 but fluctuated from year to year (table 3.10).²⁹⁸ Imports of frozen red raspberries include both IQF as well as block frozen raspberries and uncooked puree. To compare imports of frozen raspberries to U.S. production, imports of frozen red raspberries during the 2015 to 2020 period were about one-half to two-thirds of total U.S. production of fresh raspberries for processing.²⁹⁹ While Chile supplied nearly half of U.S. frozen red raspberry imports in 2015, imports from Chile declined over the next five years, both by volume and by share. U.S. imports of frozen red raspberries from Chile in 2020 were nearly half the volume imported in 2015. As noted in chapter 7, this is largely a result of decreased raspberry production and exports from Chile as well as increased exports from Chile to other, non-U.S. markets.³⁰⁰ Imports from all other major suppliers, including Mexico and Serbia, fluctuated over the period but increased, leading to only a small decline of 6 percent in overall U.S. imports of red frozen raspberries.

²⁹⁸ The HTS 10-digit statistical reporting number 0811.20.2025 includes frozen uncooked red raspberries. Other raspberries, i.e. gold and black are classified under a separate HTS statistical reporting number 0811.20.2035. The U.S. industry in Washington does not produce substantial amounts of gold and black raspberries. Industry representatives, interview by USITC staff, June 1, 2021.

²⁹⁹ Imports of juice concentrate are not included in these calculations.

³⁰⁰ USITC, hearing transcript, September 17, 2020, 56–58 (testimony of Pablo Herrera, Chilealimentos) and 64 (testimony of Antonio Dominguez, IRO); industry representative, interview by USITC staff, February 23, 2021.

Table 3.10 United States: Imports of frozen red raspberries by source, 2015–20
In metric tons (mt) and percentages.

Sources	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute	Percentage
							change, 2015–20 (mt)	change, 2015–20
Mexico	5,503	4,400	2,960	3,589	4,194	6,927	1,424	25.9
Chile	12,445	11,009	8,702	10,696	8,724	6,909	-5,536	-44.5
Serbia	4,240	4,216	5,026	6,049	3,562	5,862	1,622	38.3
Canada	2,080	1,803	1,589	2,376	2,933	3,822	1,742	83.8
Turkey	18	0	0	0	0	83	65	363.8
France	42	29	46	47	32	52	10	23.5
All other	931	210	401	109	5	80	-852	-91.5
Total	25,259	21,667	18,725	22,866	19,450	23,735	-1,524	-6.0

Source: USITC DataWeb/Census, imports for consumption, HTS 0811.20.2025, accessed February 4, 2021.

As noted above, data on imports of IQF frozen berry mixes of blackberries, blueberries, red raspberries, or strawberries are limited to partial year 2019 and full year 2020. However, available data indicate an increase in imports during this period (table 3.11), consistent with industry reports that U.S. demand is greater than the supply and has been growing. Canada and Chile are major suppliers of frozen berry mixes, which can only contain some combination of blackberries, blueberries, red raspberries, or strawberries. Production of mixed frozen fruit bags have increased with heightened consumer demand for mixed fruit products, and these products allow producers to add value to domestic production of some of the fruits used in these blends.³⁰¹ These bags may include combinations of domestically produced fruit, or combinations of domestic and imported fruit.³⁰²

³⁰¹ Industry representatives, interviews by USITC staff, July 24, 2020, and September 24, 2020.

³⁰² Industry representatives, interviews by USITC staff, February 26, 2021, and March 5, 2021.

Table 3.11 United States: Imports of IQF frozen berry mixes by source, 2019–20, metric tons (mt) and percentages

Partial-year data are reported for 2019 because the statistical reporting number for frozen berry mixes became effective in July 2019.

Sources	July–Dec 2019 (mt)	2020 (mt)	Absolute change, 2019–20 (mt)	Percent change, 2019–20
Canada	754	4,014	3,260	432.2
Chile	1,082	3,709	2,627	242.7
Mexico	709	1,962	1,252	176.6
Guatemala	227	388	162	71.4
China	27	203	176	657.5
All others	311	317	6	2.1
Total	3,110	10,592	7,483	240.6

Source: USITC DataWeb/Census, imports for consumption, HTS 0811.90.8085, accessed February 4, 2021.

Finally, the volume of imports of juice concentrate remained relatively stable from 2015 to 2019, fluctuating between 3.1 and 3.8 million liters, although the largest suppliers have varied over time. Imports more than halved in 2020, dropping to 1.3 million liters, as imports from Austria declined significantly.

Table 3.12 United States: Imports of red raspberry juice concentrate by source, 2015–20

In thousands of liters and percent.

Sources	2015 (1,000 liters)	2016 (1,000 liters)	2017 (1,000 liters)	2018 (1,000 liters)	2019 (1,000 liters)	2020 (1,000 liters)	Absolute change, 2015–20 (1,000 liters)	Percentage change, 2015–20
Canada	454	393	206	431	918	566	111	24.5
Chile	1,359	1,244	1,366	1,000	580	373	-986	-72.5
Germany	1	45	0	85	39	154	153	14,421.6
Italy	414	584	597	743	179	119	-295	-71.3
Austria	8	178	768	1,045	1,189	115	107	1,377.0
All other	1,439	1,225	310	487	174	48	-1,391	-96.6
Total	3,675	3,669	3,247	3,790	3,080	1,374	-2,301	-62.6

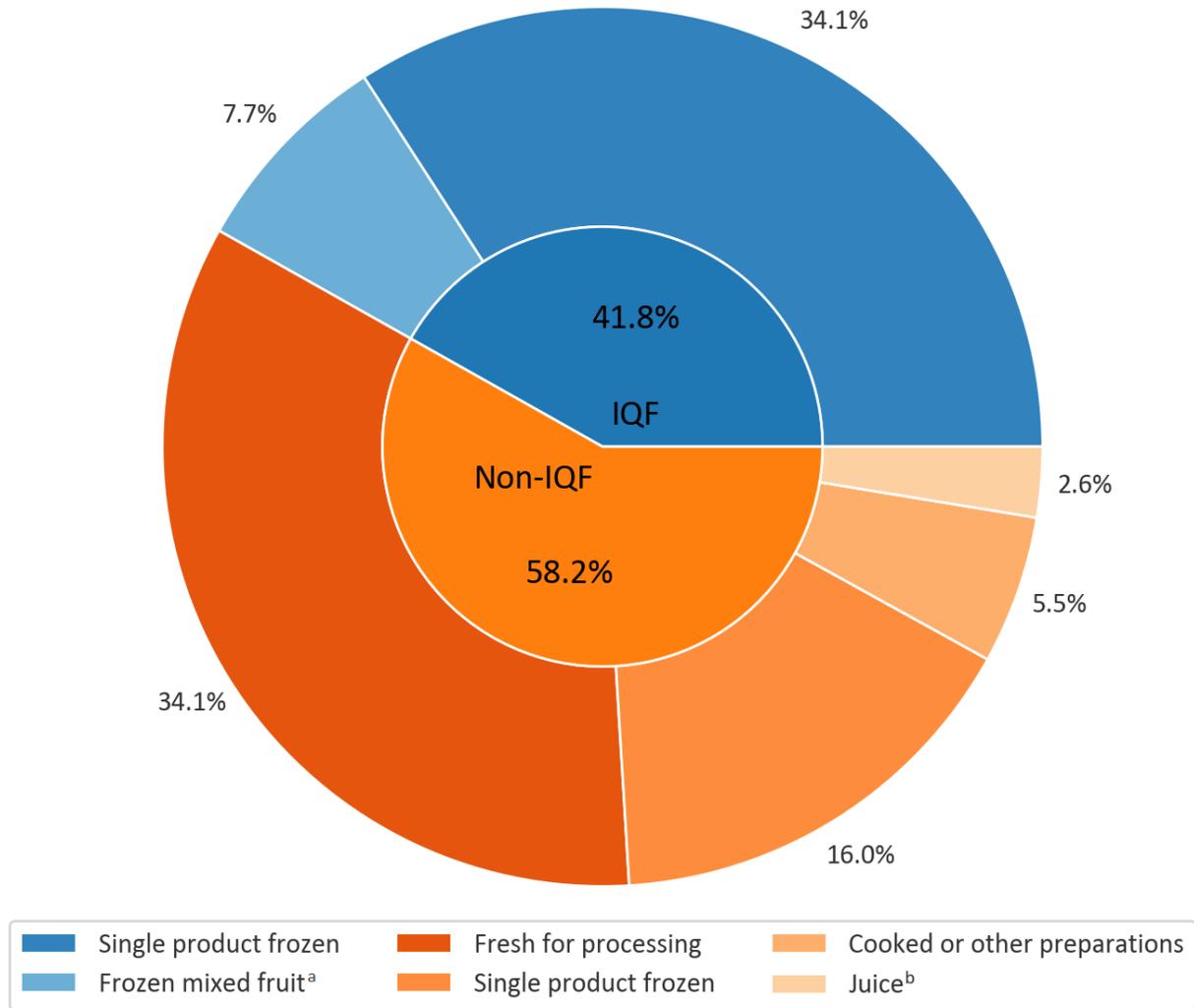
Source: USITC DataWeb/Census, imports for consumption, HTS 2009.89.6055 and 2009.89.7055, accessed February 4, 2021.

By value, U.S. imports of IQF raspberries (single product frozen and frozen mixed fruit) are the largest imported product type, accounting for around 40 percent of imports of fresh for processing and processed red raspberries (figure 3.7). U.S. imports of fresh raspberries for processing account for approximately one-third of imports of U.S. processed raspberry products and fresh raspberries for processing combined. Other processed products that are not IQF represent smaller shares of total U.S.

imports, but imports of fresh raspberries for processing are often processed into non-IQF products and can compete with U.S. production of fresh raspberries for processing and non-IQF products.³⁰³

Figure 3.7 Relative values of U.S. imports of fresh for processing and processed red raspberries by product type, 2020

Underlying data for this figure appear in [appendix table H.9](#).



Source: USITC DataWeb/Census, HTS 0810.20.1024, 0810.20.9024, 0811.20.2025, 0811.90.8085, 2008.99.2120, 2007.99.6510, and 2009.89.7055, accessed March 19, 2021. See appendix E for more information on the shares of each HTS line included in these estimates. Note: The inner circle of the pie chart indicates the more aggregated IQF or non-IQF designations, while the outer circle shows more specific products within each category. The total value of imports for consumption shown in this chart is \$137.6 million.

^a Frozen mixed fruit is an estimated proportion from HTS statistical reporting numbers that contain IQF raspberries in addition to other products not covered in this report. HTS 0811.90.8085 indicates mixes that specifically contain raspberries, while HTS 0811.90.8080 includes products that may or may not contain raspberries. For more information on USITC staff calculations see Appendix E, (“Import Sorting for Modeling Inputs”).

^b Juice (including concentrate) products are classified under HTS 2009.89.7055 in 2020.

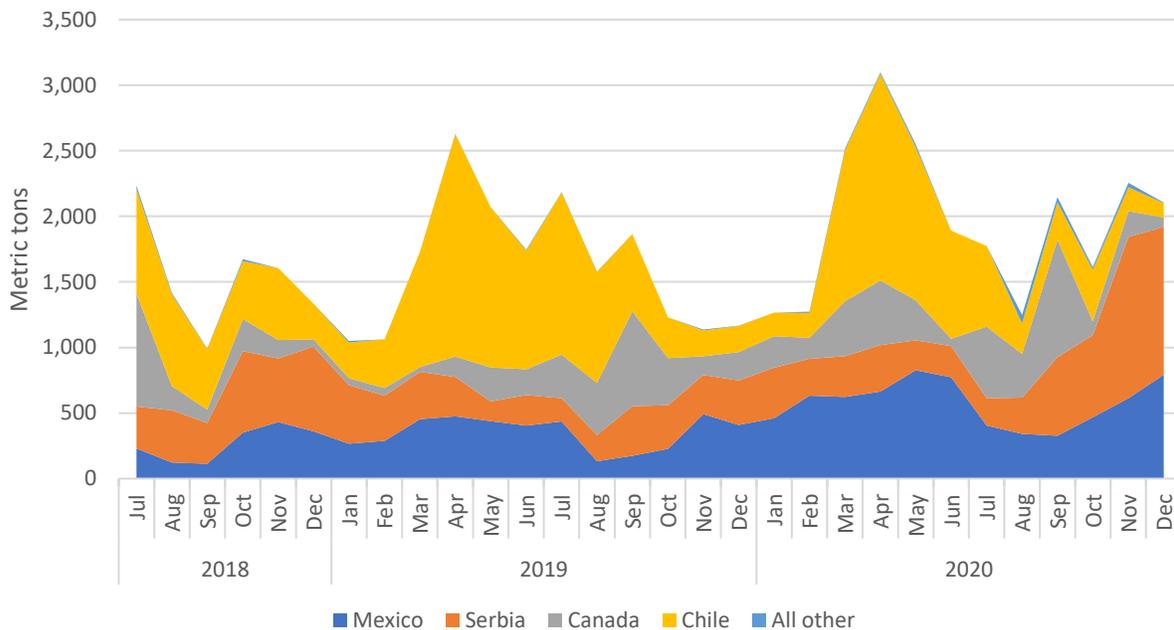
³⁰³ Industry representatives, interviews by USITC staff, July 30, 2020, August 21, 2020, October 20, 2020, and November 20, 2020; industry representative, email message to USITC staff, August 21, 2020.

Seasonal Cycles in U.S. Imports of Processed Raspberries

Although frozen raspberries can be stored by exporters for a year or more and could theoretically be shipped at any time throughout the year, U.S. import data for these products show that these imports are not level throughout the year. Imports tend to be at the highest levels in spring, before the U.S. harvest begins in June/July (figure 3.8). Imports from Chile peak during and immediately after the Chilean harvest season, which generally runs from December to April. While large Chilean processors store some raspberries to ensure they can meet year-round customer demand, smaller Chilean processors tend to ship most of their product as soon after harvest and freezing as possible in order to minimize their storage costs and risks (see chapter 7).³⁰⁴

Figure 3.8 U.S. imports of frozen raspberries, by source country, July 2018–December 2020

Underlying data for this figure appear in [appendix H table H.10](#).



Source: USITC DataWeb/Census, imports for consumption, HTS 0811.20.2025, accessed February 11, 2021.

U.S. imports of frozen red raspberries from Serbia do not appear to follow a cycle as consistent as those from Chile. While the raspberry harvest in Serbia peaks in June and July, during 2018–20 U.S. imports from Serbia tended to peak in the fall.³⁰⁵ This may reflect the United States’ position as a secondary market for Serbia. As noted in chapter 6, the European Union (EU) is Serbia’s main export destination. After their harvest, processors in Serbia reportedly prioritize supplying the EU and then sell excess production to the United States at various points throughout the year.³⁰⁶

³⁰⁴ USITC, hearing transcript, September 17, 2020, 46 (testimony of Pablo Herrera, Chilealimentos); industry representatives, interviews by USITC staff, February 11, 2021, and February 23, 2021.

³⁰⁵ See chapter 6 for more information.

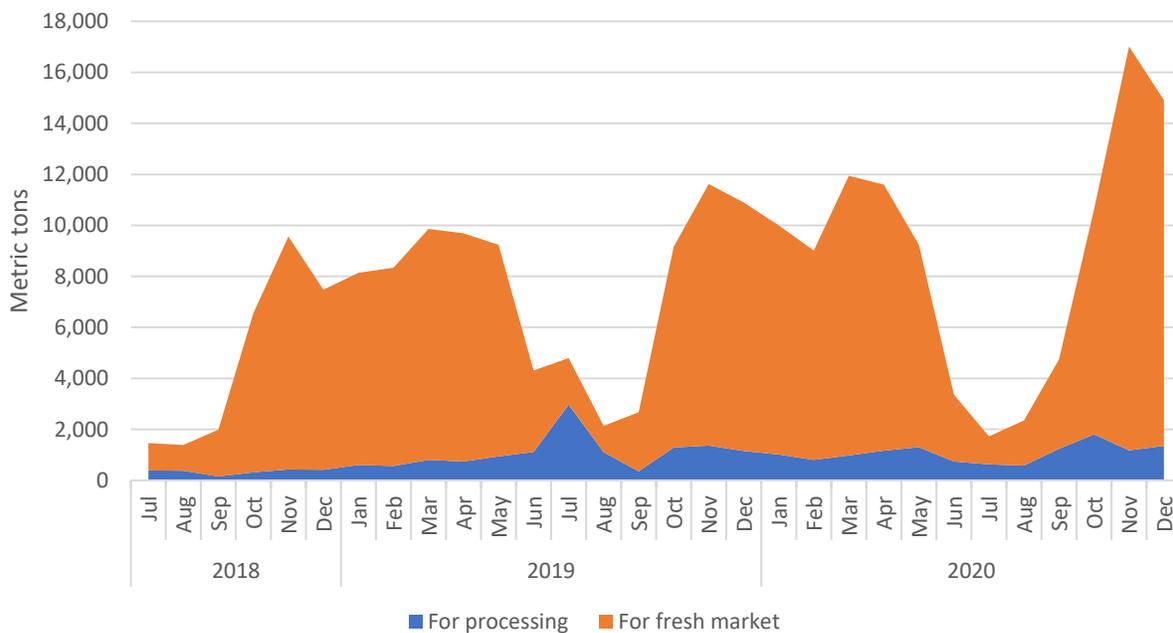
³⁰⁶ Industry representatives, interviews by USITC staff, July 30, 2020, August 4, 2020, and September 24, 2020; U.S. government official, interview by USITC staff, October 28, 2020.

Yet another pattern is evident in monthly imports of frozen red raspberries from Mexico, which shows somewhat less variation than imports from Chile, Canada, and Serbia. The more consistent level of these imports from Mexico relative to other import sources reflect Mexico’s nearly year-round raspberry production. Moreover, because of the market focus on fresh market raspberries, imported frozen red raspberries from Mexico are processed using only those raspberries that cannot be sent to the fresh market (the raspberry “seconds”).³⁰⁷

U.S. imports of fresh raspberries for processing from Mexico were imported at even more consistent levels than frozen raspberries during the period July 2018–December 2020. Although the overall imports of fresh market raspberries from Mexico follow patterns of the approximately nine-month-long season (figure 3.9), the fresh product that enters the processing market is small but relatively consistent year-round. These fresh raspberries for processing typically enter the U.S. marketing channel to be processed and used as B-grade frozen product.³⁰⁸

Figure 3.9 U.S. imports of fresh raspberries from Mexico, July 2018–December 2020

Underlying data for this figure appear in [appendix H table H.11](#).



Source: USITC DataWeb/Census, imports for consumption, CIF (cost, insurance, freight) values, “For fresh market” contains HTS 0810.20.1022 and 0810.20.9022, “For processing” contains HTS 0810.20.1024 and 0810.20.9024, accessed February 4, 2021.

In general, the timing of U.S. imports of frozen red raspberries can complement levels of U.S. stocks to fulfill U.S. demand (figure 3.10). However, in some years, large volumes of imports have entered the market during periods where U.S. stock levels were high. Although frozen products can generally be

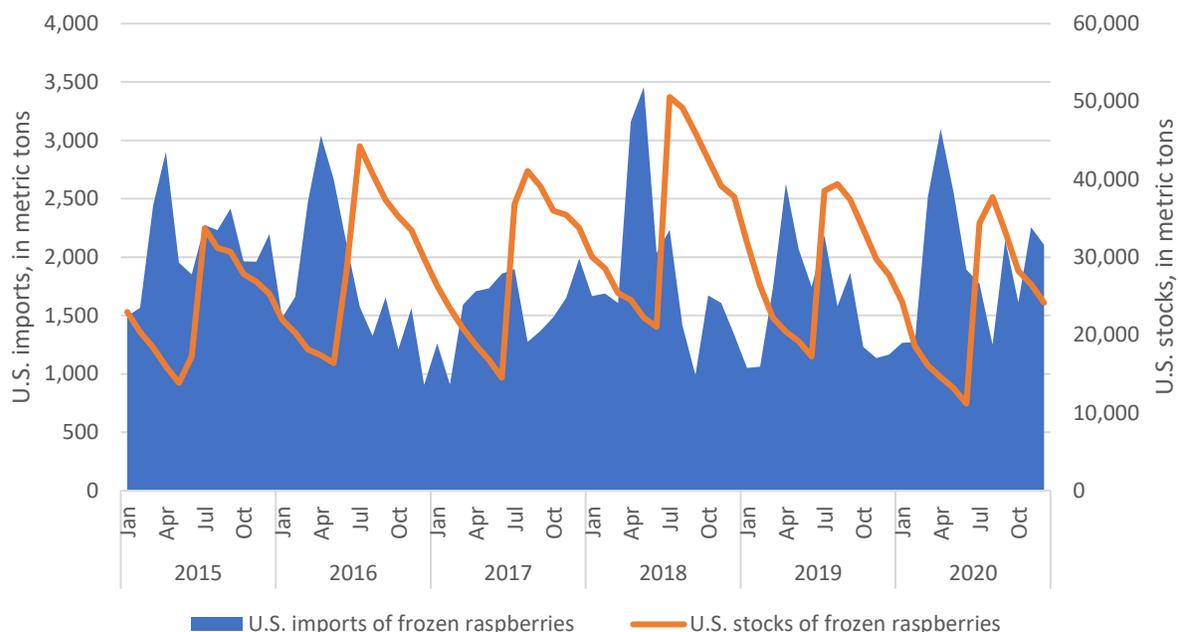
³⁰⁷ USITC, hearing transcript, September 17, 2020, 39–40 (testimony of Tony Miller, Cascade International Foods) and 42–43 (testimony of Jean-Christophe Hestean, SunOpta); industry representative, interview by USITC staff, December 1, 2020.

³⁰⁸ Industry representatives, interviews by USITC staff, July 30, 2020, October 20, 2020, and November 20, 2020; industry representative, email message to USITC staff, August 21, 2020.

stored for about a year and are not as directly tied to seasonality as fresh products are, this additional supply during the U.S. harvest could still lower product prices; such a pattern has been reported by industry representatives in certain years (see chapter 8 analysis of pricing in the U.S. market).

Figure 3.10 Monthly U.S. imports and U.S. stocks of frozen raspberry products, 2015–20

Underlying data for this figure appear in [appendix table H.12](#).



Source: USITC DataWeb/Census, imports for consumption, HTS 0811.20.2025, accessed February 11, 2021; USDA, NASS, Quick Stats, U.S. stocks of frozen barrels, pails, and IQF, accessed March 3, 2021.

Exports of Raspberries and Raspberry Products

Industry representatives report that U.S. exports of processed raspberries have been relatively low—historically, below 10 percent of production.³⁰⁹ U.S. export data show that the United States exported approximately 20,000 metric tons of fresh raspberries in 2020, about three-quarters of which went to Canada (table 3.12).³¹⁰ The United States exported about 7,500 metric tons of frozen raspberries in 2020, again with Canada as the main destination market (table 3.13).³¹¹

³⁰⁹ Industry representatives, interviews by USITC staff, November 24, 2020, and December 18, 2020.

³¹⁰ Export data include Schedule B numbers 0810.20.5000 and 0810.20.2000, which covers raspberries, blackberries, mulberries, and loganberries. However, as discussed in Chapter 2, available data indicate that most exports are raspberries.

³¹¹ Export data are based on Schedule B number 0811.20.0000 which covers raspberries, blackberries, mulberries, loganberries, currants, and gooseberries. However, as discussed in Chapter 2 available data indicate that most exports are raspberries.

Table 3.13 United States: Exports of fresh raspberries by destination, 2015–20
In metric tons (mt) and percentages.

Market	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute	Percentage
							change, 2015–20 (mt)	change, 2015–20
Canada	19,884	15,337	14,387	15,491	15,453	15,444	-4,440	-22.3
Saudi Arabia	230	444	613	682	1,214	1,097	867	376.6
United Arab Emirates	361	505	649	665	936	885	524	145.2
Japan	868	1,010	782	1,024	1,106	863	-5	-0.6
Hong Kong	114	295	130	492	854	642	528	463.4
All other	561	1,236	1,865	1,508	1,648	1,686	1,124	200.3
Total	22,018	18,828	18,426	19,863	21,211	20,617	-1,401	-6.4

Source: USITC DataWeb/Census, domestic exports, Schedule B numbers 0810.20.2000 and 0810.20.5000, accessed February 4, 2021.

Note: Schedule B numbers 0810.20.5000 and 0810.20.2000 also cover blackberries, mulberries, and loganberries.

Table 3.14 United States: Exports of frozen raspberries by destination, 2015–20
In metric tons (mt) and percentages.

Market	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute	Percentage
							change, 2015–20 (mt)	change, 2015–20
Canada	1,999	3,239	3,290	3,865	4,814	5,035	3,036	151.9
Mexico	167	623	534	754	800	792	625	375.3
South Korea	1	108	44	536	993	551	550	84,284.8
Japan	385	163	109	209	260	517	131	34.1
Chile	1	0	2	1	112	375	375	52,106.0
All other	706	664	341	531	652	526	-180	-25.5
Total	3,258	4,796	4,320	5,895	7,632	7,796	4,538	139.3

Source: USITC DataWeb/Census, domestic exports, Schedule B number 0811.20.0000, accessed February 4, 2021.

Note: Schedule B number 0811.20.0000 also cover blackberries, mulberries, loganberries, currants, and gooseberries.

Trade Actions and Concerns

U.S. imports of raspberries from Canada and Chile were the subject of U.S. antidumping duty orders at varying times between 1985 and 2007. In July 1985, the U.S. Department of Commerce (Commerce) issued an antidumping duty order on imports of subject red raspberries from Canada following affirmative final determinations by the Commission and Commerce on imports of these products from Canada.³¹² Commerce revoked the order effective January 1, 1999, after no domestic interested party responded to Commerce's notice of initiation of its sunset review by the applicable deadline.³¹³

In July 2002, Commerce issued an antidumping duty order on imports of subject IQF red raspberries from Chile following affirmative final determinations by the Commission and Commerce with respect to

³¹² See notice published in the Federal Register of June 24, 1985 (50 Fed. Reg. 26019).

³¹³ See notice published in the Federal Register of February 26, 1999 (64 Fed. Reg. 9473).

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imports of these products from Chile.³¹⁴ In May 2002, in a companion investigation under the U.S. countervailing duty law, Commerce made a negative countervailing duty determination, and, accordingly, no countervailing duty order was issued.³¹⁵ After it did not receive a notice of intent to participate from domestic interested parties in the sunset review by the deadline date, Commerce revoked the antidumping duty order on this product from Chile effective July 9, 2007.³¹⁶

More recently, in the context of this investigation, some U.S. industry representatives reported that imports of frozen berry mixes from Canada may include raspberries imported from a third country, but that the origin of the berries is not always reported on the label.³¹⁷ U.S. country of origin labeling (COOL) requirements apply to frozen fruits; however, “processed food items” are excluded from the requirements. According to the COOL regulations, a bag of frozen raspberries sold at retail in the United States must have the country of origin of the raspberry itself, not just the country where the raspberries were packaged. However, once those raspberries are combined with other berries in a berry mix, they become a “processed food item,” and only the country where the mixed berry bag was packaged must be indicated on the label.³¹⁸ Although no COOL or other regulations require it, importers report that the source of each type of berry is often noted on the frozen mixed berry packs, in addition to labeling the bag as a product of Canada.³¹⁹

Additionally, there have been no actions alleging that such berries are mislabeled or misleadingly labeled under the U.S. Perishable Agricultural Commodities Act.³²⁰ However, there have been some concerns that these frozen mixed berries entered the United States from Canada duty free under USMCA and the North American Free Trade Agreement (NAFTA), even when they contain berries from a source outside North America.³²¹ Trade data indicate that in 2018, imports of these frozen mixed berries from Canada entered the U.S. market predominantly duty free. However, the following year, in 2019, less than one-third of these imports, by value and by volume, claimed duty-free treatment under NAFTA.³²²

WRRRC members also have expressed that they are concerned about increased pesticide residue violations of imported product and what they consider to be a low level of testing of imported products

³¹⁴ See notice published in the *Federal Register* of July 9, 2002 (67 F.R. 45460).

³¹⁵ See notice published in the *Federal Register* of May 22, 2002 (67 F.R. 35961).

³¹⁶ See notice published in the *Federal Register* of July 20, 2007 (72 F.R. 39793).

³¹⁷ USITC, hearing transcript, September 17, 2020, 14 (testimony of Brad Rader, Rader Farms); industry representatives, interviews by USITC staff, June 23, 2020, and November 20, 2020.

³¹⁸ 7 CFR 65.200; U.S. government representative, interview by USITC staff, November 23, 2021.

³¹⁹ In some cases, however, the origin of only the type of berry with the highest percentage used may be listed on the label. Bratt, “Officials Hearing about Bleak 2018 Market Situation,” July 11, 2018; USITC, hearing transcript, September 17, 2020, 30 (testimony of John Tentomas, Nature’s Touch); industry representative, interview by USITC staff, September 24, 2020.

³²⁰ The Perishable Agricultural Commodities Act (PACA) is a USDA program administered by the Agricultural Marketing Service (AMS) to facilitate fair trade in the fresh and frozen fruit and vegetable industries. PACA establishes and enforces a code of fair business practices. USDA, AMS, Perishable Agricultural Commodities Act (PACA), accessed March 30, 2021; USDA, AMS, “PACA Press Releases,” accessed March 3, 2021.

³²¹ Industry representative, interview by USITC staff, June 22, 2020.

³²² USITC DataWeb/Census, HTS 0811.90.8085, accessed February 8, 2021.

for both pesticides and food contaminants.³²³ An additional WRRC member noted that any violations have a negative impact on consumer demand for all raspberry products, both imported and domestic.³²⁴ Multiple U.S. federal government agencies are responsible for oversight of pesticides in or on food, including fresh and processed raspberries.³²⁵ In particular, the U.S. Environmental Protection Agency sets the acceptable pesticide residue tolerances (also known as “maximum residue levels”), while the U.S. Food and Drug Administration (FDA) enforces these tolerances on U.S. grown and imported fresh and processed raspberries.³²⁶

Two notable indicators of issues with pesticide residues are FDA’s pesticide residue tolerance violations and pesticide import alerts for imported fresh raspberries for processing and processed raspberries.³²⁷ Between 2015 and 2018, raspberry fruits and juice did not appear on the list of imported commodities that warrant special attention such as increased testing.³²⁸ But, the FDA reports that imported products tend to be tested more than domestic products, because overall, imports have higher historical violation rates.³²⁹ From 2015 to 2018, there were a total of eight violations of pesticide residue tolerances from Chile, Mexico, Serbia, and Poland out of 168 samples of raspberries and raspberry juice from all import sources, an average violation rate of nearly 5 percent.³³⁰ By comparison, U.S. products received two violations in the same period, one in 2015 and another in 2016, out of 65 samples from the United States, an average violation rate of 3 percent.³³¹ In addition to pesticide monitoring, pesticide import alerts are FDA notifications issued when an imported product is detained (without physical examination) from entering U.S. commerce. Product detention happens when the FDA has information of a violation, such as when an imported product has been adulterated or misbranded.³³² From 2015 to 2020, two FDA

³²³ Request letter from the U.S. Trade Representative, April 9, 2020; USITC, hearing transcript, September 17, 2020, 114 (testimony of Jon Maberry, Maberry Packing); WRRC, written submission to the USITC, September 8, 2020, 15–16.

³²⁴ USITC, hearing transcript, September 17, 2020, 119 (testimony of Brad Rader, Rader Farms)

³²⁵ FDA, “Pesticide Residue Monitoring Program Questions and Answers,” content current as of September 15, 2020 <https://www.fda.gov/food/pesticides/pesticide-residue-monitoring-program-questions-and-answers>.

³²⁶ FDA monitors pesticides via three main approaches: its pesticide monitoring program, which tests U.S. product and imports for 800 pesticides; special sampling surveys of specific commodities or pesticide residues of special interest; and the Total Diet Study, which is an ongoing program to monitor contaminants and nutrients in the U.S. diet. FDA, *Pesticide Residue Monitoring Program Fiscal Year 2018, 2020*, 5.

³²⁷ The FDA sampling design targets commodities as well as specific domestic and import sources that are at higher risk of violation. FDA, “Pesticide Residue Monitoring Program Questions and Answers,” September 15, 2020; FDA, *Pesticide Residue Monitoring Program Fiscal Year 2018, 2020*, 11–12.

³²⁸ FDA, *Pesticide Residue Monitoring Program Fiscal Year 2015, 2017*; FDA, *Pesticide Residue Monitoring Program Fiscal Year 2016, 2018*; FDA, *Pesticide Residue Monitoring Program Fiscal Year 2017, 2019*; FDA, *Pesticide Residue Monitoring Program Fiscal Year 2018, 2020*.

³²⁹ For example, in 2015 FDA sampled 52 raspberry fruit and juice products from import sources, and 13 samples from U.S. sources. FDA, *Pesticide Residue Monitoring Program Fiscal Year 2018, 2020*, 11; FDA, *Pesticide Residue Monitoring Program Fiscal Year 2015, 2017*, 40 and 44.

³³⁰ FDA, *Pesticide Residue Monitoring Program Fiscal Year 2015, 2017*, 44; FDA, *Pesticide Residue Monitoring Program Fiscal Year 2016, 2018*, 46; FDA, *Pesticide Residue Monitoring Program Fiscal Year 2017, 2019*, 52; FDA, *Pesticide Residue Monitoring Program Fiscal Year 2018, 2020*, 44.

³³¹ FDA, *Pesticide Residue Monitoring Program Fiscal Year 2015, 2017*, 40; FDA, *Pesticide Residue Monitoring Program Fiscal Year 2016, 2018*, 43; FDA, *Pesticide Residue Monitoring Program Fiscal Year 2017, 2019*, 48; FDA, *Pesticide Residue Monitoring Program Fiscal Year 2018, 2020*, 41.

³³² FDA, *Pesticide Residue Monitoring Program Fiscal Year 2018, 2020*, 10.

import alerts for pesticides were issued, one for fresh raspberries from a supplier in Mexico and one for IQF raspberries from a supplier in Serbia.³³³

A minimum of five consecutive non-violative commercial shipments are required to remove a grower's, manufacturer's, or shipper's product from an import alert.³³⁴ U.S. importers of fresh and processed raspberries seek to use suppliers certified as following good agricultural, handling, and manufacturing practices, and rely on various verification procedures. The high costs associated with detained products and violations, including lost products or sales, incentivize importers to take the necessary steps to minimize violations.³³⁵ For more information on U.S. food safety standards and certifications please refer back to the chapter 1 section "Product Standards and Certifications."

Government Programs

U.S. growers of raspberries for processing have access to some of the government programs that support U.S. agriculture broadly. In 2020, USDA announced the purchase of raspberry puree for distribution to food nutrition assistance programs.³³⁶

Compliance with Food Safety Standards

Processed and fresh raspberries grown in the United States or imported from other sources must comply with the FDA Food, Drug and Cosmetic Act as amended by the Food Safety Modernization Act, which governs the safety of food sold in the U.S. market.³³⁷ For more information, refer to chapter 1, "Product Standards and Certifications."

Factors Affecting Competitiveness

As described in chapter 2 of this report, competitiveness of raspberries for processing and processed raspberry products can be measured by comparing delivered costs, product differentiation, and supplier reliability for Washington products against those of imports. Certain key factors contribute to the competitiveness of Washington processed raspberry products in the U.S. market.³³⁸ While raspberries for processing grown in Washington have product characteristic advantages over imported products, there are a number of other factors—such as the relatively high costs of producing fresh raspberries for

³³³ FDA, "Import Alert 99-05: Detention Without Physical Examination of Raw Agricultural Products for Pesticides," April 5, 2021 https://www.accessdata.fda.gov/cms_ia/importalert_258.html; FDA, Import Alert 99-08, "Detention without Physical Examination of Processed Human and Animal Foods for Pesticides," April 1, 2021 https://www.accessdata.fda.gov/cms_ia/importalert_259.html.

³³⁴ FDA, *Pesticide Residue Monitoring Program Fiscal Year 2018, 2020*, 10.

³³⁵ USITC, hearing transcript, September 17, 2020, 107 and 117–18 (testimony of John Tentomas, Nature's Touch), 115 (testimony of Lance Jungmeyer, FPAA), 116–17 (testimony of Jean-Christophe Hestean, SunOpta), and 118 (testimony of Tony Miller, Cascade International Foods).

³³⁶ USDA, AMS, "Pre-Solicitation Announcement for section 32 Purchase of Red Raspberries," February 28, 2020.

³³⁷ 21 U.S.C. 301 et seq., Public Law 111.353. FDA, *FSMA Facts: Background on the FDA Food Safety Modernization Act (FSMA)*, July 21, 2011.

³³⁸ Some of these competitiveness factors may apply to Oregon and British Columbia, Canada; however, the focus of this analysis is on Washington State.

processing and the pronounced production swings that increase price volatility—that limit the competitiveness of the Washington industry.

Washington industry raspberries have desired product characteristics.

While price is an important factor for most raspberry product purchasers, most buyers also consider certain raspberry characteristics in purchasing decisions. These traits are considered whether a buyer purchases fresh berries for processing (e.g., juice manufacturers) or processed raspberry products (e.g., raspberry jam manufacturers). Important product characteristics of the raspberries include their Brix (sugar) level, berry color, and freeze/thaw characteristics, which can be influenced by the cultivar used, growing conditions, timing of the harvest, and processing method.

Raspberries and processed products produced in Washington have characteristics that are highly desired by buyers for many of their end uses, particularly vis-à-vis unprocessed raspberries grown for the fresh market which are diverted to the fresh for processing market. This diversion of raspberries from the fresh market to the processing market mainly impacts the U.S. market in the form of fresh raspberries for processing that are imported from Mexico and mainly enter the processing market channels for B-grade products.³³⁹ Therefore, Washington raspberry growers compete directly for sales with imports of fresh raspberries for processing from Mexico. Washington grower-processors also compete directly with processed products that are produced in the United States using imported bulk fresh raspberries from Mexico. In both of these cases, the Washington products differ from the products produced with Mexican raspberries in several important ways.³⁴⁰

Raspberries grown for processing in Washington State, Oregon and British Columbia, Canada reportedly have higher Brix levels than the raspberries that are grown for fresh consumption.³⁴¹ Higher Brix levels result in sweeter and more flavorful raspberries, which are important distinguishing features for IQF berries. These features can also be important when these raspberries are used in purees or for juice.³⁴² Higher Brix levels are a key characteristic reported by U.S. processors that differentiates raspberries from the Pacific Northwest from the raspberry seconds from fresh market production that enter the processed market.³⁴³ This is because the cultivars used and the timing of harvest in the Pacific Northwest result in raspberries that are said to require less added sugar than fresh market seconds. As a

³³⁹ As in Mexico, California raspberries are grown exclusively for the fresh market. In both areas, a small share of raspberry production that is not suitable for fresh market sales is diverted to the processing market. Industry representatives, interviews by USITC staff, June 23, 2020, September 24, 2020, October 20, 2020, and November 20, 2020; industry representative, email message to USITC staff, August 21, 2020.

³⁴⁰ Industry representatives, interviews by USITC staff, October 20, 2020 and November 20, 2020; USITC, hearing transcript, September 17, 2020, 21–22, 156 (testimony of Rolf Haugen, Northwest Berry Co-op).

³⁴¹ “Brix” levels measure the percent by weight of sugar solids in a pure sucrose solution. This acts as a measure of the sugar content in foods, with higher Brix levels indicating higher levels of sugars. USDA, AMS, *Technical Procedures Manual*, June 2020, 17. Industry representative, interview by USITC staff, October 20, 2020.

³⁴² Industry representative, interview by USITC staff February 26, 2021.

³⁴³ Industry representatives, interviews by USITC staff, September 15, 2020, and October 20, 2020.

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result, for at least some purchasers, there is said to be limited substitutability between the two products, though the degree varies according to the end use.

Some industry representatives and processors report that, because of the lower Brix levels of the raspberries, those imported from Mexico can make up at most 20 percent of the raspberry mix for their processed products, including IQF crumbles that are used in jams, purees, and juice concentrate.³⁴⁴ However, other processors note that while raspberries from Mexico once were not as substitutable, growers in Mexico have adapted and have begun picking berries later, which has led to Brix levels that are closer to those grown in the Pacific Northwest.³⁴⁵ As a result, some processors report that raspberry seconds from Mexico have become more substitutable with PNW berries, potentially allowing for substitution rates as high as 50 percent in some of their processed products.³⁴⁶

Color continues to be a consideration for processed raspberry products, however, and the raspberry seconds from Mexico reportedly are lighter in color than those grown in Washington and Oregon. This limits substitutability for some processors, as the darker color is considered a positive characteristic in IQF berries and in purees.³⁴⁷ However, some industry representatives report that beet juice can be used as a natural ingredient to improve color, which allows for increased substitutability.³⁴⁸ Some have also reported that raspberry seconds can complement the use of Pacific Northwest raspberries. Because the color of Pacific Northwest berries can actually be too dark for some uses, they report that mixing in small shares of raspberry seconds from Mexico can brighten the end product.³⁴⁹

Another distinguishing product characteristic is related to the freezing method used by processors. For frozen whole raspberries and crumbles, the firmness of the raspberry when thawed is important. Because the vast majority of IQF raspberries in Washington are frozen using tunnels, they freeze more quickly than in the static freezing process that is used by some U.S. import suppliers.³⁵⁰ When raspberries are frozen more quickly, they retain their shape better than when frozen slowly, because longer freezing times result in greater cellular damage to the walls of the raspberries.³⁵¹ Whole berries or crumbles that better retain their shape when thawed and when processed can act as an advantage when the processor would like to have whole pieces or whole berries distinguishable in the end product, such as for certain jams or fillings.³⁵²

³⁴⁴ Industry representatives, interviews by USITC staff, September 15, 2020, October 20, 2020, November 20, 2020, and November 23, 2020.

³⁴⁵ Industry representatives, interviews by USITC staff, October 20, 2020, and October 26, 2020.

³⁴⁶ Industry representatives, interviews by USITC staff, September 15, 2020, October 20, 2020, and November 20, 2020.

³⁴⁷ Industry representatives, interviews by USITC staff, September 15, 2020, October 20, 2020, and November 20, 2020.

³⁴⁸ Industry representative, interview, by USITC staff, October 19, 2020, and November 20, 2020.

³⁴⁹ Industry representative, interview by USITC staff, October 20, 2020; industry representative, email message to USITC staff, June 1, 2020.

³⁵⁰ This statement applies to IQF raspberries in Canada and Oregon as well.

³⁵¹ Industry representatives, interviews by USITC staff, September 24, 2020, and February 3, 2021.

³⁵² Industry representative, interview by USITC staff, November 20, 2020.

Another distinguishing characteristic of the Washington industry is its strong reputation for food safety. This stems from Washington raspberries' traceability, in large part owing to the structure of the industry. The larger farm sizes and the degree of vertical integration within the industry allows Washington processed raspberry products to more easily be traced to their source.³⁵³ Source tracing is more difficult in U.S. supplier industries like Mexico, Chile, and Serbia, which are characterized by large numbers of small farms which are not vertically integrated with processors.³⁵⁴ The vertical integration in Washington allows the sources of any discovered food safety issues to be more easily pinpointed and therefore quickly addressed, and all affected product to be quickly and easily identified and removed from shelves without the widespread loss of product.³⁵⁵ In addition, the highly automated nature of the Washington industry, including mechanical harvesting, minimizes the number of times raspberries are touched, which reportedly lowers the risk of infection by certain organisms, including E. coli and norovirus.³⁵⁶ These traceability and food safety competitive advantages are strongest for products that will be consumed uncooked or unpasteurized, though for products that will eventually be heated or cooked, this may not have a significant impact on purchasing decisions.

One challenge for Washington State producers is in the production of organic raspberries. While demand for organic products continues to rise in the United States, including demand for organic processed raspberries (for baby food, for example), there is limited ability to produce organic raspberries for processing in the Pacific Northwest. The damp climate contributes to pest pressures in the region, and employing hoop houses, which would help protect plants and increase yields, would require hand harvesting—a costly production system that is not used in Washington. As a result, Washington producers are currently not able to meet the rising U.S. demand for organic processed raspberries.³⁵⁷

Technology has only partially mitigated higher U.S. input costs.

The U.S. industry in Washington State has invested in certain technologies in harvesting and processing raspberries to maximize efficiency and minimize costs. These efficiency gains include those for

³⁵³ Although the farm sizes in British Columbia, Canada and Oregon are typically smaller than in Washington, these locations have a small number of growers, thus traceability is not as problematic as in Chile and Serbia. Where there are many small growers supplying the processors.

³⁵⁴ USITC, hearing transcript, September 17, 2020, 45–46 (testimony of Pablo Herrera, Chilealimentos); industry representatives, interviews by USITC staff, June 23, 2020, July 24, 2020, July 29, 2020, September 24, 2020, October 19, 2020, and February 23, 2021; U.S. government representative, interview by USITC staff, October 28, 2020.

³⁵⁵ Industry representatives, interviews by USITC staff, June 23, 2020, and September 24, 2020.

³⁵⁶ Growers in Canada and Oregon also use mechanical harvesting. USITC, hearing transcript, September 17, 2020, 119 (testimony of Brad Rader, Rader Farms); industry representative, interview by USITC staff, June 23, 2020.

³⁵⁷ NW Berry Co-op, written submission to the USITC, September 24, 2020, 5; Miller, written testimony to USITC, September 8, 2020, 2; USITC, hearing transcript, September 17, 2020, 29–30, 154–55 (testimony of John Tentomas, Nature's Touch) and 154 (testimony of Jon Maberry, Maberry Packing); industry representatives, interviews by USITC staff, August 7, 2020, September 24, 2020, January 27, 2021, and March 11, 2021; industry representative, email message to USITC staff, June 1, 2020.

harvesting and processing raspberries.³⁵⁸ Some of these methods include using machine harvesting and equipment to clean, sort, and process raspberries, and continuing to invest in technology and practices that can lower labor and other production costs.³⁵⁹ However, these methods have a mixed impact on the competitiveness of raspberries grown in Washington State. While they lead to some of the positive product characteristics and food safety advantages noted above, they may also limit profitability in some cases. For example, mechanical harvesting allows greater volumes of raspberries to be harvested faster and with less labor. However, this method of harvesting, as well as the use of IQF tunnels, can lead to lower shares of whole berries than handpicking and the use of static freezing methods.³⁶⁰

Although mechanical harvesting lowers labor costs, industry representatives report that such costs—for planting, pruning, maintaining plants, spraying, and harvesting—continue to be a substantial component of the total cost of production of processed raspberries in the United States.³⁶¹ In one 2015 study of the costs of growing raspberries for processing, labor costs make up over 30 percent of total costs of production, on average.³⁶² Industry representatives report that these costs have increased in recent years and suggest that labor costs alone can reach up to 40 percent of total production costs.³⁶³

Several factors combine to drive up labor costs in the U.S. industry that grows raspberries for processing. First, the wage rates are higher than those in other producing markets. Second, industry representatives report that regulations also increase labor costs.³⁶⁴ Such regulations require the monitoring of working conditions and require safety certifications for certain employees on farms and processing facilities. In addition, during both the peak season and the off-season, when labor moves to other regions, the industry reports labor scarcity as growers and processors both compete for limited labor. This labor scarcity also leads to higher labor costs since wage rates increase during these periods

³⁵⁸ WRRRC, written submission to the USITC, September 24, 2020, 2; USITC, hearing transcript, September 17, 2020, 19, 16, 168 (testimony of Rolf Haugen, Northwest Berry Co-op) and 29 (testimony of John Tentomas, Nature’s Touch).

³⁵⁹ Bratt, “Officials Hearing about Bleak 2018 Market Situation,” July 11, 2018; WRRRC, written submission to the USITC, September 24, 2020, 2, 4; USITC, hearing transcript, September 17, 2020, 16 (testimony of Rolf Haugen, Northwest Berry Co-op); industry representative, interview by USITC staff, October 20, 2020.

³⁶⁰ Some industry representatives suggest the degree to which this occurs depends on the quality of the equipment used. Industry representatives, interviews by USITC staff, September 24, 2020, February 3, 2021, and March 11, 2021; USITC, hearing transcript, September 17, 2020, 22–23, 167 (testimony of Ryan Commons, Driscoll’s, Inc.).

³⁶¹ In a 2015 estimate of costs, wage rates were reported as \$0.25/plant for piece rate labor, \$15/hour for hand labor/general labor, \$17/hour for drivers, and \$22/hour for spray crew. Washington State reports a \$13.69 minimum wage for agricultural labor in 2021 that also applies when paying a piece rate, and the state will begin phasing in overtime pay for agricultural workers. Galinato and DeVetter, “2015 Cost Estimates of Establishing and Producing Red Raspberries,” 2015; Washington State Department of Labor Industries, Workers Rights, Agricultural Policies, Wages, accessed May 18, 2021. USITC, hearing transcript, September 17, 2020, 15–16 (testimony of Rolf Haugen, Northwest Berry Co-op); industry representatives, interviews by USITC staff, October 20, 2020, December 18, 2020, January 27, 2021, and March 1, 2021.

³⁶² Labor’s share of total costs in this estimate are 14.2 percent in the first year of planting, 37.9 percent in the second year, and 36.9 percent in years 3–6. Galinato and DeVetter, “2015 Cost Estimates of Establishing and Producing Red Raspberries,” 2015, 9.

³⁶³ Industry representative, interview by USITC staff, October 20, 2020; Galinato and DeVetter, “2015 Cost Estimates of Establishing and Producing Red Raspberries,” 2015, 2–5.

³⁶⁴ USITC, hearing transcript, September 17, 2020, 16 (testimony of Rolf Haugen, Northwest Berry Co-op); industry representative, interview by USITC staff, November 24, 2020.

as growers and processor seek to attract and maintain employees.³⁶⁵ Estimates of the degree to which labor costs are higher in the United States than in other producing markets vary, with some suggesting that they can be 20 to 30 times as high as labor costs in other markets.³⁶⁶

Thus, in spite of widespread adoption of technology, high input costs, of which labor is one, can make it nonetheless difficult for U.S. producers to compete with imports of raspberry seconds from Mexico as well as the processed products made from them.³⁶⁷ Industry representatives report that the seconds imported from Mexico are being sold at prices well below prices of U.S. raspberries. In some cases, industry representatives report that these seconds may sell below the break-even price for U.S. growers. Estimates on prices vary and are anecdotal, as price data are limited. But some report prices as low as 50 to 75 percent below U.S. market prices, and others suggest these raspberries are being sold for about one-third of Washington costs of production.³⁶⁸ As discussed in chapter 5, raspberry seconds from Mexico are reported to have little to no value assigned to producers of raspberries for the fresh market because they are considered a byproduct, or residual, of fresh production that growers would otherwise have to pay to dispose of.³⁶⁹ One industry representative reports that these berries represent roughly 15 percent of production in Mexico but account for only 1 percent of their revenue from sales.³⁷⁰

These imports are reported to have particularly impacted those growers in the Pacific Northwest who grow older cultivars, such as Meeker and Willamette, or who do not have their own extensive processing equipment. These growers have a lower share of berries that are IQF product quality, and they must sell the rest as B-grade product. However, the raspberry seconds from Mexico (equivalent to one-third of total U.S. production of fresh raspberries for processing in 2019) enter U.S. marketing channels as B-grade processed products, competing with Washington B-grade product.³⁷¹ While adopting improved cultivars (such as WakeHaven and WakeField) to increase yields and expand the share of high-value whole IQF berries in their total production could help U.S. growers facing competition from raspberry seconds, growers must pay a fee for their use. As a result of the higher costs due to the fee and the recent introduction of the newer cultivars, only some growers have switched

³⁶⁵ WRRRC, written submission to the USITC, September 24, 2020, 4; industry representatives, interviews by USITC staff, November 24, 2020, December 18, 2020, and January 27, 2021; USITC, hearing transcript, September 17, 2020, 16 (testimony of Rolf Haugen, Northwest Berry Co-op).

³⁶⁶ Bratt, "Officials Hearing about Bleak 2018 Market Situation," July 11, 2018.

³⁶⁷ Industry representatives, interviews by USITC staff, October 19, 2020, November 23, 2020, and December 18, 2020; USITC, hearing transcript, September 17, 2020, 16 (testimony of Rolf Haugen, Northwest Berry Co-op).

³⁶⁸ WRRRC, written submission to USITC, September 24, 2020, 1–2; Northwest Berry Co-op, written submission to the USITC, September 24, 2020, 1; USITC, hearing transcript, September 17, 2020, 13 (testimony of Brad Rader, Rader Farms) and 82–83 (testimony of Steve Orava, King & Spalding); industry representatives, interviews by USITC staff, October 20, 2020, and November 20, 2020.

³⁶⁹ WRRRC, written submission to the USITC, September 24, 2020, 1–2, 4–5; industry representative, interview by USITC staff, November 20, 2020. USITC, hearing transcript, September 17, 2020, 82–83 (testimony of Steve Orava, King & Spalding) and 67 (testimony of Jon Maberry, Maberry Packing).

³⁷⁰ USITC, hearing transcript, September 17, 2020, 18 (testimony of Rolf Haugen, Northwest Berry Co-op).

³⁷¹ Industry representatives, interviews by USITC staff, October 19, 2020, October 20, 2020, and November 20, 2020; USITC, hearing transcript, September 17, 2020, 101 (testimony of Jean-Christophe Hestean, SunOpta); WRRRC, written submission to the USITC, September 8, 2020, 4.

production to these varieties.³⁷² Some industry representatives have raised concerns about the risk of not recovering fees for use in all years, though reports vary.³⁷³

Finally, the high cost of processing equipment and processors' limited ability to use the IQF equipment year-round may limit the ability of some growers to access this technology. Most processors report that they maintain only enough processing capacity to support a level of berries that is guaranteed annually.³⁷⁴ All or most of these berries are raspberries that they grow themselves in a normal year, rather than a maximum potential yield that might occur in some years or through purchasing large volumes of raspberries from other growers. This is because the equipment is costly and because they have limited access to other products during the off-season, which would be needed to make it cost effective for processors to increase capacity.³⁷⁵ Processors are therefore not able to maintain additional capacity for high-yielding years. As a result, some growers may be unable to locate enough IQF processing capacity in years when they harvest higher IQF-quality yields and are therefore unable to earn additional income from those berries, which they must sell as B-grade. This further leads to a B-grade glut on the market in those years, lowering the price of their products.³⁷⁶

Highly localized production benefits the industry but can create vulnerabilities.

The U.S. raspberry for processing industry is confined to a small part of the state of Washington. This localization creates advantages for those U.S. growers and processors, as well as vulnerabilities that can lead to volatility in the domestic supply. The high concentration of growers in a small region has benefited the industry because it gives processors convenient access to the bulk of production of their raw material input. This, in turn, contributes to lower production costs for processed products, including transportation and storage costs.

The localization of production of fresh raspberries for processing in Washington, however, can also have detrimental effects. For example, disruptions caused by weather events or pest pressures will likely impact a large share of production.³⁷⁷ Weather events, such as an extreme freeze, can lead to lower production levels than anticipated.³⁷⁸ And a particularly rainy season in the state, which has become more common, will leave fewer whole berries available for IQF products. With too much rain, raspberries become soft, break more easily, and become more susceptible to mold. When this occurs

³⁷² Industry representatives, interviews by USITC staff, August 7, 2020, and October 20, 2020.

³⁷³ Industry representative, interview by USITC staff, November 24, 2020.

³⁷⁴ Industry representative, interview by USITC staff, November 24, 2020.

³⁷⁵ Industry representatives, interviews by USITC staff, October 19, 2020, and November 24, 2020; industry representative, email message to USITC staff, August 21, 2020.

³⁷⁶ Industry representatives, interviews by USITC staff, November 24, 2020, March 1, 2021, and March 11, 2021.

³⁷⁷ Gallagher, "Last Winter Was Bad for Whatcom County," October 17, 2019; industry representatives, interviews by USITC staff, July 29, 2020, September 24, 2020, October 26, 2020, and February 26, 2021; J.M. Smucker Co., written submission to the USITC, December 4, 2020, 1.

³⁷⁸ Gallagher, "Last Winter was Bad for Whatcom County," October 17, 2019; industry representative, interview by USITC staff, March 11, 2021; J.M. Smucker Co., written submission to the USITC, December 4, 2020, 1.

and supplies of domestic IQF-grade berries are limited, the share of B-grade raspberry products, sold at lower prices, necessarily increases.³⁷⁹

The pronounced production swings that localized production can foster are problematic for the industry in terms of both their raspberries' delivered costs and their reliability of supply. A number of buyers of processed raspberry products have noted that swings in U.S. production volume lead to volatility in pricing from year to year. Buyers have sought to diversify their sourcing to include raspberries from other suppliers, including imports.³⁸⁰ Purchasers report that years with extremely high prices have driven demand for U.S. raspberries for processing down. When prices increase, buyers of raspberries and processed raspberry products as ingredients shift to using different fruits or synthetic raspberry flavorings, in addition to turning to imports.³⁸¹ Similarly, buyers of IQF berries are able to replace raspberries with other berries if prices go up too high or if supply varies significantly from year to year.³⁸² For example, a berry mix might decrease the share of raspberries used or replace them with a different fruit, like cherries or pomegranates.³⁸³

³⁷⁹ Industry representatives, interviews by USITC staff, July 29, 2020, September 24, 2020, and October 20, 2020.

³⁸⁰ USITC, hearing transcript, September 17, 2020, 27 (testimony of John Tentomas, Nature's Touch); J.M. Smucker Co., written submission to the USITC, December 4, 2020, 1; industry representatives, interviews by USITC staff, July 24, 2020, July 29, 2020, September 24, 2020, and October 20, 2020.

³⁸¹ Industry representatives, interviews by USITC staff, July 29, 2020, September 15, 2020, October 19, 2020, and October 20, 2020.

³⁸² Industry representatives, interviews by USITC staff, September 24, 2020, and October 19, 2020.

³⁸³ USITC, hearing transcript, September 17, 2020, 27 (testimony of John Tentomas, Nature's Touch); industry representatives, interviews by USITC staff, September 24, 2020, and October 19, 2020.

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Chapter 4

Canada

Summary

Canada is a minor global producer and exporter of processed raspberry products, almost exclusively serving its home market and the U.S. market. Nearly all processed raspberry production in Canada is in the Fraser Valley, British Columbia, which is just over the border from Washington State.³⁸⁴ Canadian processors in British Columbia primarily convert fresh berries from Canada and the United States into individually quick frozen (IQF) raspberries, straight pack, puree, juice concentrate.³⁸⁵ Canada also has a competitive repacking industry, which sources large volumes of frozen raspberries from U.S., Canadian, Chilean, and Serbian producers to supply the U.S. market with IQF raspberries and frozen mixed berry products that include raspberries.³⁸⁶ Canadian exports of frozen processed raspberry products to the United States increased from 2015 to 2020, even as production of domestic fresh raspberries for processing fell because of poor weather, rising land rents, low yields, and farmers pulling canes (raspberry plants) to grow other berries. To export more to the U.S. market, Canadian processors imported increasing volumes of fresh and frozen raspberries as inputs.

The raspberry industries in Washington and British Columbia have a special relationship because of their geographical closeness, similar production systems and cost structures, shared focus on processing, and cross-border activity.³⁸⁷ Canadian frozen raspberry products remain competitive in the United States due to Canadian processors' access to fresh raspberries for processing grown in both British Columbia and Washington. However, Canadian growing and processing costs are considered to be higher than those in the United States, due to higher land costs.³⁸⁸ Despite high delivered costs, Canadian IQF repackers benefit from access to large volumes of IQF raspberries from Canadian and imported sources.

³⁸⁴ Industry representative, interview by USITC staff, August 7, 2020; USITC, hearing transcript, September 17, 2020, 8 (testimony of Henry Bierlink, WRRRC); Government of Canada, written submission to the USITC, December 4, 2020, 2.

³⁸⁵ Straight pack are block frozen raspberries packed in their own juices without sugar. For information on product definitions, see chapter 1 ("Introduction").

³⁸⁶ Industry representatives, interviews by USITC staff, June 23, 2020, July 24, 2020, and August 7, 2020; USITC, hearing transcript, September 17, 2020, 14 (testimony of Brad Rader, Rader Farms) and 140–141 (testimony of John Tentomas, Nature's Touch).

³⁸⁷ Industry representatives, interviews by USITC staff, October 20, 2020, and March 1, 2021.

³⁸⁸ Evidence that Canada's overall production costs for processing frozen raspberries are higher than those in the United States includes the lack of new investment in Canada for such products as laser sorters, the purchase of U.S. land by Canadian growers, and the movement of certain assets from British Columbia to Washington, including the purchase of an aseptic line from a bankrupt British Columbia cooperative. Industry representative, interview by USITC staff, March 1, 2021.

Industry Structure

Growers in British Columbia grow raspberries primarily for processing, while growers in Ontario and Quebec produce almost entirely for fresh consumption. The Canadian processed raspberry industry primarily serves the domestic and U.S. markets and sells the full range of frozen products produced from fresh raspberries, including IQF whole and broken raspberries, straight pack raspberries, raspberry puree, and raspberry juice concentrate, among others. Virtually all commercial processing occurs in British Columbia. For the most part, Canadian raspberry processors are not vertically integrated with local growers to a significant degree.³⁸⁹

Regions

Raspberries are grown in all Canadian provinces. However, almost all commercial production is concentrated in three provinces: British Columbia, Quebec, and Ontario (figure 4.1). These provinces together account for over 97 percent of Canadian production by volume.³⁹⁰ Nearly all (99 percent) Canadian raspberries for processing are grown in British Columbia, with most production occurring in the Fraser Valley.³⁹¹ In 2019, British Columbia produced 6,789 metric tons (mt) of raspberries.³⁹² The processing industry is centered around Abbotsford, just over the U.S.-Canadian border from Washington. Raspberry production in other provinces is almost exclusively focused on supplying the fresh market, largely to meet domestic demand.³⁹³

³⁸⁹ Industry representatives, interviews by USITC staff, February 26, 2021, and March 1, 2021.

³⁹⁰ Government of Canada, written submission to the USITC, December 4, 2020, 1.

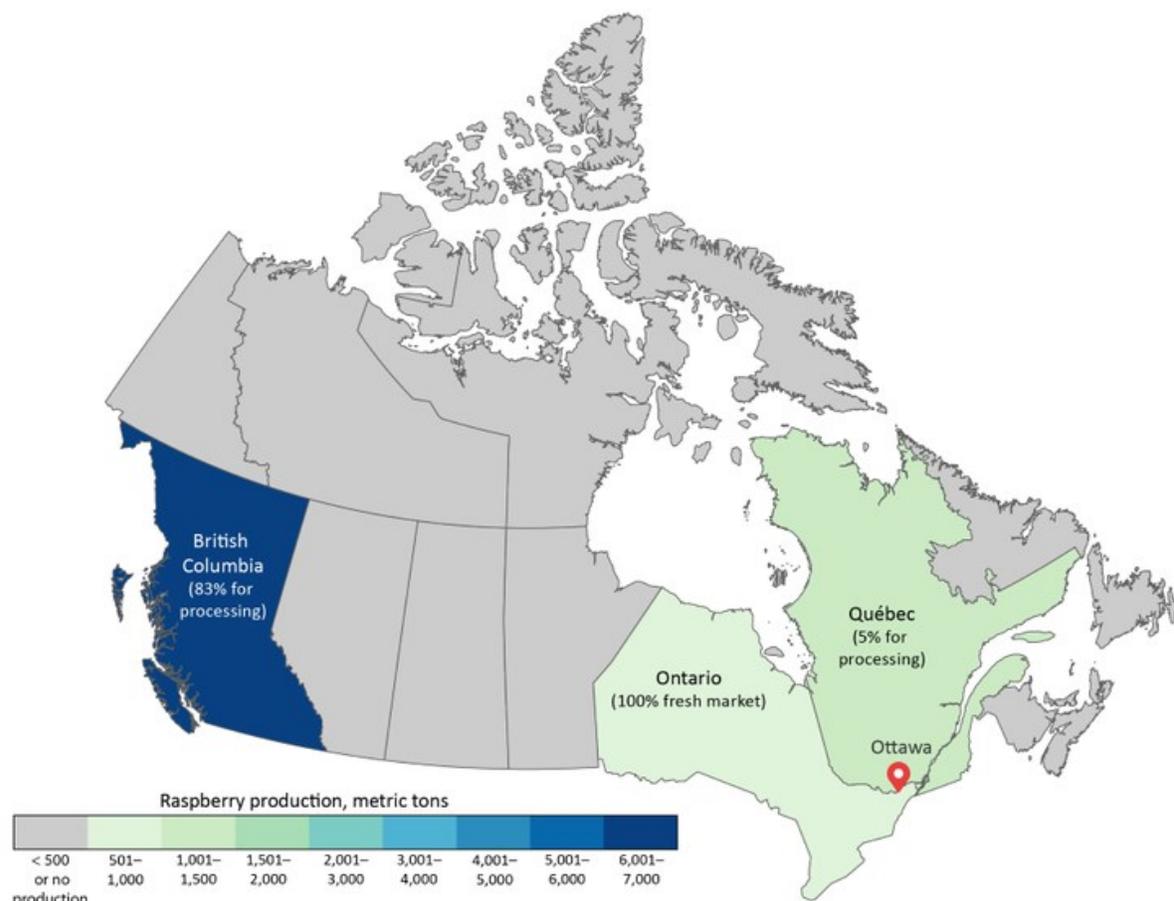
³⁹¹ Government of Canada, written submission to the USITC, December 4, 2020, 2.

³⁹² Table 1: Canadian Raspberry Marketed Production, by Province, adapted from Government of Canada, written submission to the USITC, December 4, 2020, 2.

³⁹³ Government of Canada, written submission to the USITC, December 4, 2020, 2; table 4: Canada's Fresh Raspberry Trade, 4.

Figure 4.1 Raspberry production in Canada, by province, 2019

In metric tons (mt). Underlying data for this figure can be found in [appendix H table H.13](#).



Source: Government of Canada, written submission to the USITC, December 4, 2020, table 1, 2.

Note: In 2019, 83 percent of raspberries produced in British Columbia (5,615 mt) and 5 percent of raspberries produced in Quebec (61 mt) were sold to processors. Raspberries from other provinces are sold to the fresh market. Thus, British Columbia accounts for 99 percent of Canadian production of raspberries for processing (5,676 mt).

Industry Composition

The British Columbian raspberry industry is small and concentrated. It includes two integrated grower-processors (one of which focuses on the Canadian domestic market), a handful of nonintegrated processors, and growers of various sizes that do not have processing capacity.³⁹⁴ Along with declines in acreage and production volume, the number of growers of raspberries for processing has also been

³⁹⁴ Industry representative, interview by USITC staff, March 5, 2021; BC Raspberries, “U-Pick or Buy Fresh Raspberries,” accessed March 12, 2021.

steadily falling from roughly 500 at the industry's peak in the 1980s.³⁹⁵ Estimates of the current number of growers vary from 90 to 175.³⁹⁶

There are eight raspberry processors in British Columbia.³⁹⁷ These processors reportedly process fresh berries grown in Canada, the United States, and other countries for IQF, straight pack, puree, and juice concentrate.³⁹⁸ Two Canadian processors, Berryhill Foods and Pacific Coast, account for most of the frozen products processed from fresh volume, while the remainder process only a few hundred thousand pounds of raspberries annually.³⁹⁹ Several, including a large processor called Nature's Touch, specialize in IQF, producing single berry bags or combining raspberries with other berries (blackberries, blueberries, and strawberries) to make frozen mixed berry packs for sale in Canada and export.⁴⁰⁰ The amount of IQF raspberries produced from Canadian fresh raspberries is limited, estimated at 900 mt (two million pounds) annually, so Nature's Touch also imports IQF berries from other sources.⁴⁰¹

Industry Organization

The British Columbia Raspberry Industry Development Council (RIDC) is a Canadian grower organization supported by a one-cent-per-pound levy on all raspberries grown in the province. RIDC promotes raspberries and their use through information and educational services to growers, and it also helps match raspberry product purchasers with growers and processors. The RIDC board consists of growers, processors, and government representatives, and RIDC's Research and Development Committee funds research projects. The value of RIDC approved projects is about \$40,000.⁴⁰²

In addition, the BC Raspberry Growers Association (BCRGA) represents the raspberry growers of British Columbia regarding municipal, provincial, and federal governmental legislation and affairs. Growers in

³⁹⁵ Government of Canada, written submission to the USITC, December 4, 2020, 3. Quebec has about 230 raspberry growers, while the Ontario Berry Growers Association reports less than 100 raspberry growers for that province.

³⁹⁶ Government of Canada, written submission to the USITC, December 4, 2020, 3. The Raspberry Industry Development Council of BC's video, however, states that there are about 175 growers in Fraser Valley, some of which may be fresh market growers. "BC Raspberries - Picked Fresh," September 18, 2013, accessed March 31, 2021 <https://www.youtube.com/watch?v=FO83okyALs0>.

³⁹⁷ These include BC Frozen Foods (IQF and straight pack); Berryhill Foods Inc. (IQF, straight pack, sieved puree, seedless puree, bulk frozen, juice grade); Blue Ridge Produce Inc. (IQF); Kahlon Farms (IQF, straight pack, sieved puree, seedless puree, juice stock, juice concentrate); Nature's Touch (IQF); Pacific Coast Fruit Products Ltd. (straight pack (block frozen), pasteurized and non-pasteurized puree with or without seeds, concentrated puree, NFC or single strength juice, juice concentrate, essence, pomace, sugar and other blends); Triple Crown Packers/Bergen Farms (IQF, juice); and Westberry Farms (IQF). BC Raspberry Industry Development Council, "Find Raspberries," accessed March 12, 2021.

³⁹⁸ Industry representative, interview by USITC staff, August 7, 2020.

³⁹⁹ Industry representative, interview by USITC staff, October 20, 2020.

⁴⁰⁰ Headquartered in Saint-Laurent, Quebec, Canada, Nature's Touch also has a freezing and packing operation in Abbotsford, BC, and a packing operation in Front Royal, VA. Nature's Touch, "Frozen Fruits," accessed June 1, 2021 <https://www.naturestouchfrozenfoods.com/en>; BC Raspberry Industry Development Council, "Find Raspberries," accessed March 12, 2021; industry representative, interview by USITC staff, June 1, 2020.

⁴⁰¹ Industry representative, interview by USITC staff, August 7, 2020; industry representative, email message to USITC staff, March 29, 2021.

⁴⁰² BC Raspberry Industry Development Council, "About," accessed March 12, 2021. In this chapter and throughout the entire report "\$" refers to U.S. dollars.

the Pacific Northwest on both sides of the U.S.-Canada border also have a history of mutual collaboration, and the British Columbian raspberry industry has benefited from the research and breeding programs sponsored by the Washington Red Raspberry Commission (WRRC).⁴⁰³ A Canadian raspberry cooperative operated in the 2000s but no longer exists.⁴⁰⁴

Cultivars

British Columbia's production relies on about 10 cultivars of raspberries, nearly all intended for processed supply channels.⁴⁰⁵ The Meeker variety, which is not fee for use, is the predominant raspberry variety for processing in the Fraser Valley, while the Chemainus, Rudi, and Squamish cultivars are also popular.⁴⁰⁶ The majority of British Columbia's raspberry cultivars are excellent for machine harvesting. Meeker currently represents about 35 percent of Canadian fresh raspberries for processing, but this variety is not well suited for processing into IQF raspberries.⁴⁰⁷

Production System

As in the United States, Canadian production and harvesting methods vary depending on the intended market segment—fresh or frozen (i.e., processed). The harvesting method and harvest season in Canada also depend on how raspberries are produced (open field or high tunnel), geographic location, and variety. Overall, grower production methods in British Columbia and Washington are quite similar. Generally, the Canadian raspberry harvest season runs from June to early August.⁴⁰⁸

Raspberries for processing in British Columbia are typically grown in open fields and machine harvested to reduce the cost of production, particularly labor costs. As in Washington, the raspberry varieties chosen for machine harvesting are designed to allow growers to pick the fruit efficiently with less concern for mitigating berry damage.⁴⁰⁹ As noted in chapter 3, labor associated with machine harvesting of raspberries not intended for IQF typically includes three workers per harvester. For raspberries intended for IQF, several more workers are typically added to the harvester to use smaller holding containers that minimize damage to the berries once picked.⁴¹⁰

Products and Supply Chain

The British Columbian processing industry produces the full range of raspberry products, including IQF, straight pack (block frozen), puree, and juice stock or concentrate. Although fresh raspberries for

⁴⁰³ BC RIDC, written submission to the USITC, December 7, 2020, Summary; Government of Canada, Province of British Columbia. AgriService BC, *Berry Production Guides*, accessed March 31, 2021.

⁴⁰⁴ Industry representative, interview by USITC staff, June 23, 2020.

⁴⁰⁵ U.S. government representative, email message to USITC staff, September 10, 2020.

⁴⁰⁶ Industry representative, interview by USITC staff, October 20, 2020.

⁴⁰⁷ Industry representative, interview by USITC staff, February 24, 2021.

⁴⁰⁸ USITC, hearing transcript, September 17, 2020, 26 (testimony of Ryan Commons, Driscoll's, Inc.); industry representative, interview by USITC staff, March 1, 2021.

⁴⁰⁹ USITC, hearing transcript, September 17, 2020, 22 (testimony of Ryan Commons, Driscoll's, Inc.).

⁴¹⁰ Industry representative, interview by USITC staff, October 20, 2020.

Raspberries for Processing

processing are sold into all of those product channels, Canadian growers sell mostly to processors serving non-IQF markets because of the types of cultivars they raise.⁴¹¹ By volume, the percentage of Canadian fresh raspberries intended for IQF was roughly 14 percent in 2020.⁴¹² Both Washington and British Columbia supply raspberry puree to large jam companies, although one industry representative reported that while the Canadian industry continues to focus on puree, Washington processors have shifted more production to IQF berries, typically a higher-priced product.⁴¹³

Canadian production of frozen raspberry products continues even as Canadian acreage shifts out of fresh raspberries grown for processing and into other berries, particularly blueberries.⁴¹⁴ Canada now imports fresh raspberries from the United States to fill the gap left behind by Canadian growers. Like other agricultural processing industries, Canadian raspberry processors must have access to enough fresh raspberries to cover their operating costs and see a return on their capital investments.

As noted earlier, Canada also has a competitive repacking industry selling IQF raspberries and frozen mixed berry products to the U.S. market. IQF raspberries can be sourced from processors in the United States, Canada, or other high-volume suppliers because they are shipped already frozen. Nature's Touch is reportedly the largest repacker of IQF retail berry bags (both single berry and mixed berries) in Canada and the third largest in the United States. To meet its needs, Nature's Touch procures a large volume of IQF raspberries from sources outside of Canada and the United States.⁴¹⁵

While profitability data by product are not readily available either for the Canadian industry as a whole or for individual processors, industry sources note that IQF berries normally fetch the highest price of all frozen raspberry products from purchasers. However, the IQF segment of the processing industry can also be more labor intensive.⁴¹⁶ Canadian and American industry sources note that more IQF and raspberries intended for IQF are sourced from Washington than British Columbia because the best quality IQF raspberries require replanting vines every three or four years. Most Canadian growers have insufficient capital to replant often enough to compete in that market segment.⁴¹⁷

Canada does not produce organic raspberries for processing, reportedly because of the high labor costs associated with organic production. In addition, industry representatives report that growers cannot

⁴¹¹ Industry representative, interview by USITC staff, February 26, 2021.

⁴¹² Industry representative, interview by USITC staff, February 24, 2021.

⁴¹³ The price growers receive for block frozen raspberries is generally lower than for IQF berries. However, depending on supply conditions, in some years there is almost no difference between IQF and block frozen berry prices. The price for juice stock is typically the lowest of the processed raspberry products every year. Industry representative, interview by USITC staff, July 24, 2020; industry representative, interview by USITC staff, October 20, 2020.

⁴¹⁴ According to industry sources, blueberries require less labor and are lower cost than raspberries. In particular, they require less pruning. Industry representatives, interviews by USITC staff, August 7, 2020, and February 24, 2021.

⁴¹⁵ Industry representative, interview by USITC staff, July 24, 2020.

⁴¹⁶ The price premium of IQF raspberries above the price of straight pack can vary between \$0.10–\$0.60 per lb. Industry representative, interview by USITC staff, March 1, 2021.

⁴¹⁷ Industry representative, interview by USITC staff, August 7, 2020.

grow organic berries in open fields in British Columbia because of climate requirements, since dry conditions are critical during certain periods.⁴¹⁸

Production, Consumption, and Trade

Production and Consumption

Canada remains a minor global supplier of raspberries; its global rank has deteriorated over time as domestic production declined and as other countries increased production.⁴¹⁹ In 2019, Canada was the 12th-largest global producer by volume, accounting for only 1.1 percent of total global production. One factor depressing Canada's global ranking is low yield rates, which are a persistent problem. According to data from the Food and Agriculture Organization of the United Nations (FAO), Canada's raspberry production yield of 4.9 metric tons (mt)/hectare (ha) in 2019 was quite low compared to those of the United States (15.2 mt/ha) and Mexico (18.2 mt/ha) over the same period (table 4.1).⁴²⁰ Comparing regions that primarily grow raspberries for processing, British Columbia's yield of 6.2 mt/ha in 2019 was still substantially lower than the Oregon/Washington yield of 9.0 mt/ha.⁴²¹ Poor yields for British Columbia in contrast to those of U.S. producers are not new or a one-year phenomenon; government data indicate a range of 5.8–7.7 mt/ha during 2015–19. These are consistently lower than yields in Washington and Oregon.

Total Canadian raspberry production fell from 10,868 mt in 2015 to 9,145 mt in 2019, declining almost 15.9 percent by volume in this period (table 4.1).⁴²² Because most raspberries are grown in British Columbia, provincial trends drive national production. British Columbia's marketed production, most of it raspberries for processing, declined from 8,068 mt in 2015 to 6,789 mt in 2019.⁴²³ According to Canadian officials, the production decline is due to factors such as weather, increasingly competitive market conditions, and rising input costs.⁴²⁴ Canadian officials attribute the substantial decrease in British Columbia's raspberry production in 2019 to very cold weather, noting that the Fraser Valley experienced the coldest February on record, causing damage to the raspberry plants that reportedly resulted in nearly a 40 percent crop loss.⁴²⁵ A 21.0 percent decline in planted area is another important factor: British Columbian raspberry growers lost 117 ha between 2015 and 2019. In addition, Canadian

⁴¹⁸ Industry representative, interview by USITC staff, July 24, 2020.

⁴¹⁹ In 2000, Canada was the eighth-largest global producer of raspberries by volume and accounted for 4 percent of global production. FAO, FAOSTAT database, Crops: Raspberries, accessed January 5, 2021.

⁴²⁰ Country data are not directly comparable because the United States and Mexico grow a higher percentage of raspberries for the fresh market, with cultivars producing higher yields. Yield rates for BC's raspberries for processing sector were compiled by USITC staff based on BC provincial data from Statistics Canada.

⁴²¹ For a multi-country and multi-region comparison of yields, see chapter 2, "Cross-country comparison of competitiveness."

⁴²² There is limited organic raspberry production in Canada, reportedly accounting for 10 percent of total Canadian raspberry acreage. Government of Canada, *Crop Profile for Raspberry in Canada 2016*, October 18, 2016, 1.

⁴²³ Table 1: Canadian Raspberry Marketed Production, by Province, in Government of Canada, written submission to the USITC, December 4, 2020, 2.

⁴²⁴ Government of Canada, written submission to the USITC, December 4, 2020, 1–2.

⁴²⁵ Government of Canada, written submission to the USITC, December 4, 2020, 2.

canes cultivated for raspberry processing are older on average than U.S. canes used for the same purpose, which contributes to the lower volumes of IQF raspberries produced in Canada.⁴²⁶ Given British Columbia's high land prices, low reported yields, and processing costs similar to those of processors in the United States, the provincial government expects that local raspberry growers will continue to rotate out of raspberries into blueberries. The government also estimates that local growers are likely to invest in more U.S. land for raspberry cultivation in the coming years.⁴²⁷

Table 4.1 Canada: Raspberry production, area harvested and yield, 2015–19

Production is in metric tons (mt), area harvested is in hectares (ha), and yield is in mt/ha. Percent change is in percentage.

Item	Unit	2015	2016	2017	2018	2019	Absolute change, 2015–19	Percent change, 2015–19
Production	mt	10,868	11,670	10,743	10,338	9,145	-1,723	-15.9
Area harvested	ha	2,030	2,034	2,021	1,985	1,883	-147	-7.2
Yield	mt/ha	5.4	5.7	5.3	5.2	4.9	-0.5	-9.3

Source: UNFAO, FAOSTAT database, Crops: Raspberries accessed January 19, 2021.

Canadian government statistics show that domestic consumption of frozen raspberry products, including IQF, puree, and juice, outpaced Canadian production. However, Canadian consumption of frozen raspberries rose only 3 percent during 2015–19, growing from 14,836 mt in 2015 to 15,325 mt in 2019.⁴²⁸ In terms of IQF products, industry representatives note that Canadian consumers prefer an all-raspberry product over a mixed berry blend, the option preferred by U.S. consumers.⁴²⁹

Trade

Canada is a net importer of both fresh and frozen raspberries. While Mexico and the United States supply almost all Canadian imports of fresh raspberries, Canada imports frozen raspberries from a variety of sources. Canada exports limited volumes of fresh raspberries, but it is primarily an exporter of frozen raspberries. Canadian exporters rely heavily on the U.S. market: nearly 93.9 percent of Canada's exports of frozen raspberries by volume were destined for the United States in 2020 (table 4.2); however, Canada accounted for only 16.1 percent (3,822 mt) of U.S. imports.⁴³⁰

Free trade agreements play an important role in facilitating Canadian trade in raspberries. Under the United States-Mexico-Canada Agreement (USMCA), Canada's processed raspberry industry benefits from duty-free access for fresh and frozen raspberry products when shipped to the U.S. and Mexican

⁴²⁶ Industry representative, interviews by USITC staff, August 7, 2020, and February 24, 2021.

⁴²⁷ U.S. government official, email message to USITC staff, September 10, 2020.

⁴²⁸ Table 7: Frozen Raspberries- Canadian Domestic Utilization, Government of Canada, written submission to the USITC, December 4, 2020, 7.

⁴²⁹ Industry representative, interview by USITC staff, July 24, 2020.

⁴³⁰ These imports include both IQF frozen as well as block frozen raspberries and uncooked puree. Mexico and Chile were the leading U.S. suppliers of frozen red raspberries in 2020. USITC DataWeb/Census, HTS 0811.20.2025, accessed July 27, 2020.

markets as long as they meet rules of origin requirements. All of these products had the same duty-free access under the North American Free Trade Agreement (NAFTA).

Chile and Canada are members of two free trade agreements, the Canada-Chile Free Trade Agreement (CCFTA) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).⁴³¹ Canadian imports of both fresh and frozen raspberries from Chile are free of duty under the CCFTA and the CPTPP as long as they meet rules of origin requirements. Imports of fresh raspberries into Canada from China, Poland, Serbia, and any other foreign suppliers are free of duty under Canada's most-favored-nation (MFN) rate.⁴³² However, frozen raspberries from other foreign suppliers (primarily China and Serbia), including IQF raspberries used in frozen mixed berry and single berry retail bags, are subject to a 6 percent MFN rate of duty when entering Canada.⁴³³

Exports of Processed (Frozen) Raspberries

Canada's frozen raspberry exports increased 54.7 percent by volume during 2015–20 but declined 0.1 percent by value (tables 4.2 and 4.3). The United States is the primary export market, accounting for almost all exports by both volume and value. Exports to the United States rose by 73.3 percent over the period, from 2,574 mt in 2015 to 4,461 mt in 2020. As Canada's exports to other minor export markets declined, the U.S. market share steadily grew, from 83.8 percent in 2015 to 93.9 percent in 2020 (by volume). At the same time, Canada is the United States' fourth-largest supplier of frozen raspberries, and since 2015 has nearly doubled its market share by quantity to 16.1 percent in 2020.⁴³⁴ During 2017–20, exports to the United States totaled over 90 percent of Canada's exports by volume. However, unlike fresh raspberries, frozen raspberries can travel long distances if given proper cold storage, and Canada's major export markets (after the United States) during 2015–20 included Australia, Chile, China, and Japan.

⁴³¹ OAS, Foreign Trade Information System, accessed March 12, 2021. Government of Canada, Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), accessed March 12, 2021.

⁴³² GATT 1947, Article 1; CBP, "Countries ineligible for NTR/MFN duty rates," November 2, 2020.

⁴³³ As a member of the European Union, Poland benefits from duty-free treatment for frozen raspberries (HS subheading 0811.20) under the Comprehensive Economic and Trade Agreement (CETA) with Canada starting in 2017. See: CBSA, *Customs Tariff Schedule 2021-3*, Chapter 8, April 1, 2021, accessed April 21, 2021.

⁴³⁴ USITC DataWeb/Census, HTS 0811.20.2025, accessed July 27, 2020.

Table 4.2 Canada: Exports of frozen raspberries by destination market, 2015–20

In metric tons (mt) and percentages. n.c. = not calculable; ** = less than 0.5 metric tons.

Market	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute change 2015–20 (mt)	Percent change 2015–20
United States	2,574	2,771	2,400	3,007	3,533	4,461	1,886	73.3
Japan	248	180	57	89	65	91	-157	-63.2
China	186	142	55	0	154	78	-108	-58.1
Australia	0	45	22	0	0	65	65	n.c.
Chile	0	0	23	12	56	43	43	n.c.
All other	65	154	72	33	21	14	-51	-77.7
All destination markets	3,073	3,292	2,630	3,141	3,830	4,753	1,680	54.7

Source: IHS Markit, Global Trade Atlas database, Canadian Customs Tariff Schedule, Canadian export classification number 0811.20.00, accessed March 9, 2021.

Note: Canadian export classification number 0811.20.00 covers raspberries, blackberries, mulberries, loganberries, currants, and gooseberries. However, available information indicates that the bulk of exports of this product group are raspberries.

Table 4.3 Canada: Exports of frozen raspberries by destination market, 2015–20

In thousands of U.S. dollars and percentages. n.c. = not calculable.

Market	2015 (1,000 \$)	2016 (1,000 \$)	2017 (1,000 \$)	2018 (1,000 \$)	2019 (1,000 \$)	2020 (1,000 \$)	Absolute change 2015–20 (1,000 \$)	Percent change 2015–20
United States	9,797	8,656	7,460	8,637	7,539	10,309	512	5.2
Japan	634	508	191	289	209	294	-341	-53.7
China	562	336	188	0	316	185	-377	-67.1
Australia	0	171	47	0	1	133	133	n.c.
Chile	0	0	34	27	149	163	163	n.c.
All other	157	459	233	107	46	54	-103	-65.6
All destination markets	11,150	10,131	8,153	9,060	8,260	11,138	-13	-0.1

Source: IHS Markit, Global Trade Atlas database, Canadian Customs Tariff Schedule, Canadian export classification number 0811.20.00, accessed March 9, 2021.

Note: Canadian export classification number 0811.20.00 covers raspberries, blackberries, mulberries, loganberries, currants, and gooseberries.

Exports of Fresh Raspberries

Canada exported a small volume of fresh raspberries during the period. These exports rose from 657 mt in 2015 to nearly 1,000 mt in 2016 before falling sharply to 451 mt in 2020 for an overall decline of 32 percent during 2015–20 (table 4.4). The United States accounted for over 95 percent of Canada's total fresh raspberry exports by volume and value during the 2015–20 period except for 2017, when China bought 91 mt (nearly 10 percent) of the total.⁴³⁵ Exports of raspberries to the United States followed the same trend as Canada's overall exports; other export markets are generally insignificant by comparison (table 4.5).

⁴³⁵ Canada's export data aggregates fresh raspberries for both the processing and fresh retail sectors. Exports to China in 2017 were likely destined for the fresh retail channel.

Table 4.4 Canada: Exports of fresh raspberries by destination market, 2015–20

In metric tons (mt) and percentages. n.c. = not calculable.

Market	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute change 2015–20 (mt)	Percent change 2015–20
United States	654	992	883	417	472	442	-212	-32.4
France	2	2	3	4	3	5	3	143.4
St. Pierre and Miquelon	1	3	5	4	3	4	3	390.4
Germany	0	0	0	0	0	0	0	n.c.
China	0	0	91	0	0	0	0	n.c.
All other	1	0	15	0	0	0	-1	n.c.
All destination markets	657	997	997	425	478	451	-206	-31.3

Source: IHS Markit, Global Trade Atlas database, Canadian Customs Tariff Schedule, Canadian export classification number 0810.20.10, accessed March 9, 2021.

Table 4.5 Canada: Exports of fresh raspberries by destination market, 2015–20

In thousands of U.S. dollars and percentages. n.c. = not calculable.

Market	2015 (1,000 \$)	2016 (1,000 \$)	2017 (1,000 \$)	2018 (1,000 \$)	2019 (1,000 \$)	2020 (1,000 \$)	Absolute change 2015–20 (1,000 \$)	Percent change 2015–20
United States	1,498	2,523	2,285	570	614	715	-783	-52.3
France	6	6	10	11	9	13	8	131.7
St. Pierre and Miquelon	3	9	15	11	10	13	10	386.2
Germany	0	0	0	0	0	0	0	n.c.
China	0	0	352	0	0	0	0	n.c.
All other	2	0	44	0	0	0	-2	n.c.
All destination markets	1,508	2,538	2,706	592	634	741	-767	-50.9

Source: IHS Markit, Global Trade Atlas database, Canadian Customs Tariff Schedule, Canadian export classification number 0810.20.10, accessed March 9, 2021.

Imports of Fresh and Frozen Raspberries

Canadian imports of fresh and frozen raspberries increased from 2015 to 2020. Mexico is Canada's largest source of fresh raspberries (61.4 percent by quantity in 2020), followed by the United States (38.5 percent) (tables 4.6 and 4.7).⁴³⁶ Fresh shipments from Mexico primarily target Canadian consumers in the retail sector because the Mexican industry specializes in cultivars for that channel.⁴³⁷ Canadian imports of fresh raspberries from the United States decreased between 2015 and 2020, from 16,859 mt to 12,718 mt. It is likely that most imports of U.S. fresh raspberries were of raspberries intended for processing, although U.S. fresh raspberries for the retail channel are also imported under the same tariff

⁴³⁶ IHS Markit, Global Trade Atlas database, Canadian Customs Tariff Schedule numbers 0810.20.0011, 0810.20.0012, 0810.20.1910, and 0810.20.1920, accessed March 9, 2021.

⁴³⁷ Fresh raspberries produced in Mexico are also diverted into the processed channel, amounting to an estimated 20–25 million lb. (9,072–11,340 mt). This volume is thought to be processed in Canada, Mexico, and the United States. USITC, hearing transcript, September 17, 2020, 40–41 (testimony of Jean-Christophe Hestean, Sunopta Mexico); 71–72 (testimony of Tony Miller, Cascade International Foods, Inc.).

Raspberries for Processing

line. Canadian frozen raspberry processors traditionally source fresh raspberries from Canadian and U.S. growers. Moreover, the unit value for Canadian imports of fresh raspberries from Mexico is higher than that for fresh raspberries from the United States. This disparity indicates that more of the U.S. berries are raspberries for processing, which is typically a lower-priced product than fresh raspberries for retail.

Table 4.6 Canada: Imports of fresh raspberries by source, 2015–20

In metric tons (mt) and percentages.

Sources	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute	Percent
							change 2015–20 (mt)	change 2015–20
Mexico	12,320	11,655	14,393	15,504	17,780	20,278	7,958	64.6
United States	16,859	12,150	11,033	12,832	13,586	12,718	-4,141	-24.6
All other	55	23	30	19	63	40	-15	-26.6
All import sources	29,234	23,828	25,457	28,355	31,430	33,036	3,802	13.0

Source: IHS Markit, Global Trade Atlas, Canadian Customs Tariff Schedule numbers 0810.20.0011, 0810.20.0012, 0810.20.1910, and 0810.20.1920, accessed March 9, 2021.

Note: Canadian Customs Tariff Schedule numbers 0810.20.0011, 0810.20.0012, 0810.20.1910, and 0810.20.1920 include loganberries. However, available information indicates that the bulk of imports of this product group are raspberries.

Table 4.7 Canada: Imports of fresh raspberries by source, 2015–20

In thousands of U.S. dollars and percentages.

Sources	2015 (1,000 \$)	2016 (1,000 \$)	2017 (1,000 \$)	2018 (1,000 \$)	2019 (1,000 \$)	2020 (1,000 \$)	Absolute	Percent
							change 2015–20 (1,000 \$)	change 2015–20
Mexico	90,808	90,468	119,747	134,635	140,084	152,745	61,937	68.2
United States	112,796	86,680	85,490	86,761	87,646	84,931	-27,865	-24.7
All other	372	115	245	99	260	308	-63	-17.0
All import sources	203,976	177,263	205,482	221,495	227,990	237,984	34,008	16.7

Source: IHS Markit, Global Trade Atlas, Canadian Customs Tariff Schedule numbers 0810.20.0011, 0810.20.0012, 0810.20.1910 and 0810.20.1920, accessed March 9, 2021.

Note: Canadian Customs Tariff Schedule numbers 0810.20.0011, 0810.20.0012, 0810.20.1910, and 0810.20.1920 include loganberries.

Serbia is Canada's largest import source of frozen raspberries (5,079 mt and 34.1 percent by quantity in 2020), followed by Chile (26.4 percent) and the United States (24.5 percent) (table 4.8).⁴³⁸ Processors in the top three sources of Canadian frozen imports are increasingly focused on IQF raspberries.⁴³⁹

The unit value of frozen berries that Canada imports from Mexico is significantly lower than that for similar imports from Chile, Serbia, and the United States. This strongly suggests that the primary frozen products are not IQF raspberries (or at least not most of the volume). These raspberries could be used in several frozen products, including juice concentrate. During the 2015–20 period, Canada shipped roughly \$1 million–\$2 million worth of raspberry juice concentrate to the United States annually.⁴⁴⁰

⁴³⁸ IHS Markit, Global Trade Atlas database, HS subheading 0811.20, accessed July 7, 2020.

⁴³⁹ Industry sources from Chile and the United States point to recent investments in technology for IQF raspberry production. USITC, hearing transcript, September 17, 2020, 51–52 (testimony of Pablo Herrera, JCP Foods, member of Chilealimentos); WRRRC, written submission to the USITC, September 24, 2020, 2.

⁴⁴⁰ USITC DataWeb/Census, Cost, Insurance and Freight (CIF), HTS 2009.89.6055, and 2009.89.7055, Red Raspberry Juice, not fortified, including concentrate, accessed February 16, 2021.

Table 4.8 Canada: Imports of frozen raspberries by source, 2015–20

In metric tons (mt) and percentages.

Sources	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute	Percent
							change 2015–20 (mt)	change 2015–20
Serbia	1,938	2,442	2,035	3,191	3,312	5,079	3,141	162.0
Chile	5,142	4,515	4,872	5,097	4,468	3,934	-1,208	-23.5
United States	1,266	2,257	2,336	2,634	3,664	3,655	2,389	188.8
Mexico	588	647	361	438	842	1,597	1,009	171.8
China	930	755	639	317	239	360	-570	-61.3
All other	456	237	363	232	317	288	-168	-36.8
All import sources	10,320	10,852	10,604	11,909	12,840	14,913	4,593	44.5

Source: IHS Markit, Global Trade Atlas, Canadian Customs Tariff Schedule number 0811.20.0010, accessed March 9, 2021.

Table 4.9 Canada: Imports of frozen raspberries by source, 2015–20

In thousands of U.S. dollars and percentages.

Sources	2015 (1,000 \$)	2016 (1,000 \$)	2017 (1,000 \$)	2018 (1,000 \$)	2019 (1,000 \$)	2020 (1,000 \$)	Absolute	Percent
							change 2015–20 (1,000 \$)	change 2015–20
Serbia	6,739	8,684	5,909	8,523	8,463	15,446	8,707	129.2
Chile	19,851	16,283	13,845	15,859	13,856	13,887	-5,965	-30.0
United States	5,600	8,996	7,341	7,921	10,784	11,212	5,612	100.2
Mexico	1,698	1,725	801	905	1,526	2,890	1,191	70.2
China	2,736	2,085	1,475	699	549	859	-1,876	-68.6
All other	1,829	1,045	974	742	965	840	-989	-54.1
All import sources	38,453	38,818	30,345	34,650	36,143	45,133	6,680	17.4

Source: IHS Markit, Global Trade Atlas, Canadian Customs Tariff Schedule number 0811.20.0010, accessed March 9, 2021.

Government Programs

There are few Canadian government-funded producer support programs that affect production, infrastructure, or exports of fresh and processed raspberries. Commission staff found none before 2019. While the government of Canada states that it provides no agricultural support programs to raspberry producers, the programs outlined below either support all food processors; support all berries, including blueberries, raspberries, or strawberries; or are funded at the provincial level.⁴⁴¹ In the case of Canada's support programs that benefit the fresh and processed raspberry industries, either the funding streams are very small or the programs target such a large portion of the Canadian economy that Commission staff were unable to confirm that frozen processed raspberries received any benefit.

National Program Support: In May 2019, the Government of Canada announced an investment to support berry production and quality in British Columbia. The program is intended to improve the market competitiveness of the British Columbia raspberry, strawberry, and blueberry industries by improving production capacity, berry genetics, and growing practices. Run through the Lower Mainland Horticultural Improvement Association under the Canadian Agricultural Partnership AgriScience

⁴⁴¹ Government of Canada, written submission to the USITC, December 4, 2020, 11.

Program, this program is part of a \$3 billion, five-year investment by federal, provincial, and territorial governments to strengthen the agricultural and agri-food sector. The Lower Mainland Horticultural Improvement Association will receive \$200,000 in annual funding for the next five years to improve berry genetics. The research will support a plant breeding program that produces superior berry varieties that are suited to the local climate. The program is expected to lead to improved crops, higher fruit quality, and increased pest and disease resistance.⁴⁴²

Provincial Producer Support: In early 2021, the British Columbia provincial government introduced a berry producer support program called the British Columbia Raspberry Replant Program, intended to increase the amount of acreage planted with raspberry varieties suitable for IQF and fresh raspberry markets in the province.⁴⁴³ A limiting factor to the program is its emphasis on small-scale farming; new or existing growers must plant eligible varieties on no more than 10 acres (4 ha) per applicant. In addition, the program requirements exclude raspberry varieties grown primarily for bulk block frozen markets (straight pack, puree, or juice). Cost-share funding were available for eligible raspberry fields planted in the spring of 2021, provided on a per-plant basis.⁴⁴⁴

Compliance with Food Safety Standards

Canada's domestic food safety standards are similar to those in the United States, and Canadian processors (including those that export frozen raspberries) are able to meet U.S. Food Safety Modernization Act (FSMA) requirements.⁴⁴⁵ Adherence to strict food safety requirements and a reputation for high quality has traditionally been a competitive strength for the Canadian raspberry processing industry selling into the U.S. market.⁴⁴⁶

⁴⁴² Government of Canada, "British Columbia Berries Receive Funding Boost," May 13, 2019.

⁴⁴³ Government of Canada, Province of British Columbia, *Raspberry Replant Program Requirements*, 2, accessed March 15, 2021.

⁴⁴⁴ Government of Canada, Province of British Columbia, *Raspberry Replant Program Requirements*, 3, accessed March 15, 2021.

⁴⁴⁵ Government of Canada, "Food Safety Standards and Guidelines," accessed May 14, 2021; Government of Canada, "Guidelines for 'Product of Canada' and 'Made in Canada' Claims," accessed March 12, 2021; BC RIDC, written submission to the USITC, December 7, 2020, 5; USDA, AMS, "Good Agricultural Practices (GAP) and Good Handling Practices (GHP)," accessed March 15, 2021; USDA, FDA, "Food Safety Modernization Act (FSMA)," accessed March 15, 2021.

⁴⁴⁶ USITC, hearing transcript, September 17, 2020, 29 (testimony of John Tentomas, Nature's Touch).

Factors Affecting Competitiveness

As described in chapter 2 of this report, competitiveness of raspberries for processing and processed raspberry products can be measured by comparing delivered costs, product differentiation, and supplier reliability for U.S. products against those of imports. Certain key factors contribute to the competitiveness of Canadian processed raspberry products in the U.S. market. The raspberry industries in Washington and British Columbia are geographically close, have similar production systems and a shared focus on processing. Canadian frozen raspberry products remain competitive in the United States due to Canadian processors' access to fresh raspberry inputs from British Columbia and Washington, and frozen raspberry inputs from Chile, Serbia, and the United States. However, Canadian growing and processing costs are higher than those in the United States.

British Columbia Growers Are Not Cost Competitive with Growers in Major Foreign Supplier Countries

British Columbia raspberry growers face many of the same competitive challenges as growers of raspberries for processing in Washington and Oregon. However, Canadian grower costs are the highest among the producers in the United States, Mexico, Chile, and Serbia, primarily because of the high cost of suitable land in British Columbia, combined with labor costs similar to those in the United States. Not only is British Columbian land very expensive, often multiple times as costly to rent as similar acreage in the United States, but the supply of land suitable for raspberry production is also limited. Expanding urban development in the Vancouver metropolitan area and attractive alternative growing options (such as blueberries) have helped to shrink acreage and production volume for raspberries.⁴⁴⁷

Higher land costs also affect decisions about paying to use proprietary raspberry cultivars. New, innovative raspberry cultivars have been developed to improve yields and resilience to changing weather patterns in the Pacific Northwest. However, many British Columbia farmers rent land rather than own it outright. They must therefore secure land leases that are long enough (ideally at least 10 years) to justify the cost of licensing plant varieties, pulling up old canes, and absorbing the financial impact of having no harvest in the first year as the new varieties grow to maturity.⁴⁴⁸

Canadian growers and processors face higher labor costs than in Mexico, Chile, and Serbia, and similar labor costs to their U.S. counterparts. As in the United States, Canadian growers have mitigated this to an extent by investing in machine harvesting. Industry representatives report that labor costs for countries competing with Canadian and U.S. growers are as much as 50–90 percent lower.⁴⁴⁹ In 2017, the British Columbian government implemented minimum wage legislation that increased the minimum wage from C\$11.35 (\$9.08)/hour to C\$14.60 (\$11.68)/hour.⁴⁵⁰ By June 1, 2021, the minimum wage in British Columbia was slated to rise again, to C\$15.20 (\$12.16)/hour. The Canadian wage is slightly below

⁴⁴⁷ Industry representative, interview by USITC staff, February 26, 2021.

⁴⁴⁸ Industry representative, interview by USITC staff, August 7, 2020.

⁴⁴⁹ BC RIDC, written submission to the USITC, December 7, 2020, 5.

⁴⁵⁰ BC RIDC, written submission to the USITC, December 7, 2020, 5.

the minimum wage of \$13.50/hour in Washington, but British Columbian processors are obligated to pay a range of additional payroll costs (e.g., vacation pay, employment and workplace safety insurance, overtime for certain workers, and pension contributions) higher than those paid by U.S. processors.⁴⁵¹ Moreover, labor availability in both British Columbia and Washington for this sector is a continual problem, according to industry representatives.⁴⁵² Canadian growers reportedly face labor shortages and compete for seasonal workers with U.S. growers and with other summer crops in Canada.⁴⁵³

Canadian Processors Adapted by Purchasing More Fresh and Frozen Raspberries from Foreign Suppliers

Canadian processors have duty-free access to fresh raspberries and frozen raspberry products originating in the agreement partners of USMCA (Mexico and the United States), CETA (Poland), and CPTPP (Chile). In addition, the MFN rate of duty for frozen raspberries from other suppliers such as Serbia is 6 percent ad valorem.⁴⁵⁴ Consequently, Canadian processors have access to raspberry inputs from the largest producers in the world, an important consideration when success or failure largely depends on access to high enough volumes of cost-competitive raspberries for processing.⁴⁵⁵

Because the Canadian processing sector is not vertically integrated with local growers in a significant way, the decline in Canadian acreage of raspberries for processing has a more limited impact on the processors than if they were jointly owned. The cost of procuring fresh raspberries for processing from Canadian growers in British Columbia is comparable to the cost of similar raspberries from Washington.⁴⁵⁶ Canadian processors are importing more fresh raspberries from the United States to produce all frozen products. The proximity of Washington and Oregon to British Columbia processors allows raspberries to be picked at peak ripeness and sold at competitive prices, in part because of low transportation costs. Import data also point to increasing Canadian imports of Mexican frozen raspberries (i.e., raspberry seconds not suitable for the fresh market) to make frozen raspberry products in Canada (table 4.8).

Canada's repackers are competitive suppliers of IQF raspberries to the United States, although IQF comprises a small part of Canada's processed raspberry industry overall. Repacking firms source whole IQF raspberries from a growing list of suppliers to ensure a consistent inventory for producing retail

⁴⁵¹ Industry representative, interview by USITC staff, February 26, 2021; BC RIDC, written submission to the USITC, December 7, 2020, 5.

⁴⁵² USITC, hearing transcript, September 17, 2020, 123 (testimony of John Tentomas, Nature's Touch).

⁴⁵³ Industry representative, interview by USITC staff, February 26, 2021. Raspberry production in the second-largest producing province, Quebec, is also decreasing, reportedly because of import competition with products from Mexico and California, poor weather conditions, and an increase in the minimum wage. Fresh Plaza, "Canada: Strawberry and Raspberry Producers Hampered," May 24, 2019, accessed March 15, 2021.

⁴⁵⁴ For further information, see the "Trade" section of this chapter.

⁴⁵⁵ Industry representative, interview by USITC staff, February 26, 2021.

⁴⁵⁶ Industry representative, interview by USITC staff, March 1, 2021.

berry bags.⁴⁵⁷ U.S. processors meet some of Canada's IQF requirements by investing in technology and new varieties to increase their own supply of IQF raspberries.⁴⁵⁸ By remaining at arm's length from the declining acreage and financial fortunes of Canadian growers producing raspberries for processing, Canadian repackers have been able to take advantage of these imports.⁴⁵⁹

Vertical Integration Is a Key Difference between the U.S. and Canadian Processing Sectors

Canadian processors as a group have far less vertical integration with local growers than processors in the United States. In fact, they purchase more fresh raspberries for processing from U.S. growers than from Canadian growers. This situation seems unlikely to change, as high land rents and conversion of British Columbia agricultural land away from raspberries into blueberries makes vertical integration impractical. The lack of significant vertical integration in Canada is a major difference from the U.S. industry and is viewed as a disadvantage by most Canadian processors.⁴⁶⁰ These processors see vertical integration as a means of better controlling their inputs (i.e., the supply of raspberries), enabling them to focus on food safety and controlling the use of pesticides in the fields.⁴⁶¹ In addition, Canadian processors state that vertical integration would allow better yield management and variety development, as seen in integrated raspberry operations in Washington.⁴⁶² By contrast, the segment of Canadian processors repacking IQF raspberries view vertical integration as a disadvantage. These processors buy IQF raspberries to repackage for retail sale and prefer not to be responsible for selling lower-value raspberries into other market channels (i.e., straight pack, puree, and juice).⁴⁶³

⁴⁵⁷ Industry representatives, interviews by USITC staff, June 12, 2020, June 23, 2020, and July 24, 2020. USITC, hearing transcript, September 17, 2020, 14 (testimony of Brad Rader, Rader Farms).

⁴⁵⁸ Industry representative, interview by USITC staff, February 26, 2021.

⁴⁵⁹ Industry representative, interview by USITC staff, February 26, 2021.

⁴⁶⁰ Industry representative, interview by USITC staff, February 26, 2021, and March 1, 2021.

⁴⁶¹ Industry representative, interview by USITC staff, March 1, 2021.

⁴⁶² Industry representative, interview by USITC staff, February 26, 2021.

⁴⁶³ There are exceptions in Canada to the view that IQF repackers are not interested in vertical integration. At least one of the IQF repackers produces for both the fresh and IQF retail segments, using only Canadian raspberries and selling almost entirely in Canada. The company's business model is selling Canadian raspberries to Canadians, so controlling the raspberries from field to retail is important. Industry representative, interview by USITC staff, March 5, 2021.

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Chapter 5

Mexico

Summary

Mexico is the second-largest global producer of raspberries (after Russia), accounting for 15 percent of global production in 2019. Mexico’s raspberry production mainly serves the lucrative fresh market in the United States. Mexico’s small raspberry processing industry grew out of this fresh market production. That industry is driven solely by the availability of raspberry seconds, or raspberries that do not meet the product specifications for the fresh market. The volume of raspberry seconds has been growing in recent years as overall raspberry production has expanded. Mexican exports to the United States include processed raspberry products produced in Mexico using raspberry seconds, as well as fresh raspberry seconds in bulk form to be used for processing by U.S. firms. As shown in Chapter 3 (“United States”), fresh raspberries for processing from Mexico accounted for nearly all (99 percent) U.S. imports of fresh raspberries for processing.⁴⁶⁴

Mexico’s competitiveness in the U.S. processed raspberry market is enhanced by favorable growing conditions for raspberries, an extended growing season that allows product to be available almost year-round, and relatively low delivered costs of both raspberries for the fresh market and for processing. The raspberry industry in Mexico enjoys a delivered-cost advantage in the U.S. fresh market from the lower costs of labor as well as the Mexican industry’s high yields and proximity to the U.S. market, which increases the volume of raspberry seconds available for processing. To a certain degree, these competitive strengths are mitigated by the fact that Mexican raspberries are grown to the specifications of the fresh market, even those that are sold into the processing market. This means that for certain processing applications, these raspberries cannot necessarily be substituted for raspberries grown specifically for processing in Washington State.

Industry Structure

There are a number of firms that process raspberries in Mexico, but most of these focus on processing other fruits, strawberries and mangoes in particular. Raspberries play only a small, but important, role in these firms’ business, since they aim to keep their processing equipment in use year-round. Similarly, Mexican raspberry growers enter the processing market only to a limited extent, selling raspberry seconds that do not meet fresh market product specifications. In 2019, between 13.3 and 18.1 percent

⁴⁶⁴ This calculation considers the following HTS statistical reporting numbers: 0810.20.1024 and 0810.20.9024 (fresh raspberries for processing). U.S. import data for fresh raspberries for processing— “Fresh raspberries in containers other than those under 5kg”—were revised downward in early 2021 after the U.S. Census Bureau clarified container weight with importers of record. Data on fresh raspberries for processing in this report reflect these revisions. Staff at the U.S. Census Bureau expect further downward revisions. USITC DataWeb/Census, imports for consumption, HTS 0810.20.1020, 0810.20.1022, 0810.20.1024, 0810.20.9020, 0810.20.9022, 0810.20.9024, and 0811.20.2025, accessed February 4, 2020.

of all Mexican raspberries produced were seconds, with the majority sold to the processing market.⁴⁶⁵ In 2020, the Mexican processing sector exported 9,910 metric tons (mt) of frozen raspberries, including individually quick frozen (IQF), straight pack, and purees, to the United States, its largest destination market.⁴⁶⁶ In addition, Mexico exported a large share of its fresh raspberry seconds, supplying 15,797 mt to the United States in 2020.⁴⁶⁷ The Mexican processing market also supplies the small domestic market. There is little vertical integration between raspberry growers and fruit processors in Mexico. Instead, the market dynamics in the processing sector are significantly impacted by the relationships between key players in the fresh market (i.e., relationships between fresh berry marketers and raspberry growers) as most farmers sell raspberries into the processing sector only when their harvested berries do not have the qualities required for the fresh market.⁴⁶⁸ And typically, processors process raspberries only when they have excess processing capacity during the off seasons of more popular fruits.⁴⁶⁹

Regions

Raspberry processing in Mexico takes place in the raspberry production regions because of the perishability of the berry. Fresh production is highly concentrated in the central Mexican Federal Entities (states) of Jalisco and Michoacán, which together accounted for 89.6 percent of fresh raspberry production in 2019 (see figure 5.1).⁴⁷⁰ Baja California also has a small (9.1 percent) but notable share of fresh raspberry production. All three states have temperate climates that are conducive to producing fresh berries, including blackberries, blueberries, and strawberries, in addition to raspberries.⁴⁷¹ Raspberries in these regions are grown for the U.S. fresh market. Processing facilities are primarily located near berry- and fruit-growing locations in central Mexico and to a lesser extent, Baja California.⁴⁷²

⁴⁶⁵ The processing of seconds is a common practice in the produce sector. The estimated range was based on USITC staff calculations. Mexican growers report that 10–12 percent of raspberry production are seconds at the farm level and that this percentage is declining, while fresh berry marketers report that 1–2 percent are seconds at their facilities. U.S. imports of processed and fresh for processing raspberries from Mexico represented a 13.3 percent share of total Mexican production of fresh raspberries in 2019. U.S. imports of processed and fresh for processing raspberries made up an 18.1 percent share of total raspberry imports from Mexico in 2019. USITC DataWeb/Census, imports for consumption, HTS 0810.20.1020, 0810.20.1022, 0810.20.1024, 0810.20.9020, 0810.20.9022, 0810.20.9024, and 0811.20.2025, accessed February 4, 2020; Government of Mexico, SIAP, *Anuario estadístico de la producción agrícola* (Agricultural production statistical yearbook), accessed December 4, 2020; U.S. government representative, email message to USITC staff, January 15, 2021; industry representative, interview by USITC staff, December 1, 2020.

⁴⁶⁶ IHS Market, Global Trade Atlas database, HS 0811.20, accessed March 16, 2020.

⁴⁶⁷ USITC DataWeb/Census, HTS 0810.20.1024 and 0810.20.9024, accessed February 4, 2021.

⁴⁶⁸ Industry representatives, interviews by USITC staff, November 25, 2020, and December 3, 2020.

⁴⁶⁹ Industry representatives, interviews by USITC staff, November 25, 2020, December 3, 2020, and December 1, 2020.

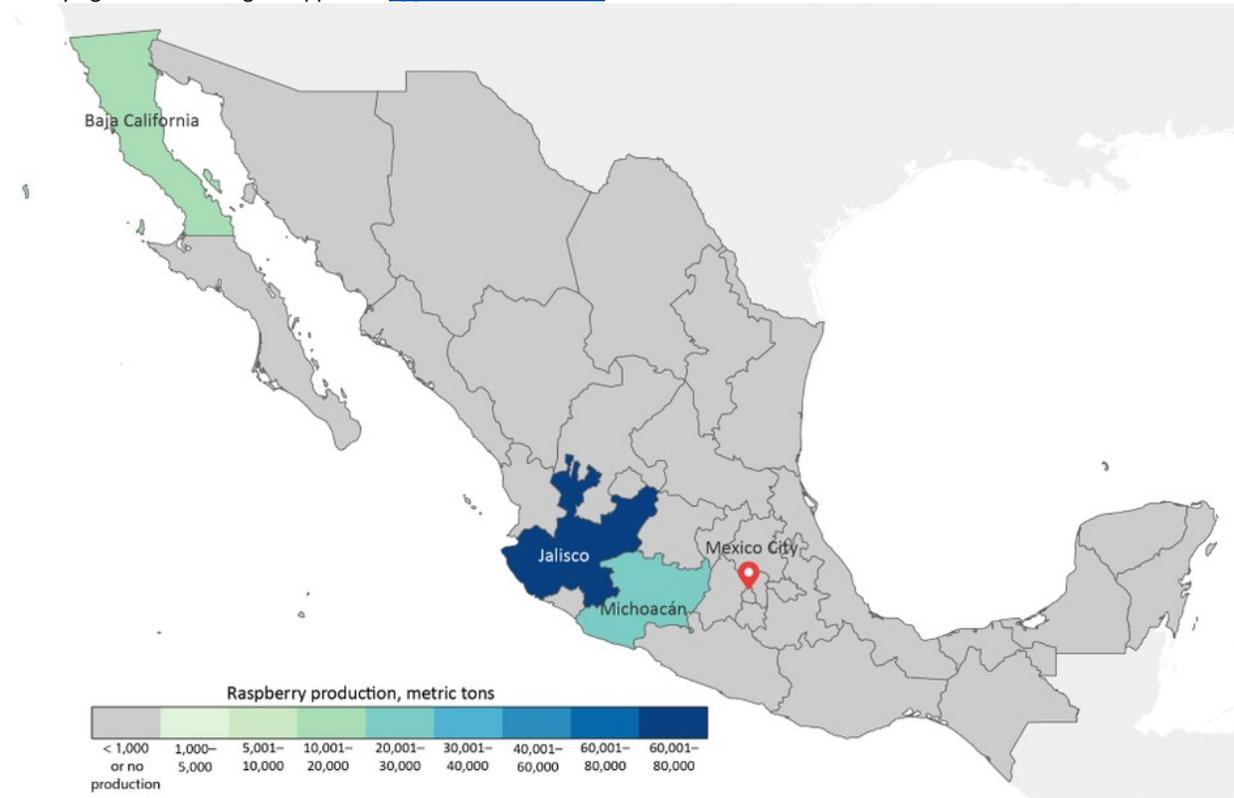
⁴⁷⁰ Government of Mexico, SIAP, *Anuario estadístico de la producción agrícola* (Agricultural production statistical yearbook), accessed December 4, 2020.

⁴⁷¹ Industry representative, interview by USITC staff, October 26, 2020.

⁴⁷² USITC, hearing transcript, September 17, 2020, 157 (testimony of Jean-Christophe Hestean, SunOpta Inc.) and 158 (testimony of Tony Miller, Cascade International Foods); industry representative, interview by USITC staff, December 3, 2020.

Figure 5.1 Raspberry production in Mexico, by state, 2019

Underlying data for this figure appear in [appendix H table H.14](#).



Source: Government of Mexico, SIAP, *Anuario estadístico de la producción agrícola* (Agricultural production statistical yearbook), accessed December 4, 2020.

Industry Composition

Although there are reportedly a few small companies that process raspberries exclusively—mainly small volumes of high-quality IQF berries—raspberry processing in Mexico is best seen as a minor subsector of the broader fruit processing industry.⁴⁷³ There are reportedly 30 fruit processors in central Mexico,⁴⁷⁴ and of these, fewer than 10 process raspberries.⁴⁷⁵ The main business focus for fruit processors in Mexico is strawberries and tropical fruits such as mango.⁴⁷⁶ Raspberries represent a small share of fruit processors' product lines and, according to industry representatives, raspberries account for anywhere between 5 and 15 percent of all Mexican processed fruit production.⁴⁷⁷ Along with other minor processed fruits, raspberries are processed when there are no other fruits to process and when the processor has a contract for the purchase of processed raspberries. This primarily occurs during the

⁴⁷³ USITC, hearing transcript, September 17, 2020, 81–2 (testimony of Jean-Christophe Hesteau, SunOpta Inc.); industry representatives, interviews by USITC staff, November 20, 2020, and December 1, 2020.

⁴⁷⁴ These plants produce IQF, block frozen, puree, and juice concentrate.

⁴⁷⁵ Industry representatives, interviews by USITC staff, November 20, 2020, and December 3, 2020.

⁴⁷⁶ USITC, hearing transcript, September 17, 2020, 81–2 (testimony of Jean-Christophe Hesteau, SunOpta Inc.); industry representative, interview by USITC staff, December 1, 2020.

⁴⁷⁷ Industry representatives, interviews by USITC staff, November 20, 2020, and December 1, 2020; USITC, hearing transcript, September 17, 2020, 81–2 (testimony of Jean-Christophe Hesteau, SunOpta Inc.).

period September to January, with limited raspberry processing January to May as spare capacity is limited in those months.⁴⁷⁸

There are approximately 600 raspberry farms in Mexico averaging 10–20 acres in size that supply fresh raspberry seconds for processing.⁴⁷⁹ Generally, raspberry farmers have experience with other crops, such as broccoli, other berries, or agave, and have switched to growing raspberries because it is considered a good business opportunity with the potential to generate high returns from the fresh market.⁴⁸⁰

Industry Organization

Despite belonging to the same berry industry trade association, Aneberries,⁴⁸¹ there is very little integration between fruit processors and raspberry growers in Mexico, and the presence of raspberry seconds available for processing is wholly a function of dynamics in the fresh raspberry market.⁴⁸²

Raspberry growers and fresh berry marketing companies work closely together through multiyear contracts.⁴⁸³ Under the contracts, growers have access to the berry marketer's raspberry cultivars, which are not available to growers without contracts, as well as to farm financing and agronomic advice and support.⁴⁸⁴ In return, the growers are required to sell all the raspberries they grow to the berry marketer, as long as the berries meet the fresh export market quality standards. For berries that do not meet these standards, growers are free to sell their raspberry seconds into processing channels independently.⁴⁸⁵

For the raspberry seconds that will be sold into processing channels, growers and processors typically do not have set contracts, but they do work out a price at the beginning of the raspberry season. However, this price may change over the course of the growing season depending on the quality and volume of the harvest, as well as the conditions in the fresh market. According to several industry representatives, price changes are often initiated by the grower.⁴⁸⁶

⁴⁷⁸ Strawberries are processed January to May, and mangoes are processed May to September; industry representative, interview by USITC staff, December 1, 2020.

⁴⁷⁹ USITC, hearing transcript, September 17, 2020, 42 (testimony of Jean-Christophe Hestean, SunOpta Inc.).

⁴⁸⁰ Johnson, "Mexico—Best Known for Tequila, Cactus," March 6, 2015; Industry representatives, interviews by USITC staff, November 25, 2020, and December 3, 2020.

⁴⁸¹ National Association of Berry Exporters (Aneberries) is an industry trade association in Mexico that represents companies involved in the fresh and processed berry export industry, including strawberries, blueberries, blackberries, and raspberries. Aneberries, "About Aneberries," accessed June 15, 2020.

⁴⁸² Industry representative, interviews by USITC staff, November 25, 2020, and December 3, 2020.

⁴⁸³ Reportedly, a few fresh berry marketing companies own some of their own farms. Approximately 90 percent of raspberries in Mexico are grown under contract. USITC, hearing transcript, September 17, 2020, 42 (testimony of Jean-Christophe Hestean, SunOpta Inc.); industry representatives, interviews by USITC staff, September 16, 2020, and December 3, 2020.

⁴⁸⁴ USITC, hearing transcript, September 17, 2020, 93–4 (testimony of Ryan Commons, Driscoll's, Inc.); industry representatives, interviews by USITC staff, November 25, 2020, and December 3, 2020.

⁴⁸⁵ USITC, hearing transcript, September 17, 2020, 93–4 (testimony of Ryan Commons, Driscoll's, Inc.); industry representative, interview by USITC staff, December 3, 2020.

⁴⁸⁶ Industry representatives, interviews by USITC staff, November 25, 2020, and December 1, 2020.

When they have outstanding contracts for processed raspberries, fruit processors are interested in maximizing raspberry volume in order to meet contracts and keep their processing lines utilized. Hence, they are typically willing to accept the price increases requested by the growers.⁴⁸⁷

Cultivars

Unlike raspberry growers in other U.S. import supplier countries, growers in Mexico use raspberry cultivars tailored to producing high-quality raspberries for fresh consumption.⁴⁸⁸ Fresh berry marketing companies provide Mexican growers with their own cultivars developed under contract by plant breeders or from their own specialized breeding programs.⁴⁸⁹ Specifically, these raspberries, such as the popular Adelita cultivar, are optimized for a long shelf life. The result is a more fragile berry that is lighter in color and has a lower Brix value (sugar content) than berries from cultivars developed for processing.⁴⁹⁰ As discussed in “Factors Affecting Competitiveness” below, these factors can limit the uses of Mexican raspberry seconds in processed products.

Production System

Raspberry production in Mexico uses a mix of technology and manual labor. While growers use tractors for tasks like soil preparation and laying plastic mulch for weed control, raspberries are harvested by hand.⁴⁹¹ The use of manual rather than machine harvesting is driven both by the fresh-market focus of growers, who wish to maximize berry quality and appearance, and by the use of covered structures that are too small for harvesting machines.⁴⁹² As in California, raspberries in Mexico are grown under hoop houses which extend the growing season, increase yields, and help protect the raspberries from wet weather that can cause fungal issues.⁴⁹³ However, hand harvesting requires much more labor than machine harvesting (see box 6.1 for a discussion of labor costs and conditions in Mexico).⁴⁹⁴ For most

⁴⁸⁷ Industry representatives, interviews by USITC staff, November 25, 2020, and December 1, 2020.

⁴⁸⁸ USITC, hearing transcript, September 17, 2020, 42–3 (testimony of Jean-Christophe Hestean, SunOpta Inc.); industry representative, interview by USITC staff, December 3, 2020.

⁴⁸⁹ USITC, hearing transcript, September 17, 2020, 93–4 (testimony of Ryan Commons, Driscoll’s, Inc.); industry representatives, interviews by USITC staff, September 16, 2020, and December 3, 2020.

⁴⁹⁰ The Adelita cultivar was bred in Spain to produce well in warmer climates and to have a long shelf life and is used by at least nine companies in Mexico. *Planasa*, “Planasa Receives the Visit,” April 3, 2019; industry representative, interview by USITC staff, September 16, 2020.

⁴⁹¹ Industry representatives, interviews by USITC staff, September 16, 2020, November 20, 2020, and December 3, 2020.

⁴⁹² Industry representatives, interviews by USITC staff, September 16, 2020, October 26, 2020, and December 3, 2020.

⁴⁹³ Raspberries are grown in Mexico using production systems that are essentially identical to those used with the fresh raspberries grown in California. Hoop houses reportedly cost \$30,000 per hectare and, though this is less than the \$100,000 cost of a greenhouse, they are a high-cost initial investment; industry representative, email message to USITC staff, October 24, 2020; industry representatives, interviews by USITC staff, September 16, 2020, and October 26, 2020; Academic experts, interview by USITC staff, January 12, 2021.

⁴⁹⁴ USITC, hearing transcript, September 17, 2020, 23 (testimony of Ryan Commons, Driscoll’s, Inc.).

raspberries, the growing season runs from late September to early June, although there is some year-round production in Baja California.⁴⁹⁵

Even though Mexico is a major raspberry producer globally, raspberries are one of the smaller berry crops grown in the country. In 2019, fresh raspberries accounted for about 17 percent of the 40,676 hectares of total strawberry, blueberry, blackberry, and raspberry harvested area and for only 0.1 percent of total berry production volume.⁴⁹⁶

Box 5.1 Wage rates and labor conditions in the Mexican produce industry

Wages in the Mexican agriculture sector are much lower than in the U.S. agriculture sector, and there have been reports of poor labor conditions in Mexico's fresh produce industry. As seen in table 2.5 in chapter 2 ("Cross-country Comparison of Competitiveness"), average monthly earnings in the Mexican agriculture sector are 8.6 percent of those in the U.S. agriculture sector.^a This textbox presents information on the wage rates and labor conditions in Mexico's produce industry, and to the extent available, in the raspberry and fruit processing industries.

In fruit-processing facilities where raspberries are processed, the wage rate for line workers is 250 to 300 pesos per day (\$12.58 to \$15.10)—comparable to that of farm workers.^b There is reportedly competition between berry growers and fruit processors for workers.^c According to an industry representative, some workers prefer working in the field because they can make the same wage picking berries in the field for two-thirds of a day as they can make in a full day working inside a fruit processing factory.^d

Agricultural labor is more expensive in the major raspberry production regions of Mexico than in other parts of the country (see Escobar, Martin, and Stabridis, 2019). Moreover, wage rates have been rising in recent years.^e Agricultural workers in the six Mexican states with the highest percentage of agricultural exports—including the major raspberry-producing states of Jalisco, Michoacán, and Baja California—earn 40 percent more per month than agricultural workers in states with a low share of agricultural exports.^f Picking raspberries is a relatively high-skilled job compared to picking other fresh produce because the berries are particularly delicate.^g The wages for raspberry farm workers can reportedly range from 200 to 400 pesos per day (\$10.07 to \$20.13), higher than the Mexican minimum wage of 123.22 pesos per day (\$6.20).^h In addition, workers may receive a range of other benefits such as housing, medical care, transportation to and from work, lunches, and school for children.ⁱ

The supply of labor in Mexico has been tightening for several decades, especially along the northern border regions, causing wages, and therefore the labor costs of growers, to rise. The tightening has become an especially acute dynamic in central Mexico, where 90 percent of the country's raspberries are grown.^j This is attributed to several factors, including an increase in manufacturing plants in central Mexico (which according to multiple industry observers are generally viewed as a better place to work than in agriculture).^k Agricultural employers in Mexico also compete for workers against U.S.-based agricultural employers, who pay higher wages for similar work.^l There is also competition for labor

⁴⁹⁵ Government of Mexico, SIAP, *Anuario estadístico de la producción agrícola* (Agricultural production statistical yearbook), accessed December 4, 2020; Driscoll's, "Product Guide 2019–2020," accessed September 3, 2020; industry representatives, interviews by USITC staff, November 25, 2020, December 1, 2020, and December 3, 2020.

⁴⁹⁶ FAO, FAOSTAT database, Crops: Raspberries (production, area harvested, yield), accessed January 19, 2021; Government of Mexico, SIAP, *Anuario estadístico de la producción agrícola* (Agricultural production statistical yearbook), accessed December 4, 2020.

across the different types of berries; the expansion of blueberry production, for example, has reduced the availability of workers on other berry farms.^m

While information on labor conditions in Mexico's raspberry industry is limited, there are a number of reports on labor conditions in the broader agriculture sector. In countries around the world, the inability to form effective unions and bargain collectively can contribute to poor labor conditions and suppress wages across economic sectors, including agriculture, where unionization is low.ⁿ While workers in Mexico can collectively bargain with their employers, protection contracts are the norm. Under protection contracts, unions negotiate contracts between the employer and the worker without the worker's knowledge or consent.^o Such contracts typically have provisions that are weighted to benefit the employer.^p There are reports that protection contracts depressed wages for raspberry workers in Baja California in the recent past.^q The labor provisions in the United States-Mexico-Canada Agreement (USMCA) that Mexico implemented through changes to its labor law enacted on May 1, 2019, aim to address this issue with an annex that is specific to Mexico on worker representation in unions and collective bargaining rights.^r Agriculture, however, is not currently on the priority sector list; therefore, it is not a focus for monitoring under the USMCA provisions.⁵

In 2014, the *Los Angeles Times* documented several instances of poor labor conditions in Mexico's agricultural produce sector.^t These include forced and child labor, debt bondage, and poor living conditions. The series of articles identified produce exported to the United States that had been grown by workers experiencing such conditions. These articles prompted a multiyear joint research project, funded by the Walmart Foundation, by the University of California's Migration Center, the Center for Research and Higher Studies in Social Anthropology in Mexico, and the Wilson Center's Mexico Institute on farm labor in Mexico's export-oriented produce sectors.

The findings of the research project suggest that the majority of export farms are in compliance with Mexico's labor laws, that most farm workers work on compliant farms, and that these workers are satisfied with their jobs.^u They also found that most workers earn up to three times Mexico's pre-2019 minimum wage, with under 5 percent earning less than the minimum, and that workers on export-oriented produce farms earn incomes above the poverty line.^v Interestingly, the researchers found that while most workers are employed on a few large farms (typically export-oriented) that comply with labor regulations, the majority of farms are small (typically oriented locally), not compliant, and employ relatively few workers.^w Some crops produced by the latter may ultimately end up in the export stream.

In addition, the researchers have found rapid changes in working conditions since the publication of the *Los Angeles Times* articles.^x The researchers found that workers on berry farms earned wages 15 percent higher than workers on other produce farms, and that only 10 percent of workers got their job through recruiters, who are responsible for many of the poor labor conditions.^y Also, just 2.5 percent of berry workers owed a debt to their employer, compared with 5 percent of all farm workers.^z However, a representative from a workers' rights organization reports that these wages are still low, especially compared with the costs of living, and that there are still ongoing labor issues in Mexico's export agriculture sector.^{aa}

^a ILO, ILOSTAT, Mean Nominal Monthly Earning of Employees by Sex and Economic Activity, accessed March 2021.

^b Industry representative, interview by USITC staff, November 20, 2020.

^c USITC, hearing transcript, September 17, 2020, 149 (testimony of Jean-Christophe Hestean, SunOpta Inc.); industry representative, interview by USITC staff, November 25, 2020.

^d Industry representative, interview by USITC staff, November 25, 2020.

^e Escobar, Martin, and Stabridis, "Farm Labor and Mexico's Export Produce Industry," October 2019, 121.

^f *Rural Migration News Blog*, "Workers on Mexico's Export Farms," November 9, 2019.

^g USITC, hearing transcript, September 17, 2020, 149 (testimony of Jean-Christophe Hestean, SunOpta Inc.).

Raspberries for Processing

^h On January 1, 2020, the minimum wage in Mexico was raised to 123.22 pesos (\$6) per day from 102.68 (\$5) pesos per day. University of California Davis, “Jocotepec Berry Field Trip,” March 2, 2018; USITC, hearing transcript, September 17, 2020, 34 (testimony of Lance Jungmeyer, Fresh Produce Association of the Americas); Gonzalez, “Mexico to Hike Daily Minimum Wage,” December 16, 2019.

ⁱ USITC, hearing transcript, September 17, 2020, 34 (testimony of Lance Jungmeyer, Fresh Produce Association of the Americas); industry representative, interview by USITC staff, September 16, 2020.

^j Zahniser et al., “Farm Labor Markets in the United States and Mexico,” November 2018, 1, 11–14; Iliff, “Mexico’s Boom Strains Labor Markets, Infrastructure for Suppliers,” September 9, 2016; industry representative, interview by USITC staff, September 16, 2020; USITC, hearing transcript, September 17, 2020, 149 (testimony of Jean-Christophe Hesteanu, SunOpta Inc.).

^k Iliff, “Mexico’s Boom Strains Labor Markets, Infrastructure for Suppliers,” September 9, 2016; USITC, hearing transcript, September 17, 2020, 150 (testimony of Lance Jungmeyer, Fresh Produce Association of the Americas); industry representative, interview by USITC staff, December 1, 2020.

^l Industry representative, interview by USITC staff, November 25, 2020.

^m Industry representative, interview by USITC staff, December 1, 2020.

ⁿ Labor actions in Baja California by workers in produce, including raspberries, have resulted in some positive changes to wages, benefits, and working conditions, though these have had limited impact on wage differentials between workers in Mexico and the United States. Dibble, “Grower Announces Pay Hikes,” March 31, 2015; Stevenson, “Mexican Growers Offer 15 Pct in Baja Farm Strike,” March 30, 2015; Marosi, “A Year after a Violent and Costly Strike,” May 21, 2016; Card, Lemieux, and Riddell, “Unions and Wage Inequality,” 2004, 519–59; Bryson, “The Effect of Trade Unions on Wages,” 2007, 33; academic experts, interview by USITC staff, January 12, 2021.

^o Academic experts, interview by USITC staff, January 12, 2021; nongovernmental organization (NGO) representative, interview by USITC staff, February 5, 2021.

^p Academic experts, interview by USITC staff, January 12, 2021; NGO representative, interview by USITC staff, February 5, 2021.

^q Taylor-Rosner, “From the Fields of San Quintin,” December 11, 2018; academic experts, interview by USITC staff, January 12, 2021.

^r USDOL, “Labor Rights and the United States-Mexico-Canada Agreement (USMCA),” accessed February 9, 2021; Government of Mexico, Decreto por el que se reforman, adicionan y derogan diversas disposiciones de la Ley Federal del Trabajo (Decree reforming, augmenting, and repealing various provisions of the Federal Labor Law . . .), May 1, 2019.

^s USMCA, chap 31, art 31.B.15.

^t Marosi, “Product of Mexico,” December 17, 2014.

^u In addition to using the Government of Mexico’s National Survey of Occupation and Employment Project, the researchers systematically surveyed over 3,000 farm workers in Mexico in early 2019 using a randomized and stratified survey. Escobar, Martin, and Stabridis, “Farm Labor and Mexico’s Export Produce Industry,” October 2019, 155, 177; academic expert, interview by USITC staff, January 12, 2021; *Rural Migration News Blog*, “Workers on Mexico’s Export Farms,” November 19, 2019.

^v Escobar, Martin, and Stabridis, “Farm Labor and Mexico’s Export Produce Industry,” October 2019, 9, 136–137; Academic experts, interview by USITC staff, January 12, 2021.

^w Academic experts, interview by USITC staff, January 12, 2021.

^x Escobar et al., “Farm Workers in Mexico’s Export Agriculture: Main Findings,” November 2020, 2.

^y Escobar, Martin, and Stabridis, “Farm Labor and Mexico’s Export Produce Industry,” October 2019; Marosi, “Product of Mexico,” December 17, 2014; *Rural Migration News Blog*, “Workers in Mexico’s Export Agriculture,” August 26, 2019; Academic experts, interview by USITC staff, January 12, 2021.

^z *Rural Migration News Blog*, “Workers in Mexico’s Export Agriculture,” August 26, 2019.

^{aa} NGO representative, interview by USITC staff, February 5, 2021.

Products and Supply Chain

Mexico is a supplier to the U.S. market of fresh raspberry seconds as well as processed raspberry products. Processors in Mexico produce a number of products, most of which are used as ingredients for other products, while a small amount are final goods. These products include IQF raspberries, which account for about half of all Mexican processed raspberry production, as well as purees and straight pack raspberries.⁴⁹⁷ Most of these raspberry products are conventional but, according to Aneberries, about 10 percent of Mexico’s processed raspberry products are organic.⁴⁹⁸ Mexican processors sell their products both domestically and for export, mostly to the United States and Canada. Some larger processors have their own marketing departments which arrange sales to U.S.-based food

⁴⁹⁷ Industry representatives, interviews by USITC staff, October 26, 2020, November 25, 2020, and December 1, 2020.

⁴⁹⁸ Aneberries, written submission to the USITC, September 24, 2020, 4.

manufacturers. Other Mexican processors may work with intermediaries, often U.S.-based, that import frozen fruit and vegetables, including raspberries, and sell them to U.S.-based food manufacturers.⁴⁹⁹

Raspberry seconds for processing can be exported fresh, mostly to geographically close customers in the United States. Fresh seconds are exported by brokers or other intermediaries rather than growers or fresh marketing companies.⁵⁰⁰ Reportedly, fresh raspberry seconds from Baja California can be delivered in about 7.5 hours to fruit processors across the border in southern California.⁵⁰¹ While transport times for seconds from Jalisco and Michoacán are longer, there are some reports of fresh seconds from central Mexico being sold to buyers in the Texas border towns of McAllen and Laredo.⁵⁰² These U.S.-based buyers allegedly purchase large drums of chilled raspberries (similar to those used for straight pack and puree) to freeze and warehouse raspberries for sales to other parties in the United States.⁵⁰³

Production, Consumption, and Trade

Production and Consumption

Mexican processed raspberry production is determined by the availability of raspberry seconds for processing and has therefore been driven entirely by the rise in the production of raspberries for the fresh market, mainly for export to the United States. In earlier years, growers had to pay to dispose of raspberry seconds, but by 2012–14, they found a market for them in processing channels.⁵⁰⁴ Mexican fruit processors started offering raspberries in their product lines because of the availability of seconds. During 2015–20, processing volumes rose as raspberry production expanded. The percentage of U.S. imports of frozen raspberries and fresh raspberries for processing as a share of total U.S. raspberry imports from Mexico increased 1.9 percent from 2019 to 2020, from 18.1 percent to 20.0 percent.⁵⁰⁵

Industry and U.S. government representatives characterize the berry industry in Mexico as sophisticated.⁵⁰⁶ Heavy investment from fresh marketing companies, many of which are based in the United States, has driven the rapid expansion in fresh raspberry supply from Mexico.⁵⁰⁷ As seen in table 5.1, raspberry production in Mexico nearly doubled during 2015–19, driven by expanding acreage and, to a lesser extent, a steadily rising yield.⁵⁰⁸ It was reported in 2015 that agave growers were switching to

⁴⁹⁹ Industry representatives, interviews by USITC staff, November 25, 2020, and December 1, 2020.

⁵⁰⁰ Industry representative, interview by USITC staff, October 26, 2020.

⁵⁰¹ Industry representatives, interviews by USITC staff, October 24, 2020, October 26, 2020, and December 1, 2020; Google Maps, directions from San Quintín, Mexico, to Oxnard, California.

⁵⁰² Industry representative, interview by USITC staff, July 30, 2020.

⁵⁰³ Industry representative, interview by USITC staff, July 30, 2020.

⁵⁰⁴ One industry representative reported that what was once a cost to growers of \$25,000 per year is now worth \$100,000 of revenue to them. Industry representatives, interviews by USITC staff, October 26, 2020, and December 3, 2020.

⁵⁰⁵ USITC DataWeb/Census, imports for consumption, HTS 0810.20.1020, 0810.20.1022, 0810.20.1024, 0810.20.9020, 0810.20.9022, 0810.20.9024, 0811.20.2025, accessed February 4, 2020.

⁵⁰⁶ U.S. government representative, interview by USITC staff, September 1, 2020; industry representative, email message to USITC staff, October 24, 2020.

⁵⁰⁷ U.S. government representative, interview by USITC staff, September 1, 2020.

⁵⁰⁸ FAO, FAOSTAT database, Crops: Raspberries (production, area harvested, yield), accessed January 19, 2021.

raspberries in the central Mexican state of Jalisco because raspberries provided a higher return.⁵⁰⁹ Production data suggest the expansion in acreage may be starting to plateau, but one industry representative reported that berry companies are still expanding raspberry acreage to new growing areas in Mexico.⁵¹⁰ This expansion has been driven by firms wanting to take advantage of different growing conditions as a hedge against production disruptions caused by extreme weather and climate change.⁵¹¹ The expanding yield can be tied to continually improving cultivars and production practices.⁵¹²

Table 5.1 Mexico: Production, area harvested, and yield, 2015–19

Production is in metric tons (mt), area harvested is in hectares (ha), and yield is in mt/ha. Percent change is in percentage.

Item	Unit	2015	2016	2017	2018	2019	Absolute change, 2015–19	Percent change, 2015–19
Production	mt	65,388	112,661	120,184	130,187	128,848	63,460	97.1
Area harvested	ha	3,673	6,208	6,390	7,151	7,028	3,355	91.3
Yield	mt/ha	17.8	18.1	18.8	18.2	18.3	0.5	3.0

Source: FAO, FAOSTAT database, Crops: Raspberries, accessed January 19, 2021.

Mexico's domestic consumption of raspberries is growing but has historically been very small; it is reported to currently be about 5 percent of total production.⁵¹³ Before domestic production of raspberries expanded a decade ago, Mexico imported fresh raspberries from the United States to meet that limited demand.⁵¹⁴ As Mexico became a major raspberry producer, Mexican consumers became more familiar with the fruit and its flavor, driving up demand, which was supplied from Mexican production.⁵¹⁵ This growth in demand was supported by public and private marketing campaigns to promote domestic consumption of Mexican-grown raspberries.⁵¹⁶ As the raspberry flavor has become more popular and prevalent, demand for processed raspberries has also been rising, with the berries being featured in dishes at restaurants and incorporated into yogurts and other dairy products, baked goods, and jams and jellies.⁵¹⁷ Despite its domestic production, Mexico does import some processed raspberry products from the United States.⁵¹⁸

Trade

The United States is Mexico's largest trading partner for fresh and processed raspberries. As seen in table 5.2, total Mexican exports of frozen raspberries decreased markedly between 2015 and 2017

⁵⁰⁹ Johnson, "Mexico—Best Known for Tequila, Cactus," March 6, 2015.

⁵¹⁰ Industry representative, interview by USITC staff, October 26, 2020.

⁵¹¹ FAO, FAOSTAT database, Crops: Raspberries (area harvested), accessed January 19, 2021; industry representatives, interviews by USITC staff, October 26, 2020, and November 20, 2020.

⁵¹² Industry representatives, interviews by USITC staff, October 26, 2020, and December 3, 2020.

⁵¹³ U.S. government representative, interview by USITC staff, September 1, 2020; industry representatives, interviews by USITC staff, July 30, 2020, September 16, 2020, and December 1, 2020.

⁵¹⁴ Industry representatives, interviews by USITC staff, October 26, 2020, and December 3, 2020.

⁵¹⁵ Industry representatives, interviews by USITC staff, December 1, 2020, and December 3, 2020.

⁵¹⁶ Industry representatives, interviews by USITC staff, September 16, 2020, and December 3, 2020.

⁵¹⁷ Industry representative, interview by USITC staff, December 1, 2020; USITC, hearing transcript, September 17, 2020, 71–72 (testimony of Tony Miller, Cascade International Foods).

⁵¹⁸ IHS Market, Global Trade Atlas database, HS 0811.20, accessed March 16, 2020.

before increasing steadily to 15,029 mt in 2020, of which 9,910 mt went to the United States. Overall, these exports increased only 6 percent from 2015 to 2020. The United States is Mexico's largest export destination for frozen raspberries, driving the sharp fall and rise of Mexican exports of these goods during the period. Canada was Mexico's only other market for frozen raspberries in 2020, importing 5,119 mt, a 92.4 percent increase since 2015. This trade was not all one way. Mexico imported a small amount of frozen raspberries (620 mt) from the United States in 2020, double the volume in 2015.⁵¹⁹

Table 5.2 Mexico: Exports of frozen raspberries by destination market, 2015–20

In metric tons (mt) and percentages. n.c.= not calculable.

Market	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute	Percent
							change 2015–20 (mt)	change 2015–20
United States	9,561	8,152	5,389	7,526	7,877	9,910	348	3.6
Canada	2,661	1,374	1,453	2,489	1,446	5,119	2,459	92.4
China	0	0	1	95	0	0	0	n.c.
Chile	762	735	0	48	0	0	-762	n.c.
Brazil	35	0	0	9	0	0	-35	n.c.
All other	1,152	1,687	98	6	0	0	-1,152	n.c.
All destination markets	14,172	11,948	6,940	10,173	9,323	15,029	857	6.0

Source: IHS Markit, Global Trade Atlas, HS 0811.20, accessed March 16, 2021.

Note: HS code 0811.20 covers raspberries, blackberries, mulberries, loganberries, currants, and gooseberries. However, available information indicates that the bulk of exports of this product group are raspberries.

As seen in table 5.3, Mexico's exports of fresh raspberries (including fresh raspberries for processing) to all markets have increased by 23,975 mt or 33.8 percent between 2015 and 2020.⁵²⁰ The largest quantity increase in Mexican fresh berry exports was to the United States, with a 25,211 mt (37.5 percent) increase—the United States was the destination for 97.4 percent of Mexican fresh raspberry exports in 2020. Other top markets for Mexican fresh raspberry exports include several European countries and Canada. While exports of fresh raspberries to nearly all other markets fell over the six-year period, Mexican exports to Canada surged by 232 mt or 411.7 percent. Mexico imported a small amount (23 mt) of fresh raspberries from the United States in 2020, an 88 percent decrease since 2015.⁵²¹

⁵¹⁹ IHS Market, Global Trade Atlas database, HS 0811.20, accessed March 16, 2020.

⁵²⁰ HS 0810.20 covers raspberries, blackberries, mulberries, and loganberries. The United States imported 76,732 mt of fresh blackberries from Mexico in 2019. USITC/Census DataWeb, HTS 0810.20.9030, fresh blackberries, accessed February 12, 2021.

⁵²¹ IHS Market, Global Trade Atlas database, HS 0811.20, accessed March 16, 2020.

Table 5.3 Mexico: Exports of fresh raspberries by destination market, 2015–20

In metric tons (mt) and percentages.

Market	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute	Percent
							change 2015–20 (mt)	change 2015–20
United States	67,232	71,787	72,574	81,194	95,200	92,443	25,211	37.5
United Kingdom	962	827	948	2,047	1,125	850	-112	-11.6
Netherlands	509	531	518	713	476	395	-114	-22.4
Italy	646	682	763	831	508	379	-267	-41.4
Canada	56	246	370	339	13	288	232	411.7
All other	1,492	1,523	1,777	1,866	525	517	-975	-65.4
All destination markets	70,897	75,597	76,951	86,990	97,847	94,872	23,975	33.8

Source: IHS Markit, Global Trade Atlas, HS 0810.20, accessed March 16, 2021.

Note: HS 0810.20 covers raspberries, blackberries, mulberries, and loganberries. The United States imported 76,732 mt of fresh blackberries from Mexico in 2019. USITC DataWeb/Census, HTS 0810.20.9030, fresh blackberries, accessed February 12, 2021.

These trends in fresh and frozen berry exports reflect the increase in production of fresh market raspberries in Mexico. One industry representative reported that the proportion of raspberry seconds in Mexico is decreasing as cultivars and methods improve, that in turn increases the share of raspberries that meet fresh market standards.⁵²² As seen in table 3.9 in the U.S. profile chapter, 6,596 mt (7.3 percent) of total U.S. fresh raspberry imports from Mexico in 2019 were intended for processing, representing 10.1 percent of total raspberry production in Mexico in that year.⁵²³ For more information on how raspberries for processing from Mexico enter the U.S. supply chain please see chapter 3, “United States,” in the “Products and Supply Chain” section.

Government Programs

Most of the government support previously offered to growers is no longer available due to policy changes under the administration of President Andrés Manuel López Obrador, who was elected in 2018.⁵²⁴ There is likewise no Mexican government support to the fruit processing sector.⁵²⁵

These policies differ from those beginning in the early 2000s, when the Mexican federal government provided support to the fresh produce industry, including raspberry growers, through several programs

⁵²² Due to data limitations for U.S. imports of fresh raspberries for processing, staff are unable to determine the trend for the share of Mexican fresh raspberries that became U.S. imported seconds over the 2015–20 period. In chapter 8, the pricing analysis estimates a share using 2019 and 2020 for import levels of earlier years. Industry representative, interview by USITC staff, December 1, 2020.

⁵²³ USITC DataWeb/Census, HTS 0810.20.1022, 0810.20.1024, 0810.20.9022, and 0810.20.9024, accessed February 4, 2020; FAO, FAOSTAT database, Crops: Raspberries (production), accessed January 19, 2021.

⁵²⁴ U.S. government representative, email message to USITC staff, December 10, 2020; U.S. government representative, interview by USITC staff, September 1, 2020; Angulo, “Imported Tortillas? Big Mexican Farmers Fear Cuts,” October 15, 2020; USITC, hearing transcript, September 17, 2020, 121 (testimony of Jean-Christophe Hestea, SunOpta Inc.); industry representative, interview by USITC staff, December 1, 2020.

⁵²⁵ USITC, hearing transcript, September 17, 2020, 121 (testimony of Jean-Christophe Hestea, SunOpta Inc.); industry representatives, interviews by USITC staff, November 20, 2020, and December 1, 2020.

aimed at helping growers secure private financing for capital expenditures.⁵²⁶ As part of these programs, grants were provided to fresh produce growers to invest in various forms of protected agriculture technologies, notably hoop houses for raspberries.⁵²⁷

According to industry representatives, additional support was also provided by the government. The government reportedly provided financing assistance to fresh produce growers in the form of guarantees to private banks that enabled growers to access private financing they might not have otherwise been able to obtain.⁵²⁸ In addition to general support that was provided to the fresh produce industry, the Mexican government reportedly supported the promotion of berries, including raspberries, in the domestic market.⁵²⁹ This promotional support included allowing berries to be featured in marketing campaigns to promote consumption of fruit and of local, healthy food produced by Mexicans for Mexicans.⁵³⁰

Compliance with Food Safety Standards

The main drivers of food safety compliance in the Mexican raspberry industry are private international standards required by customers in the destination markets.⁵³¹ These private food safety standards, including Primus and GLOBALG.A.P. at the grower level and the Safe Quality Food Program, FSSC 2200, and Primus at the processor level, are reportedly more stringent than Mexican or U.S. regulations.⁵³² Since the private certification standards meet or exceed requirements found in the U.S. Food Safety Modernization Act (FSMA), the raspberry industry in Mexico reports that no major operational changes have been needed to comply with FSMA.⁵³³ Other factors driving a high level of compliance with food safety requirements are the heavy involvement of U.S. fresh marketing companies and the potential high costs to the industry of a food safety incident.⁵³⁴

⁵²⁶ Wu et al., “Government Support in Mexican Agriculture,” 2018, 7; Industry representatives, interviews by USITC staff, December 1, 2020 and December 3, 2020; U.S. government representative, email message to USITC staff, December 10, 2020; USITC, hearing transcript, September 17, 2020, 121 (testimony of Jean-Christophe Hestean, SunOpta Inc.).

⁵²⁷ U.S. government representative, email message to USITC staff, December 10, 2020.

⁵²⁸ Industry representative, interview by USITC staff, December 1, 2020.

⁵²⁹ Industry representative, interview by USITC staff, December 3, 2020.

⁵³⁰ Industry representative, interview by USITC staff, December 3, 2020.

⁵³¹ USITC, hearing transcript, September 17, 2020, 116–17 (testimony of Jean-Christophe Hestean, SunOpta Inc.).

⁵³² See chapter 1 (“Introduction”) for more information on how U.S. imports of raspberries comply with U.S. food safety standards. USITC, hearing transcript, September 17, 2020, 116–17 (testimony of Jean-Christophe Hestean, SunOpta Inc.); industry representative, interview by USITC staff, December 1, 2020.

⁵³³ Aneberries, written submission to the USITC, September 24, 2020, 3–4.

⁵³⁴ Food safety incidents, such as outbreaks of foodborne illnesses, can result in multimillion dollar losses to growers of affected products. Ribera et al., “Cost of Foodborne Illness Outbreaks for Vegetable Producers,” accessed January 11, 2021; Romero, “Yuma Lettuce Growers Look to Rebuild Trust,” July 2, 2018; USITC, hearing transcript, September 17, 2020, 117–18 (testimony of Jon Mayberry, Mayberry Packing LLC); industry representatives, interviews by USITC staff, October 26, 2020, and November 20, 2020; industry representative, email message to USITC staff, October 24, 2020.

Factors Affecting Competitiveness

As described in chapter 2 of this report, the competitiveness of raspberries for processing and processed raspberry products can be measured by comparing delivered costs, product differentiation, and reliability of supply for U.S. products against those of imports. Certain key factors contribute to the competitiveness of Mexican raspberries for processing and processed raspberry products in the U.S. market. The raspberry industry in Mexico can produce fresh and processed raspberries at lower costs over an extended season than other raspberry producers can. However, as noted earlier, the use of fresh raspberry seconds limits the competitiveness of Mexican processed raspberries.

Mexican competitiveness in the fresh market drives increased production of raspberries for processing.

The raspberry industry in Mexico enjoys a delivered-cost advantage in the U.S. fresh consumption market from the lower costs of labor as well as the Mexican industry's high yields and proximity to the U.S. market.⁵³⁵ Although the main reason for fresh berry marketing companies to invest in expanding raspberry production in Mexico is to help ensure a year-round supply of fresh raspberries to satisfy U.S. consumer demand, the increases in fresh market raspberry production boosts production of all raspberries, including seconds for processing.⁵³⁶

Labor costs are lower in Mexico than in other countries profiled in this report, particularly the United States.⁵³⁷ The share of labor as a percent of total grower costs has been estimated at 15 percent, the largest component of that share is the harvest labor, which accounts for 12 percent of total grower costs.⁵³⁸ The labor cost of harvesting one pound of raspberries in California and Mexico, where growers use the same fresh market production methods, are \$1.44 and \$0.22, respectively.⁵³⁹ The relatively low Mexican labor costs allow its raspberry industry to use production and harvesting methods that are not practical in the U.S. raspberries for processing industry. Growers are able to use hoop houses that yield more berries but require more labor, particularly at harvest.⁵⁴⁰ The high yields stemming from the use of hoop houses, the good weather, and good soils in the growing regions also contribute to a low delivered cost for Mexico's fresh market raspberries.⁵⁴¹

⁵³⁵ Industry representatives, interviews by USITC staff, September 16, 2020, October 26, 2020, November 20, 2020, November 25, 2020; industry representative, email message to USITC staff, October 24, 2020.

⁵³⁶ Industry representative, email message to USITC staff, October 24, 2020; industry representatives, interviews by USITC staff, October 26, 2020, December 3, 2020, and February 5, 2021.

⁵³⁷ ILO, "Mean Nominal Monthly Earning of Employees by Sex and Economic Activity", accessed March 2021; academic expert, interview by USITC staff, January 12, 2021.

⁵³⁸ Escobar, Martin, and Stabridis, "Farm Labor and Mexico's Export Produce Industry," October 2019, 80, 83; industry representative, interview by USITC staff, September 16, 2020.

⁵³⁹ Escobar, Martin, and Stabridis, "Farm Labor and Mexico's Export Produce Industry," October 2019, 80, 83; Bolda et al., "Sample Costs to Produce and Harvest," 2017, 6.

⁵⁴⁰ Industry representatives, interviews by USITC staff, September 16, 2020, and December 3, 2020.

⁵⁴¹ Industry representatives, interviews by USITC staff, September 16, 2020, October 26, 2020, November 25, 2020, December 1, 2020, December 3, 2020; industry representative, email message to USITC staff, October 24, 2020.

Another important cost factor is the proximity to the U.S. fresh raspberry market that Mexico enjoys, which subsequently increases the number of seconds available for processing. Along with developed infrastructure, low costs of shipping, and efficient supply chains, this proximity to market gives Mexico a cost advantage compared with other potential supply sources of fresh raspberries, such as Chile.⁵⁴²

Mexico has an extended period of supply for raspberries.

Another important competitive factor noted as favoring the Mexican raspberry industry is its ability to supply raspberries for both the fresh market and processing for an extended period of the year. The main season for raspberries in Mexico is from September to June, which is the off-season for most U.S. regions growing raspberries both for the fresh market and for processing. In addition, raspberries are grown in multiple regions, each with different districts and valleys that can have distinct microclimates. The diversity in geographic growing regions helps reduce and isolate the risks that adverse weather conditions could pose to the Mexican raspberry crop. For example, if the rainy season starts early in Jalisco and Michoacán, the growing conditions in Baja California are probably not affected.⁵⁴³ This enhances the reliability of supply of Mexican fresh raspberries. In addition, the availability of raspberry seconds for processing in central Mexico and Baja California coincides with the downtime for the processors of more popular fruits, allowing processors to keep their processing lines running and to spread their capital costs over more product.⁵⁴⁴

The reliability of raw fruit supply for processing from different growing regions, coupled with Mexican fruit processors' efforts to utilize spare capacity by taking contracts for processed raspberries, helps reduce the price volatility of processed Mexican raspberries. This also helps make them a more attractive product to food manufacturers. Industry representatives involved with U.S.-Mexican trade of processed Mexican raspberries report that there are typically no big swings in the price of processed raspberries from Mexico throughout the year.⁵⁴⁵

The steady availability of Mexican raspberries for processing benefits food manufacturing customers as well because the fruit is available over a long period of time. This pattern reportedly reduces the food manufacturers' storage costs by as much as 50 percent compared with processed product from Washington. Many growers in Washington try to sell their entire harvest after the season, requiring the customer to take ownership and pay storage costs, even if it would not be further processed right away.⁵⁴⁶ In addition, a steady supply over time is reported to ease the operations both in the manufacturing lines and in cost accounting.⁵⁴⁷

⁵⁴² Industry representatives, interviews by USITC staff, September 16, 2020, and February 5, 2021.

⁵⁴³ Industry representatives, interviews by USITC staff, October 26, 2020, and November 25, 2020; industry representative, email message to USITC staff, October 24, 2020; Smucker's, written submission to the USITC, December 4, 2020, 1.

⁵⁴⁴ USITC, hearing transcript, September 17, 2020, 142 (testimony of Tony Miller, Cascade International Foods).

⁵⁴⁵ Industry representatives, interviews by USITC staff, November 20, 2020, and December 1, 2020.

⁵⁴⁶ Industry representative, interview by USITC staff, November 20, 2020.

⁵⁴⁷ Industry representatives, interviews by USITC staff, October 26, 2020, and November 2020; industry representative, email message to USITC staff, October 24, 2020; Smucker's, written submission to the USITC, December 4, 2020, 1.

Raspberries play a minor role in the Mexican processed fruit industry.

Mexican processors diversify their fruit portfolio and keep their processing plants fully utilized by purchasing raspberries in addition to other Mexican fruits.⁵⁴⁸ Mexican fruit processors have access to a wide variety of fruits throughout the year which allows them to maximize efficiencies of their manufacturing lines more so than processors in regions that only have fruit to process in the summer.⁵⁴⁹ In addition, processors prefer to have raspberries on hand to offer to customers in addition to their sales of other processed fruits.

The Mexican processed fruit industry benefits from the relatively low delivered costs for raspberries for processing. This is a result of raspberry growers focusing on the lucrative fresh rather than processing market, where reportedly growers can get \$0.15–0.50 per pound depending on quality for their raspberry seconds, rather than paying to dispose of them as in earlier years.⁵⁵⁰ According to industry representatives, the sale of the seconds allows Mexican growers to recover a portion of the \$2 per pound that it costs to produce both the fresh market raspberries and the seconds.⁵⁵¹

Like the processors of Mexican raspberries, the brokers that buy processed raspberries from Mexico and sell them to customers in the United States tend to specialize in fruit other than raspberries (e.g., strawberries and mangoes).⁵⁵² One U.S.-based broker who primarily handles other fruit besides raspberries reported that fruit brokers' business interests in raspberries may be more for their value in maintaining business relationships with processors and food manufacturers than for their value in trade. For many of these brokers, raspberries represent a small portion of their portfolios, so they are not well versed in the dynamics and pricing of the processed raspberry market.⁵⁵³

Substitutability of Mexican raspberries is limited for some applications, acceptable for others.

One factor that tempers the competitiveness of Mexican raspberries for processing is the limited substitutability of Mexican processed raspberries in some applications. Compared with other sources, such as the U.S. industry in Washington, the berries grown in Mexico are tailored to the fresh market and are not viewed as suitable for all processor specifications, as noted in chapter 3. A number of

⁵⁴⁸ Industry representative, interview by USITC staff, November 20, 2020, and December 1, 2020; industry representative, email message to USITC staff, March 29, 2021.

⁵⁴⁹ These fruits include strawberries, mangoes, pineapple, guava, bananas, blueberries, blackberries, and raspberries. Industry representative, email message to USITC staff, March 29, 2021; industry representatives, interviews by USITC staff, November 20, 2020, and December 1, 2020.

⁵⁵⁰ Industry representatives, interviews by USITC staff, September 16, 2020, October 26, 2020, November 20, 2020, December 1, 2020, and December 3, 2020; academic experts, interview by USITC staff, January 12, 2021.

⁵⁵¹ Industry representatives, interviews by USITC staff, September 16, 2020, October 26, 2020, November 20, 2020, December 1, 2020, and December 3, 2020; academic experts, interview by USITC staff, January 12, 2021.

⁵⁵² Industry representative, email message to USITC staff, October 24, 2020; industry representatives, interviews by USITC staff, October 26, 2020, November 20, 2020, and November 25, 2020.

⁵⁵³ Industry representatives, interviews by USITC staff, November 20, 2020, and November 25, 2020.

purchasers of raspberries for processing have noted differences between the Mexican product and those from regions that grow raspberries specifically for processing. Several purchasers reported that the puree and straight pack raspberry products imported from Mexico need to be mixed with raspberries grown for processing in order to get the desired deeper red color and higher Brix levels.⁵⁵⁴ In addition, U.S. buyers reported that the fresh market berries grown in Mexico are fragile and tend to break apart during the IQF process, resulting in a lower-quality IQF product. As a result, several U.S. purchasers of whole IQF frozen raspberries reported that they source IQF raspberries from Mexico only as a last resort.⁵⁵⁵

However, for some in the industry these product differences are not a major concern, or, in some cases, are even preferred. Reportedly, some food manufacturers find it is possible to reformulate their products using Mexican raspberries and achieve a comparable final product. For instance, by adding sugar or food coloring like beet juice to a final product, such as a low-value jam, a firm could produce an acceptable raspberry product made from Mexican raspberry seconds.⁵⁵⁶ Also, some food manufacturers prefer the lighter red color of the Mexican raspberry products for certain applications. It was reported that in one case, a jam manufacturer prefers lighter-color raspberries because they naturally make for a brighter red finished product that is pleasing to consumers, rather than the darker, almost brown jam that results from raspberries grown for processing.⁵⁵⁷

Moreover, these differences in product characteristics between Mexican raspberry products and those from other sources can fluctuate from year to year. For instance, the raspberries for processing industry in the United States reportedly produced a lower-quality product in 2020 stemming from excessive rainfall that reduced the Brix level. Some purchasers noted that raspberries from Washington that year were unable to meet the minimum sweetness level specified in contracts.⁵⁵⁸

⁵⁵⁴ USITC, hearing transcript, September 17, 2020, 137 (testimony of Rolf Haugen, Northwest Berry Co-op); industry representative, interview by USITC staff, October 20, 2020.

⁵⁵⁵ Industry representatives, interviews by USITC staff, September 24, 2020, and November 20, 2020.

⁵⁵⁶ Industry representatives, interviews by USITC staff, October 19, 2020, October 20, 2020, and November 20, 2020.

⁵⁵⁷ Industry representative, interview by USITC staff, October 26, 2020.

⁵⁵⁸ Industry representative, interview by USITC staff, October 26, 2020; industry representative, email message to USITC staff, October 24, 2020.

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Chapter 6

Serbia

Summary

Serbia is an export-oriented supplier of processed raspberry products, which it sells primarily to the European Union (EU). The United States accounted for about 4 percent of Serbia's total exports of frozen raspberries during 2015–20. However, within the U.S. market, Serbia is a major supplier. In 2019, Serbia was the second-largest U.S. supplier by value, and the third largest by quantity after Chile and Mexico.⁵⁵⁹ The majority of U.S. imports of frozen raspberries from Serbia are IQF products. Serbia has the ideal climate and land to produce raspberries, including organic raspberries. Serbia's grower's organic production allowed Serbia to achieve a highly competitive position in terms of product differentiation among processed raspberry suppliers to the United States from 2015 to 2020.

Several factors contribute to Serbia's competitive position in the U.S. market. Serbia's processors have access to organic raspberries in volumes suitable for commercial sale. This is primarily due to the country's ideal growing climate and widely dispersed geographic growing areas. Data show that the number of growers cultivating organic raspberries is growing each year. In addition, as a candidate for accession to the EU, Serbia's established relationships in the EU market and its compliance with the EU's stringent standards of quality and safety have contributed to the acceptance of its raspberry exports (largely frozen) on the global stage. The EU-Serbia trade relationship also facilitates a trade route from Serbia to United States. The low cost of the raw material, which is impacted by low labor costs, has contributed to Serbia's success as a global supplier in recent decades.

However, despite Serbia's highly competitive position in both the EU and United States, growth in the Serbian raspberry industry has largely plateaued. The lack of integration between growers and processors prevents growers from receiving the full benefits of increased global market prices for the fresh input, lending to instability at the Serbian grower level, including grower-led protests within Serbia. The primary growing region within Serbia has also been hit with a series of adverse weather events over recent years. These weather problems have contributed to inconsistent yields, which have depressed export quantities of processed product in certain years. Nonetheless, even though the Serbian raspberry industry has a few impediments to overcome in order to continue to expand and diversify, Serbia is expected to continue to be a significant exporter of frozen raspberries, competing with processed raspberries in the United States.

⁵⁵⁹ The Harmonized Commodity Description and Coding System (HS) international system maintained by the World Customs Organization (WCO) categorizes global trade in goods under 6-digit classification numbers. Frozen raspberries (including some other berries) are classified under HS 0811.20, which covers shipments of only one type of berry as opposed to mixes of berries and other fruit. The Harmonized Tariff Schedule of the United States (HTS) classifies frozen uncooked red raspberries (frozen red raspberries) under HTS 0811.20.2025. IHS Markit, Global Trade Atlas database, HS 0810.20 and 0811.20, accessed June 22, 2020; USITC DataWeb/Census, HTS 0811.20.2025, accessed February 4, 2020.

Industry Structure

The Serbian raspberry industry is export oriented, recording over \$270 million worth of frozen raspberry exports, in 2019. There are over 75,000 raspberry growers within Serbia⁵⁶⁰ that primarily produce raspberries for processing; most Serbian raspberries (over 90 percent) are destined for the frozen berry market, typically in the form of individually quick frozen (IQF) berries. Germany is Serbia's largest single-country export market, accounting for nearly one-third—34,511 metric tons (mt)—of Serbia's frozen raspberry exports in 2020. During 2019–20 Serbia was the third-largest supplier by volume of frozen raspberries to the United States, after Mexico and Chile.⁵⁶¹

Regions

Raspberries are grown in all regions of Serbia and the fruit is so prolific that it is sometimes referred to as “red gold.” Generally, the best land for raspberry production within Serbia is in the valley regions, which range from 400 to 800 meters above sea level.⁵⁶² These regions have high-quality soils (deep, fertile, moderately heavy, and mildly acidic). They also have moderately warm and moderately humid areas that are the most suitable for raspberry cultivation.⁵⁶³ For this reason, fresh raspberry production is primarily concentrated within the western region of Serbia (figure 6.1).⁵⁶⁴ However, due to the potential profitability of raspberry crops, production takes place in nearly all parts of the country, even where growing conditions are less than optimal.⁵⁶⁵ For instance, a notable concentration of growers—over 4,000—are in the Arilje municipality in western region of Serbia, supplying about 5 percent of the country's production as of 2019.⁵⁶⁶ Throughout the country, Serbian processors are located near the growers that supply raspberries at peak harvest. As raspberries are one of the most fragile of all berries, the ability to freeze them quickly is beneficial.

⁵⁶⁰ SORS Database, Number of farms and areas of different fruits by agricultural size of orchard: Raspberries, accessed March 8, 2021; academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020.

⁵⁶¹ IHS Markit, Global Trade Atlas database, HTS 0810.20 and 0811.20, accessed June 22, 2020.

⁵⁶² USDA, FAS, “Yugoslavia Fresh Deciduous Fruit Raspberries Annual 2003,” 5.

⁵⁶³ Djurkovic, “SWOT Analysis of Serbia's Raspberry Sector,” 82.

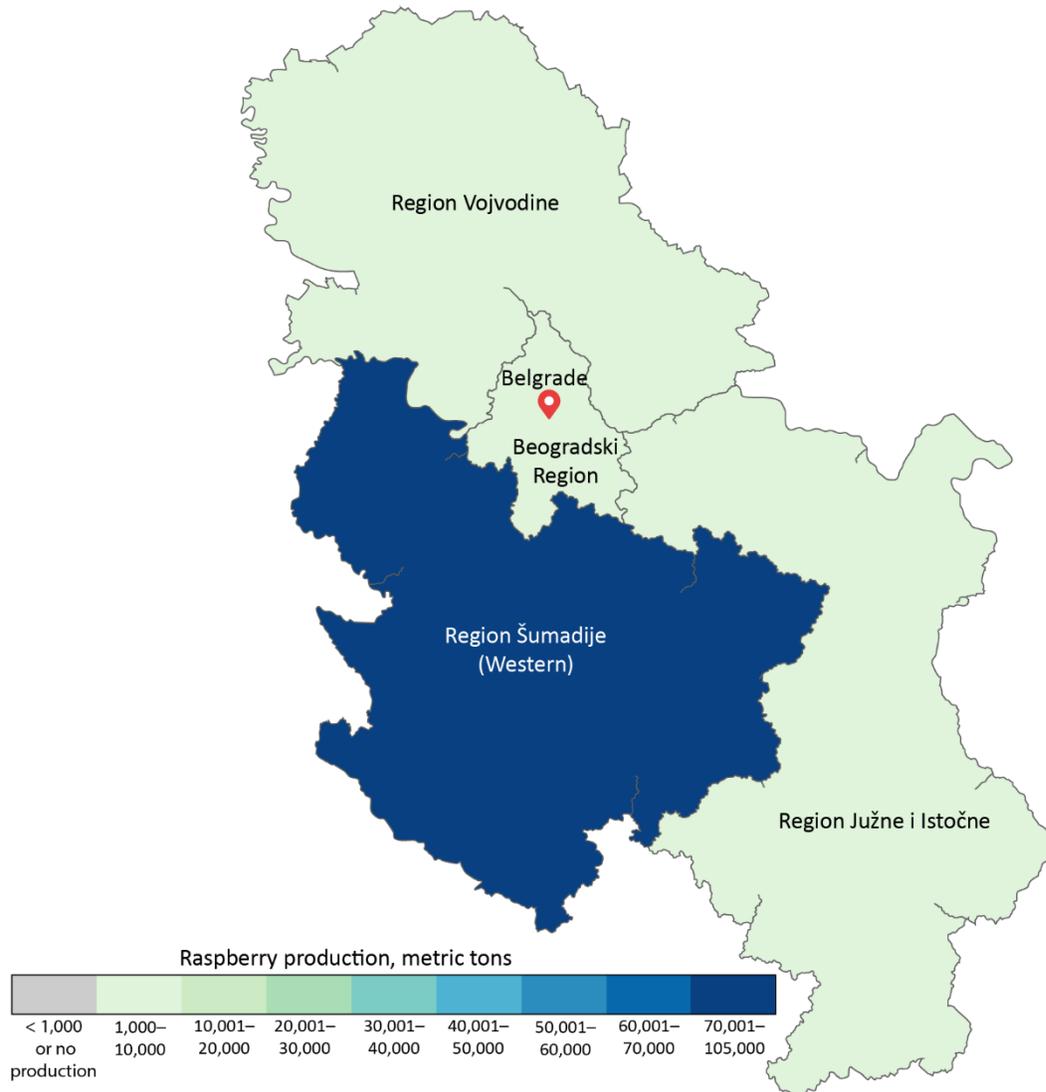
⁵⁶⁴ All Berries, “About Serbia,” accessed February 8, 2021; USDA, FAS, *Yugoslavia Fresh Deciduous Fruit Raspberries Annual 2003*, April 30, 2003, 5.

⁵⁶⁵ Traditionally, raspberries have been one of the highest-value fruits on the global market, with prices typically higher than those of other high-value soft fruits like blackberries and blueberries. Industry representative, interview by USITC staff, July 24, 30, 2020; Kljajić, “Production and Export of Raspberry,” April 10, 2017, 46.

⁵⁶⁶ SORS Database, Number of farms and areas of different fruits by agricultural size of orchard: Raspberries, accessed March 8, 2021.

Figure 6.1 Raspberry production in Serbia, by region, 2019

In metric tons (mt). Underlying data for this figure appear in [appendix H table H.15](#).



Source: Compiled by USITC based on the Government of Serbia, Statistical Office, Crop Production from 2005 (Raspberries, 2019).

Serbia also hosts several microclimate regions, which allow raspberry production that meets the requirements stipulated for organic certification.⁵⁶⁷ Historically, Serbia has dry weather at the appropriate times during raspberry cultivation, which reduces mold growth without the use of synthetic fungicides, optimizing conditions for organic production.⁵⁶⁸

⁵⁶⁷ Industry representative, interview by USITC staff, July 24, 2020; Wróblewska, Pawlak, and Paszko, “Economic Aspects in the Raspberry Production,” December 1, 2019, 78.

⁵⁶⁸ Industry representative, interview by USITC staff, July 24, 2020; academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020.

Industry Composition

The Serbian raspberry industry is focused on processing berries and exporting most of them. There are nearly 300 processors (firms with freezing and other processing operations) active within Serbia.⁵⁶⁹ Some processors also export processed raspberry products.⁵⁷⁰ As of 2017, nearly 200 companies, including many small processors, exported raspberries to foreign markets. Four exporters accounted for over one-quarter of total raspberry exports, but no single company had an export share greater than 10 percent. Serbian-owned companies are dominant among the largest exporters.⁵⁷¹ At the same time some of the large modern processors operating in Serbia, such as Crop S & Partners and Mondi Lamex, are foreign owned.⁵⁷²

There are over 75,000 raspberry farms in Serbia that supply the fresh raspberry input for processed raspberries. The raspberry farms in Serbia, which average only 0.5 hectares (ha) (1.2 acres), are typically family-owned seasonal businesses that do not use newer technology or processes, instead relying on traditional production methods. The workforce on these farms generally consists of family labor and, when needed during the harvest season (early summer), seasonal workers from Serbia or neighboring countries.⁵⁷³

Over the past several years, the number of these small family farms has begun to decrease due to a variety of factors. These, include aging populations in rural villages, migration to the urban areas, and lack of capital going to growers.⁵⁷⁴ As with raspberry production in other countries, periods of sustained low pricing led to many new growers exiting the raspberry production sector; many growers entered the market when prices were high, and then left when lower prices did not meet their expectations.⁵⁷⁵

Industry Organization

Cooperation and organization in the Serbian raspberry supply chain (i.e., producers, intermediaries, cold stores) is very limited. There is some horizontal integration within the supply chain, but vertical integration does not exist.⁵⁷⁶ Generally, raspberry growers do not have ownership stakes in cold storage facilities, and specialized cooperatives for raspberry processing and export are underdeveloped.⁵⁷⁷ Thus,

⁵⁶⁹ Djurkovic, "SWOT Analysis of Serbia's Raspberry Sector," 27; SeedEv, *Market Study*, April 12, 2019, 71.

⁵⁷⁰ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020.

⁵⁷¹ Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 48.

⁵⁷² Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 48.

⁵⁷³ The number of Serbian farms producing organic raspberries has increased significantly in recent years, from about 300 farms in 2013 to over 2,000 farms in 2018. Stojanović et al., "Market Analysis of Serbia's Raspberry Sector," 2018, 5; Djurkovic, "SWOT Analysis of Serbia's Raspberry Sector," 2012, 86.

⁵⁷⁴ USDA, FAS, "Yugoslavia Fresh Deciduous Fruit Raspberries Annual 2003," 5.

⁵⁷⁵ Fruit Ukraine, "EU Lifts Additional Control Measures for Export," accessed February 8, 2021.

⁵⁷⁶ Much research has been devoted to the fragmented production within Serbia, but it is worth noting that the fragmentation also applies to the processors and exporters. Nearly 200 companies within Serbia exported raspberries to foreign markets in 2018. Džagić et al., "Integrated Report on Performance and Value Chain Analysis," December 2017, 47; Stojanović et al., "Food Chain Structure, Price and Risk Management Strategies," 2018, 5.

⁵⁷⁷ Parausić and Simeunović, "Market Analysis of Serbia's Raspberry Sector," December 31, 2016, 1424.

the majority of raspberry growers are price takers—that is, they lack power to influence prices—when selling fresh raspberries.

In recent years, media reports have covered growers’ protests over unfair pricing and purchasing conditions, which occurred when raspberry prices were set lower.⁵⁷⁸ Despite these reports,⁵⁷⁹ some researchers state that there is trust between growers and some operators of cold storage facilities, particularly when long-term contracts have been established that feature agreed-upon raspberry pricing.⁵⁸⁰

Cultivars

The vast majority (over 90 percent) of raspberries grown in Serbia are the Willamette cultivar from Oregon.⁵⁸¹ High-yielding, Willamette plantings produce berries that are good for freezing and processing and are said to maintain a good flavor profile.⁵⁸² In recent years, the Meeker cultivar has been introduced, but production of this cultivar is still comparatively limited. Several other cultivars have been introduced, including Promise and Grandina, but these plant types make up a small share of the market.⁵⁸³ Attempts to diversify cultivars are driven, in part, by the goal of helping the Serbian raspberry crop become more robust against mold and certain pests.⁵⁸⁴ A recent example is Fertodi Zamatos, a Hungarian cultivar, that is high yielding and more resistant to moisture.⁵⁸⁵ There are also attempts to expand production to autumn raspberry cultivars—such as the Polka, Polana, and Tulameen varieties—in order to extend the harvesting season.⁵⁸⁶ Growth of more robust raspberry cultivars that are mold-resistant without the use of certain chemicals could increase Serbia’s ability to produce organic raspberries.

Newer cultivars, with stronger genetic potential, are typically imported because Serbia has few modern nurseries. Serbian growers do not trust imported seedlings in general, so adoption of these newer cultivars is very limited.⁵⁸⁷ Also, growers are said to lack knowledge in terms of choice, scope, and method of using inputs. They rely primarily on the traditional way of production. One of the industry’s

⁵⁷⁸ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020.

⁵⁷⁹ Stojanović et al., *SUFISA Raspberry Report an Extended Summary*, June 2018, 8; Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 99–101.

⁵⁸⁰ Some regions in Serbia have associations for producers and cold storage facilities. However, reports indicate that associations largely do not represent the small producers and there is no benefit from the association such as joint purchase, building facilities, etc. Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020.

⁵⁸¹ The Willamette variety has been cultivated in Serbia for nearly half a century. SeedEv, *Market Study*, April 12, 2019, 15.

⁵⁸² Government of Canada, BC Ministry of Agriculture, *A Global Export Market Overview*, 2010, 8; Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020.

⁵⁸³ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; SeedEv, *Market Study for Soft Fruits*, April 12, 2019, 15.

⁵⁸⁴ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020.

⁵⁸⁵ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; Floriva, “Malina Fertodi Zamatos,” August 27, 2018.

⁵⁸⁶ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020.

⁵⁸⁷ Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 47.

key challenges is to turn the growers' focus onto education and encourage their adoption of modern cultivation technologies and approaches, which include diversifying cultivars.⁵⁸⁸

Production System

Most raspberries in Serbia are planted and tended to manually, unlike in EU countries, where advanced technical and technological practices are more frequently employed.⁵⁸⁹ Raspberries are predominantly grown on small family-owned farms with the harvesting done primarily by hand. Even on farms where machinery is used in planting or tending operations, the harvesting is still done solely by hand. As noted, the Willamette cultivar dominates the market, which translates into one harvest season lasting only six weeks from June through July.⁵⁹⁰ The Serbian raspberry harvest season involves the hiring of about 15,000 seasonal workers, of which over a third are "not local," to assist the approximately 100,000 raspberry producers.⁵⁹¹ Seasonal labor is not fully regulated, and legislation within Serbia to strengthen seasonal laborers' rights has not been passed.⁵⁹²

Products and Supply Chain

After the harvest, most Serbian raspberries (over 90 percent) enter the frozen market channel.⁵⁹³ Serbian processed raspberries products are primarily (1) whole IQF raspberries, (2) "raspberry mixtures" (i.e., various proportions of free-flowing whole and broken raspberries),⁵⁹⁴ and (3) block frozen raspberries. As recently as 2016, less than 3 percent of total Serbian raspberry production went to the fresh market channel.⁵⁹⁵

The raspberry supply chain is short for both domestic and global markets; the last step after processing is cold storage, since Serbian raspberries are largely exported as frozen product. Due to the homogeneity of the product (mostly IQF), the supply chain is comparatively simple compared to that of other countries. It can be described in three segments: growers (producers of the raw material);

⁵⁸⁸ Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 47.

⁵⁸⁹ Wróblewska, Pawlak, and Paszko, "Economic Aspects in the Raspberry Production," December 1, 2019, 76.

⁵⁹⁰ Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 47.

⁵⁹¹ Academic professional, email message to USITC staff, March 3, 2020; FAO, *Smallholders and Family Farms in Serbia*, 2020, 138; Government of the Netherlands. Ministry of Agriculture, Nature, and Food Quality, "Serbia Newsflash Week 24," December 6, 2020.

⁵⁹² The legislation that is being referenced is the "Law on Seasonal Labor." FAO, *Smallholders and Family Farms in Serbia*, 2020, 122; Stojanović et al., "Food Chain Structure, Price and Risk Management Strategies," 2018, 5.

⁵⁹³ Due to the lack of processing technologies, Serbia converts very small quantities into local juice and puree products. Instead, the country exports most of its frozen raspberries to other European countries, where firms process them for re-export. Government of Canada, BC Ministry of Agriculture, *A Global Export Market Overview*, 2010, 9.

⁵⁹⁴ Raspberry mixtures consist of 40 to 50 percent frozen whole berries, 20 to 30 percent chopped raspberries, and 20 percent broken raspberries. All Berries, "About Serbia," accessed February 8, 2021; USDA, FAS, "Yugoslavia Fresh Deciduous Fruit Raspberries," April 30, 2003, 3.

⁵⁹⁵ Stojanović et al., *Serbia National Report*, April 2018, 3, 97.

processors (operators that purchase, store, process, and sell the product); and distributors (e.g., retailers, exporters, and foreign firms).⁵⁹⁶

The Serbian raspberry supply chain starts with the inputs that are needed for the growers to produce.⁵⁹⁷ There are no significant producers of fertilizers or pesticides within Serbia, so these materials are primarily sourced through imports.⁵⁹⁸ Actual planting materials used for raspberries are sourced and largely produced in Serbia. Growers generally are skeptical of the health of imported seedlings and attribute instances of infected crops to seedling materials sourced from abroad.⁵⁹⁹ One local source, the Fruit Research Institute (located in Čačak, Serbia), produces standard and certified propagating and planting material. The Fruit Research Institute issues up to 600,000 certified seedlings annually to growers, many seedlings are studied but some materials are sold commercially to nurseries and fruit growers.⁶⁰⁰

Once Serbian growers harvest the raspberries, the supply chain moves forward to the processor stage. This largely involves local intermediaries (brokers),⁶⁰¹ the cold storage facilities that own processing capacity (processors), and foreign intermediaries.⁶⁰² After selling their harvest, growers typically have little to no further involvement in the supply chain.⁶⁰³ During the 1990s, the processed raspberry sector was run by state-owned cold storage facilities, and the growers' sales were mostly directed to domestic intermediaries (brokers who aggregate berries from small farms).⁶⁰⁴ Some of these brokers still exist today, selling the product to processors.

The Serbian raspberry processing sector consists of Serbian cold storage facilities, which numbered over 300 in 2017. It is estimated that up to 95 percent of Serbia's raspberry production is purchased by processors. This segment of the industry is fragmented; plants range in size from micro-facilities, with capacities of a few dozen metric tons, to large facilities, which can handle more than a thousand metric tons.⁶⁰⁵ Smaller facilities work as intermediaries/brokers, while larger facilities can freeze, store,

⁵⁹⁶ Stojanović et al., "Food Chain Structure, Price and Risk Management Strategies," 2018, 5.

⁵⁹⁷ For an overview of the different segments of the raspberry supply chain, please see chapter 1, "[Introduction.](#)"

⁵⁹⁸ Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 46.

⁵⁹⁹ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; Stojanović et al., *SUFISA Raspberry Report: An Extended Summary*, June 2018, 6–7; Stojanović et al., *Serbia National Report*, April 2018, 117–18.

⁶⁰⁰ Stojanović et al., "Food Chain Structure, Price and Risk Management Strategies," 2018, 5; Fruit Research Institute (Institut za voćarstvo) Čačak, "History (Istorijat)," accessed February 9, 2021.

⁶⁰¹ "Micro" cold storage operators (capacity is not greater than a few dozen tons) act exclusively as intermediaries. Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 47.

⁶⁰² Some cold storage operations, usually "large" operations, are purchasers, processors, and exporters. Fruvela is one such example: it purchases, stores, and processes a variety of fruits in Serbia just outside of Belgrade. Fruvela, "Cold Storage for Fruits," accessed February 9, 2021.

⁶⁰³ In Serbia, large processors (those that have thousands of tons of storage capacity) have been buying less and less raw material (i.e., raspberries) directly from growers due to the high number of small cold storage facilities spread across the country. Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 46.

⁶⁰⁴ Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 47.

⁶⁰⁵ Stojanović et al., *Serbia National Report*, 96.

package, and market frozen raspberry products.⁶⁰⁶ Cold storage operations are generally located close to raspberry-growing areas, and reportedly have longstanding relationships with growers within their localities.⁶⁰⁷ Serbian raspberry processors also freeze other fruit and vegetables with their equipment.

It is estimated that 15–20 percent of cold storage facilities in Serbia have Hazard Analysis Critical Control Point (HACCP) certificates. “Modern” cold storage facilities that meet key standards, such as HACCP,⁶⁰⁸ and that have greater than 2,000 mt capacity account for around 30–40 percent of total final purchases of frozen raspberries.⁶⁰⁹

Once frozen, the raspberries are mainly exported as IQF product in units of 10–20 kilograms (kg).⁶¹⁰ Depending on the capabilities and established relationships of the processor, foreign intermediaries negotiate with final customers and generally handle packaging and delivery of the final products.⁶¹¹ Serbia’s limited adoption of modern machinery and technology means that many processors do not have access to packaging material that meets EU standards. Therefore, many EU buyers that require raspberries to be packed in a specific size or style of packaging for retail purposes will supply the packaging and labels to Serbian processors. Generally, when exported, IQF raspberries are packed into plastic bags of 2.5 kg net weight in a standard five-layer carton box.⁶¹²

Production, Consumption, and Trade

Production and Consumption

Serbia is the third-largest global producer of raspberries, behind Russia and Mexico.⁶¹³ As noted previously, it is generally accepted that 90 percent of raspberries produced in Serbia are frozen.⁶¹⁴ Production in Serbia grew from 2015 to 2019, with peak production reported in 2018 (table 6.1).⁶¹⁵ There have been reports from industry that adverse weather and poor growing conditions in 2019

⁶⁰⁶ SeedEv, *Market Study for Soft Fruits*, April 12, 2019, 69; Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 43.

⁶⁰⁷ Depending on the size of the operations, sometimes growers operate as brokers and have cold storage capacity but generally are not involved in exporting operations. Nanni, “Serbian Raspberry Prices Unlikely to Decline,” September 29, 2020.

⁶⁰⁸ These facilities also meet British Retail Consortium (BRC) and other key standards. Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 47; FAO, *Smallholders and Family Farms in Serbia*, 2020, 39–40.

⁶⁰⁹ Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 47.

⁶¹⁰ During the harvest season some fresh raspberries are also exported from Serbia in storage tanks, but the amounts exported are minuscule when compared to frozen raspberry exports. Industry representative, interview by USITC staff, July 29 and August 13, 2020; Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 48; Government of Canada, BC Ministry of Agriculture, *A Global Export Market Overview*, 2010, 9–10.

⁶¹¹ Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 53.

⁶¹² Government of Canada, BC Ministry of Agriculture, *A Global Export Market Overview*, 2010, 9.

⁶¹³ FAO, FAOSTAT database, Crops: Raspberries, accessed June 2, 2020.

⁶¹⁴ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020.

⁶¹⁵ Industry representative, interview by USITC staff, July 30, 2020.

hindered production, which corresponds, in part, to the decrease in yield from 2018 to 2019. Although organic raspberry production has grown, as of 2018, only about 2.5 percent of raspberry growers were producing organic product.⁶¹⁶

Domestic demand for frozen raspberry products is low—Serbians mainly consume fresh raspberries sold in farmers’ markets.⁶¹⁷ Historically, there were few companies that processed raspberries for jam and juice, although a small number of operations have come online for this purpose in recent years.⁶¹⁸

Table 6.1 Serbia: Raspberry production, area harvested, and yield, 2015–19

Production is in metric tons (mt), area harvested is in hectares (ha), and yield is in mt/ha. Percent change is in percentage.

Item	Unit	2015	2016	2017	2018	2019	Absolute	Percent
							change,	change,
							2015–19	2015–19
Production	mt	97,165	113,172	109,742	127,010	120,058	22,893	23.6
Area harvested	ha	16,211	20,194	21,861	22,654	23,249	7,038	43.4
Yield	mt/ha	6.0	5.6	5.0	5.6	5.2	-0.8	-13.8

Source: FAO, FAOSTAT database, Crops: Raspberries, accessed January 19, 2021.

Serbia lags behind the United States on yield, but is generally ahead of direct competitors such as Poland.⁶¹⁹ Yields vary by farm type: average yields from traditional growers range from 5 to 6 tons, but the more modern and larger farms have yields that can reach up to 15–20 tons per hectare.⁶²⁰ In recent years, yields have been inconsistent due to weather events.⁶²¹ However, researchers note that there is potential to expand yield if farmers have consistent access to healthy seedlings and reliable pricing for raspberries, such as through registered seedling banks.⁶²²

Trade

In 2020, U.S. import data show Serbia as the third-largest supplier of frozen raspberries (mainly IQF) to the United States.⁶²³ Although Serbian exports of frozen raspberries during 2015–20 remained high,

⁶¹⁶ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; Stojanović, Ristić, and Filipović, “Organic Raspberries in Serbia,” 2019, 215–30.

⁶¹⁷ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020.

⁶¹⁸ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; Djurkovic, “SWOT Analysis of Serbia’s Raspberry Sector,” 16; Fruit Ukraine, “Serbian Berry Sector Needs New Approach,” April 5, 2019.

⁶¹⁹ FAO, FAOSTAT database, Crops: Raspberries, accessed January 19, 2021; Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 47.

⁶²⁰ The source reported “tons,” which likely refers to metric tons. Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 47.

⁶²¹ Refer to “[Factors Affecting Competitiveness](#)” section later in this chapter.

⁶²² Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; Parausić and Simeunović, “Market Analysis of Serbia’s Raspberry Sector,” December 31, 2016, 1417.

⁶²³ IHS Markit, Global Trade Atlas database, HS 0810.20 and 0811.20, accessed June 22, 2020. Serbian raspberries and frozen raspberries are eligible products under the U.S. Generalized System of Preferences (GSP) and have been among the top Serbian GSP exports to the United States. Most U.S. imports of frozen raspberries from Serbia claimed GSP treatment in 2019. USITC DataWeb/Census, HS 0810.20 and 0811.20, accessed June 22, 2020.

Raspberries for Processing

both quantity and value varied year to year. Overall, exports to the U.S. were up at the end of the period in terms of both value and quantity (20.2 and 18.5 percent respectively) (table 6.2). Exports of frozen raspberries to the United States rebounded in 2020 (5,574 mt) after the lowest quantity of exports during the period occurred in 2019 (2,774 mt). Some of the variance can be attributed to lower pricing, but previously noted weather events also impacted the consistency of available quantities.⁶²⁴ Sources indicate that most of Serbia's processed raspberry exports to the United States are composed of whole IQF raspberries.⁶²⁵ Serbia is not a significant source of other processed raspberry products or juice.⁶²⁶ Despite Serbia's position as a leading supplier of U.S. frozen imports, its principal export market for frozen raspberries is the EU. Germany is Serbia's largest individual-country export market; nearly one-third of Serbia's frozen raspberries (34,511 mt) were exported to Germany in 2020. As of 2018, more than 170 entities exported frozen raspberries from Serbia, with 4 firms contributing over 25 percent of total exports.⁶²⁷

Table 6.2 Serbia: Exports of frozen raspberries by destination market, 2015–20

In metric tons (mt) and percentages.

Market	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute change, 2015–20 (mt)	Percent change, 2015–20
Germany	30,560	29,405	28,807	31,732	35,333	34,511	3,951	12.9
France	21,462	20,486	20,009	20,363	22,139	17,831	-3,631	-16.9
Belgium	8,434	6,814	5,553	6,804	6,365	6,952	-1,482	-17.6
United Kingdom	3,894	4,231	4,123	5,528	5,881	6,770	2,876	73.9
United States	4,703	2,905	5,336	4,602	2,774	5,574	871	18.5
All other	24,738	22,115	30,194	34,073	41,539	35,733	10,995	44.4
All destination markets	93,791	85,957	94,021	103,102	114,032	107,371	13,580	14.5

Source: IHS Markit, Global Trade Atlas database, Serbian Customs Tariff numbers 0811.20.31 and 0811.20.3100, accessed March 9, 2021.

Note: Serbian Customs Tariff numbers 0811.20.31 and 0811.20.3100 include only unsweetened raspberries. A negligible amount of sweetened raspberries are exported under 0811.20.11, 0811.20.19, and 0811.20.1900.

⁶²⁴ Refer to "[Factors Affecting Competitiveness](#)" section later in this chapter.

⁶²⁵ Industry representative, interview by USITC staff, July 30, 2020; academic professional, interview by USITC staff, August 4, 2020; academic professional, email message to USITC staff, March 3, 2021.

⁶²⁶ Academic professional, interview by USITC staff, August 4, 2020; Parausić and Simeunović, "Market Analysis of Serbia's Raspberry Sector," December 31, 2016, 1417.

⁶²⁷ Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 47–48.

Table 6.3 Serbia: Exports of frozen raspberries by destination market, 2015–20

In thousands of U.S. dollars and percentages.

Market	2015 (1,000 \$)	2016 (1,000 \$)	2017 (1,000 \$)	2018 (1,000 \$)	2019 (1,000 \$)	2020 (1,000 \$)	Absolute	Percent
							change, 2015–20 (1,000 \$)	change, 2015–20
Germany	86,997	83,640	68,828	66,864	70,543	91,763	4,766	5.5
France	56,300	55,212	49,114	41,434	42,069	43,525	-12,776	-22.7
Belgium	25,656	21,197	15,962	16,385	14,188	19,854	-5,802	-22.6
United Kingdom	12,466	14,080	12,646	14,986	14,888	19,926	7,461	59.8
United States	16,178	9,686	13,710	10,839	7,282	19,439	3,261	20.2
All other	70,569	64,070	72,958	74,705	84,768	100,578	30,008	42.5
All destination markets	268,166	247,884	233,217	225,211	233,739	295,084	26,919	10.0

Source: IHS Markit, Global Trade Atlas database, Serbian Customs Tariff numbers 0811.20.31 and 0811.20.3100, accessed March 9, 2021.

Note: Serbian Customs Tariff numbers 0811.20.31 and 0811.20.3100 include only unsweetened raspberries. A negligible number of sweetened raspberries are exported under 0811.20.11, 0811.20.19, and 0811.20.1900.

Seasonality of Exports

Serbian processors can retain their stocks and sell product past peak season for up to two years.⁶²⁸ However, more product tends to be sold directly after harvest, as smaller processors tend to sell off stock as quickly as possible to avoid cold storage fees.⁶²⁹ U.S. import trade data⁶³⁰ show about a two-month lag after the Serbian harvest (July and August) before U.S. imports from Serbia start to rise. Since Serbian product are transported through the EU market, larger quantities of U.S. imports from Serbia do not start arriving until September.⁶³¹

Serbian Imports of Raspberries

Although Serbia is a net exporter of frozen raspberries, it imports limited quantities of fresh and frozen raspberries from neighboring countries such as Bosnia and Herzegovina (6,742 mt in 2020) to supplement its supplies for exports.⁶³² There are four main Serbian firms that account for about 50 percent of frozen raspberry imports in terms of both quantity and value.⁶³³ However, the reliability and sustainability of this particular supply line is threatened by raspberry price fluctuations. Reportedly,

⁶²⁸ Processors' holding of frozen Serbian raspberry supply has been reported to contribute to the inflation of raspberry prices. Nanni, "High Starting Prices for Chilean Raspberries," December 16, 2020; Nanni, "High Starting Prices for Serbian Raspberry," July 9, 2020.

⁶²⁹ Industry representative, interview by USITC staff, February 11, 2021.

⁶³⁰ See the "[Seasonal Cycles in U.S. Imports of Processed Raspberries](#)" subsection of the "Production, Consumption and Trade" section in chapter 3, "United States."

⁶³¹ USITC DataWeb/Census, HTS 0811.20.2025, accessed February 4, 2020.

⁶³² Government of Serbia, Statistical Office, Serbian Customs Tariff number 0811.20.31, accessed March 9, 2021.

⁶³³ SeedEv, *Market Study for Soft Fruits*, April 12, 2019, 47.

producers in Bosnia and Herzegovina have been known to quickly abandon raspberry production when faced with low prices, limiting Serbia's import supply.⁶³⁴

Government Programs

Agricultural policy within Serbia has experienced frequent reform over the past quarter century. Following the launch of the negotiations for Serbia's accession to the EU at the end of 2013, Serbia began a shift towards the common agricultural policy of the EU.⁶³⁵ In 2014 the Serbian government adopted an Agricultural and Rural Development Strategy for the period 2014–24. This strategy provided guidelines defining the basic reforms that are needed for Serbia's agricultural industry to meet EU and World Trade Organization requirements, which would benefit both the growers and processors (e.g., fresh raspberries for processing and frozen raspberries). The goal of the strategy is to improve Serbia's business environment and competitiveness, raise living conditions, and introduce greater stability for Serbia's farmers in rural areas.⁶³⁶

In 2015, the Ministry of Agriculture instituted specific National Development Programs that were mentioned as assisting raspberry production.⁶³⁷ Monetary programs that were in place as of 2018 to incentivize agricultural production included:⁶³⁸

- **Loans** granted to fruit producers (for investment in seedlings and equipment).
- **Subsidies** for expansion of land used for raspberry planting; purchase, certification, and selection of seedlings; and purchase of equipment used in primary production (in the form of refunds of 40 to 55 percent of investment in equipment).⁶³⁹
- **Refunds** for costs associated with fuel and fertilizers and seedling insurance premiums.
- **Support** for basic crop production; organic fruit production; and investments in certification of geographical origin.

Despite the institution of such programs, reports indicate that raspberry production suffers from a lack of machinery, investment, and vertical integration; insufficient state support and inadequate planning by local policymakers; limited economic actions, including incentives; inadequate education of rural producers; and limited membership in cooperatives or associations.⁶⁴⁰ Some of these insufficiencies are

⁶³⁴ Nanni, "Bosnia-Herzegovina Processed Fruit Exports," April 22, 2020; Nanni, "High Starting Prices for Serbian Raspberry," July 9, 2020; Životić et al., "Characteristics of Raspberry Production in Bosnia and Herzegovina," May 7, 2019, 241.

⁶³⁵ FAO, *Smallholders and Family Farms in Serbia*, 2020, 92.

⁶³⁶ USDA, FAS, *Serbian Agriculture Overview and Best Prospects, 2015*, June 9, 2015, 3.

⁶³⁷ USDA, FAS, *Serbian Agriculture Overview and Best Prospects, 2015*, June 9, 2015, 3.

⁶³⁸ Stojanović et al., *Serbia National Report*, 100–3; Stojanović et al., *SUFISA Raspberry Report an Extended Summary*, June 2018, 5–6.

⁶³⁹ Certain investments in equipment are eligible for subsidies: for example, investments in cold storage and investments in equipment used in production and processing.

⁶⁴⁰ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; Stojanović et al., *Serbia National Report*, April 2018, 101–2.

due, in part, to challenges in implementing the policies outlined above.⁶⁴¹ As of 2020, specific organized government support and programs facilitating raspberry production at a national level were limited,⁶⁴² considering the importance of the raspberry supply chain to the overall agricultural and rural development of Serbia.

The U.S. Agency for International Development (USAID) has aided the Serbian agriculture industry, including support for raspberry production.⁶⁴³ Initially USAID support included providing technologies and machinery to assist in raspberry planting. However, during 2015–19, USAID supported the raspberry industry through industry education and networking help—for example, by connecting growers and processors to facilitate transactions.⁶⁴⁴ This support for the Serbian raspberry industry continues as of 2021.⁶⁴⁵ Despite USAID’s earlier support, many Serbian raspberry producers do not use modern technology in the cultivation of their raspberry crops, and have continued to rely on traditional methods of production.⁶⁴⁶

Compliance with Food Safety Standards

Over the past several years there have been a number of actions taken to ensure that Serbian raspberries meet EU health and food safety standards, which have facilitated the industry’s global export compliance, including for the U.S. market. Some Serbian producers of agricultural goods are certified via the private standards body GLOBALG.A.P.⁶⁴⁷ While certified producers in the overall agricultural sector grew from 66 in 2013 to 1,011 by 2019, within the raspberry sector it is estimated that the majority of producers (up to 70 percent) do not have GLOBALG.A.P. certification. Generally, only large processors and large farming operations meet the standard because there is little incentive

⁶⁴¹ FAO, *Smallholders and Family Farms in Serbia*, 93–4.

⁶⁴² Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; Stojanović et al., *Serbia National Report*, April 2018, 96; Stojanović et al., *SUFISA Raspberry Report an Extended Summary*, June 2018, 5–6, 8–10.

⁶⁴³ USAID, “Pioneering the Production of Raspberries,” June 13, 2019; USAID, “Fact Sheet: Serbia,” May 14, 2020; Cardno, “USAID Serbia Competitive Systems Strengthening (CSS),” accessed October 15, 2020.

⁶⁴⁴ Cardno, “USAID Serbia Competitive Systems Strengthening (CSS),” accessed October 15, 2020.

⁶⁴⁵ A provision in U.S. law, widely known as the Bumpers Amendment, prohibits U.S. government support for products for export in a foreign country that would compete with similar products produced by the United States in third-country markets. On January 11, 2019, USAID determined that the support it has been providing to Serbia’s agricultural sectors (including for the production, processing and trade of fresh and frozen berries) was consistent with Agency Policy Determination 15 through which USAID implements support. USAID/Serbia, “Action Memorandum for the Mission Director,” January 11, 2019. See Further Consolidated Appropriations Act, 2020, § 7025(b) (P.L.116-94, Dec. 20, 2019). <https://www.congress.gov/bill/116th-congress/house-bill/1865/text>.

⁶⁴⁶ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; Parausić and Simeunović, “Market Analysis of Serbia’s Raspberry Sector,” December 31, 2016, 1419.

⁶⁴⁷ According to Funt and Hall, *Raspberries*, March 22, 2013, this organization “sets voluntary standards for the certification of production processes of agricultural (including aquaculture) products around the globe,” chiefly “to reassure consumers about how food is produced on the farm by minimizing detrimental environmental impacts. GLOBALG.A.P. serves as a practical manual for good agricultural practice (G.A.P.) anywhere in the world.” See also Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 60.

for small growers to get certified (i.e., the majority of small growers do not export), and they find it too expensive to renew the annual certification.⁶⁴⁸

As the EU is Serbia's primary export market for raspberries, the Serbian raspberry industry is focused on meeting EU food and safety standards.⁶⁴⁹ Over the past several years, however, there have been reports of Serbian raspberries not meeting food safety standards. As part of a 2013 assessment, controls were put in place by the EU to help mitigate problems such as foodborne illness on raspberries imported from Serbia.⁶⁵⁰ One of the controls put in place was to check every 10th truck against norovirus.⁶⁵¹ In August 2020, all additional control measures from the audit were removed.⁶⁵²

Factors Affecting Competitiveness

As described in chapter 2 of this report, the competitiveness of raspberries for processing and processed raspberry products can be measured by comparing delivered costs, product differentiation, and supplier reliability for U.S. products against those of imports. Certain key factors contribute to the competitiveness of Serbian processed raspberries in the U.S. market. One factor is Serbia's production system, which includes handpicking, allowing the industry to supply more whole berries to the processed market. Another factor, the country's climate, allows it to continue expanding production of organic product. As the Serbian raspberry industry has grown on the global stage over the past couple of decades, it has been bolstered by access to the EU market. Not only has the EU provided a customer base, but it has also been a driver of improved health and safety practices intended to meet the EU's stringent food safety standards.

Serbia's delivery costs are low, but lack of integration inhibits expansion.

The Serbian processed raspberry industry benefits from several factors that contribute to a generally lower delivered cost. These factors include the costs of inputs for processed raspberries, and the industry's structure. The low labor costs in Serbia contribute to the overall lower cost of the raw material sold to processors. In general, labor costs for raspberry harvesting can represent over half of total production costs, and on average Serbian agricultural wages are far lower than those of the U.S. agricultural sector.⁶⁵³ Over the past several years the average labor cost for raspberry production in

⁶⁴⁸ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020.

⁶⁴⁹ Djurkovic, "SWOT Analysis of Serbia's Raspberry Sector," 56, 69, 73, 111; Food Safety News, "EU Audit Finds Issues," accessed February 8, 2021; Nanni, "EU Audit Detects Weakness of Serbian Soft Fruit," November 19, 2019.

⁶⁵⁰ European Commission Directorate-General for Health and Food Safety, *EU Audit Final Report*, October 2019.

⁶⁵¹ Instances of norovirus related to Serbian raspberries are primarily caused by the use of non-genuine and noncertified seedlings (i.e., raspberry cultivars that are not properly sourced), inadequate plant protection products, and insufficient hygiene of workers who are in direct contact with raspberries. Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 62.

⁶⁵² Fresh Plaza, "EU Lifts Additional Control Measures for Export," August 31, 2020.

⁶⁵³ For example, in 2008 the average field price in Serbia was \$0.87 per kilogram, while the average field price in the U.S. was \$3.72 per kilogram. The average monthly wages in agriculture were \$820 in Serbia, \$1,221 in Poland, and \$1,776 in the United States. Djurkovic, "SWOT analysis of Serbia's Raspberry Sector," 2012, 83.

Serbia has been reported as being as little as one-fifth that of the EU.⁶⁵⁴ In addition, improvements in internal transportation infrastructure through Serbia, connecting Western and Central Europe with Southeastern Europe and the Middle East, have facilitated trade between Serbia and importing countries, including the United States.⁶⁵⁵

The fragmented industry structure (many small farms with limited vertical and horizontal integration) also contributes to lower input costs, particularly labor costs, but is often cited as a hindrance to stability of raspberry production in Serbia.⁶⁵⁶ The field price is set by cold storage facilities, which are the main processors and exporters, and farmers become price takers.⁶⁵⁷ Changes in prices in the world market are not always transferred to prices paid to the growers for their raw material. Therefore, world prices have a limited effect on domestic production (e.g., growers leave the market despite high global raspberry prices).⁶⁵⁸ Some sources indicate that exporting processed raspberries provide limited value added, as the exported products have a low degree of processing compared to other processed agricultural products.⁶⁵⁹ If integration between the growers and processors were to increase, then it could close the gap between payments to growers and the export prices.⁶⁶⁰

Serbian industry can produce organic product and meet external markets' food safety standards.

The location of Serbian raspberry processors near many growers affords processors access to organic raw material supplies. Selected growing operations deliver organic raspberries in volumes suitable for commercial sale, which enhances Serbia's competitive position based on product differentiation.⁶⁶¹ Since consumers perceive organic raspberries as being higher quality, these products can achieve a higher price point. Some industry representatives view small farms as better able to handle the

⁶⁵⁴ Historically, seasonal workers that are brought in to harvest Serbian raspberries have been paid around \$1.80 per hour. Djurkovic, "SWOT Analysis of Serbia's Raspberry Sector," 2012, 84; Government of the Netherlands. Ministry of Agriculture, Nature, and Food Quality, "Serbia Newsflash Week 24." December 6, 2020. See also chapter 2, "[Cross-Country Comparison of Competitiveness](#)."

⁶⁵⁵ Improved infrastructure includes access to European Corridors. Djurkovic, "SWOT Analysis of Serbia's Raspberry Sector," 2012, 82, 84.

⁶⁵⁶ The fragmentation contributes to the lack of adoption of modern cultivation practices, including the use of technology and education about proper growing techniques. Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; Parausić and Simeunović, "Market Analysis of Serbia's Raspberry Sector," December 31, 2016, 1422.

⁶⁵⁷ Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 8; Stojanović et al., *SUFISA Raspberry Report an Extended Summary*, June 2018, 8.

⁶⁵⁸ Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 9.

⁶⁵⁹ Djuric et al., "Export of Agricultural and Food Products," 2017, 896; Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 42–43; Stojanović et al., *SUFISA Raspberry Report an Extended Summary*, June 2018, 8.

⁶⁶⁰ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; Džagić et al., *Integrated Report on Performance and Value Chain Analysis*, December 2017, 9; Djurkovic, "SWOT Analysis of Serbia's Raspberry Sector," 105–6, 108; Stojanović et al., *SUFISA Raspberry Report an Extended Summary*, June 2018, 8.

⁶⁶¹ Academic professional, interview by USITC staff, August 4, 2020; Stojanović et al., *SUFISA Raspberry Report an Extended Summary*, June 2018, 8; Stojanović et al., *Serbia National Report*, April 2018, 101–4.

requirements of organic certifications because tasks like clearing weeds or eliminating pests can be done manually rather than with chemicals.⁶⁶² As mentioned earlier, Serbia's ability to produce organic raspberries is also enhanced by the presence of microclimate regions.⁶⁶³ Sources indicate that the number of growers producing organic raspberries has increased nearly sevenfold over the past several years.⁶⁶⁴

There are many factors that would suggest further growth and development of Serbia's organic raspberry sector is forthcoming. For example, Serbia has large areas of agricultural land that are not polluted and not intensively cultivated, making conversion easier; substantial interest of international contributors; and close existing relations with established organic markets in Germany, Austria, Switzerland, and the Netherlands.⁶⁶⁵ Despite these positive factors, the Serbian organic raspberry sector has had difficulty penetrating foreign markets. Reportedly, some participants within Serbia have not built good relationships with EU businesses, hindering international trade of Serbian organic raspberries.⁶⁶⁶ Nonetheless, Serbia still maintains a competitive advantage over Washington, which is unable to produce organic raspberries due to their rainy climates, which necessitate the use of chemical treatments to stave off mold on the raspberries.⁶⁶⁷

The EU-Serbia trade relationship has helped facilitate Serbia's ability to comply with U.S. quality and food safety standards, and Serbian processed raspberry products largely meet EU's high food safety requirements. As outlined in the trade section of this chapter, Serbia's exports of fresh and frozen raspberries go to EU countries. These exports become part of a broader EU market channel and typically comply with EU standards for quality and food safety.⁶⁶⁸

Serbia is a stable high-quality supplier, but input supply is challenged by weather events.

Frozen raspberries are one of Serbia's largest export commodities and typically feature stable production levels allowing for a reliable supply of frozen raspberry exports.⁶⁶⁹ In addition, Serbia continues to be one of the largest fresh raspberry producers in the world.⁶⁷⁰ The country has a higher production efficiency than its close competitors Poland and Ukraine, in part due to the high-yielding,

⁶⁶² Industry representative, interview by USITC staff, February 11, 2021.

⁶⁶³ Industry representative, interview by USITC staff, July 24, 2020.

⁶⁶⁴ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; Stojanović, Ristić, and Filipović, "Organic Raspberries in Serbia," 2019, 217.

⁶⁶⁵ Stojanović et al., *Serbia National Report*, April 2018, 103–4.

⁶⁶⁶ Stojanović et al., *Serbia National Report*, April 2018, 105.

⁶⁶⁷ Industry representative, interview by USITC staff, July 24, 2020.

⁶⁶⁸ Importers of Serbian raspberries work to ensure that there is compliance with EU requirements. Djurkovic, "SWOT Analysis of Serbia's Raspberry Sector," 2012, 93.

⁶⁶⁹ This was the case even during periods of embargo before 2015. Djurkovic, "SWOT Analysis of Serbia's Raspberry Sector," 2012, 96.

⁶⁷⁰ Despite being a top producer, to date, Serbia has not developed other raspberry market channels, such as the fresh market. Fruit Ukraine, "Serbian Berry Sector Needs New Approach," April 5, 2019.

easy-picking nature of the Willamette cultivar.⁶⁷¹ Further, Serbia's industry has a well-developed capability to maintain the fruit's quality when harvested and frozen. It also has access to well-established supply chains within the EU that help ensure the supply of frozen raspberries available for exports.⁶⁷²

However, U.S. raspberry importers state that it is difficult for new Serbian processors to enter the market, and importers rely on relationships with processors and growers to maintain steady supplies.⁶⁷³ These relationships allow U.S. importers to meet stringent documentation requirements, including GLOBALG.A.P., Global Food Safety Initiative (GFSI) benchmarks, and third-party certifications such as those for Safe Quality Food (SQF), British Retail Consortium, and Kosher.⁶⁷⁴

Availability of fresh raspberry inputs to processors depends on production yields, which declined by 6,952 mt from 2018 to 2019. Although Serbia has the ideal climate and soil for raspberry production, output has reportedly suffered from multiple instances of poor weather, such as flooding and hailstorms. In May 2019, it was reported that up to 80 percent of the raspberry crop was destroyed in some regions due to snow, hail, and stormy weather. Reported yields for 2019 were lower than in 2018 (5.2 mt/ha versus 5.6 mt/ha).⁶⁷⁵ A little over a year later, June 2020, it was reported that upwards of 30 percent of raspberries were destroyed by heavy rain and hail. This was soon followed by reports in July of over 1,000 ha of raspberry fields destroyed due to flooding in Western Serbia.⁶⁷⁶ These events represent significant damage to the industry, as it will take two years for new plantings to reach maturity and bear fruit, and raspberry production is more concentrated within the region of Western Serbia.⁶⁷⁷ Some attribute the decrease in Serbian raspberry production to changing weather patterns that are increasing the frequency of these weather events.⁶⁷⁸

⁶⁷¹ Wróblewska, Pawlak, and Paszko, "Economic Aspects in the Raspberry Production," December 1, 2019, 78.

⁶⁷² Serbian raspberry industry is largely Eurocentric. Industry representative, interview by USITC staff, August 13, 2020; Djurkovic, "SWOT Analysis of Serbia's Raspberry Sector," 2012, 96; Wróblewska, Pawlak, and Paszko, "Economic Aspects in the Raspberry Production," December 1, 2019, 78.

⁶⁷³ Industry representatives, interviews by USITC staff, July 24, 2020, and July 30, 2020.

⁶⁷⁴ One importer, Lamex Food Group, acquired an ownership stake in a processing plant in Serbia. Industry representative, interview by USITC staff, July 30, 2020; Lamex Foods, "Fruits and Vegetables," accessed February 8, 2021.

⁶⁷⁵ In general, growers in certain regions were reporting that the majority of raspberry crops were destroyed. Bjelotomic, "Raspberry Producers: 80% of Crop Destroyed," May 22, 2019.

⁶⁷⁶ The 2020 flood was the second that led to widespread raspberry crop destruction in recent years. In 2014, support was given to the Serbian agricultural industry via the European Union Assistance for Flood Relief Programme. FAO, "Restoring Farmers' Livelihoods," accessed February 8, 2021.

⁶⁷⁷ Fresh Plaza, "Floods Devastate Serbian Crops," accessed February 8, 2021.

⁶⁷⁸ Academic professional, interview by USITC staff, email message to USITC staff, August 4, 2020; Parausić and Simeunović, "Market Analysis of Serbia's Raspberry Sector," December 31, 2016, 1422.

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Chapter 7

Chile

Summary

Chile is a leading source of U.S. imports of frozen raspberries and a major global producer and exporter of processed raspberry products. Chile continues to play a key role in the global market, despite modest declines in production and exports of processed raspberries between 2015 and 2020. Frozen raspberries—including whole and broken individually quick frozen (IQF) products—compose most of Chile’s processed raspberry production. Chile has increasingly shifted into organic raspberry production, with frozen organic raspberries making up over 20 percent of total production and almost half of Chile’s frozen raspberry exports to the United States.⁶⁷⁹ The U.S. industry filed trade remedy cases against imported Chilean IQF red raspberries in 2001 that led to the imposition of an antidumping order, but the United States revoked the order in 2007.⁶⁸⁰ In fact, in recent years Chile’s average costs of production have become comparable to average U.S. costs of production. Chile’s exports to the United States also peak in months when U.S. inventories are declining, and the country’s increasing emphasis on organic products further reduces direct competition with frozen raspberries produced in the United States. In 2020, the United States was the destination market for about 33 percent of Chile’s frozen raspberry exports.⁶⁸¹ Chilean exports of frozen raspberries to the United States fell from 2015 to 2020, with Mexico surpassing Chile in 2020 to become the largest supplier of raspberries (by weight) to the U.S. market.⁶⁸²

Chile has a competitive processing industry that supplies frozen raspberries to the United States. Most exports to the United States come from a small number of experienced processors using high-quality freezing, sorting, and packing equipment. Chilean processors have access to handpicked raspberries and make strategic use of both belt and static freezers, which help them obtain a higher ratio of IQF output and more whole IQF berries than most other processors. At the same time, the labor costs associated with operating static freezers and buying handpicked berries drive up their costs of production. The labor intensity of growing and handpicking raspberries (compared to other, more profitable fruit) has also prompted a long-term decline in the number of raspberries that are available for processing in Chile. The growth in organic raspberries in Chile reinforces the country’s status as a relatively high-cost

⁶⁷⁹ USITC, hearing transcript, September 17, 2020, 49 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to USITC, September 8, 2020, 3; IHS Markit, Global Trade Atlas database, Chilean Tariff codes 0811.20.21 and 0811.20.29, accessed March 2, 2021.

⁶⁸⁰ See chapter 3 for more discussion of the U.S. industry. USITC, *Individually Quick Frozen Red Raspberries From Chile (Preliminary)*, July 2001, 1; USITC, *Individually Quick Frozen Red Raspberries From Chile (Final)*, June 2002, 1; 72 Fed. Reg. 41526 (July 30, 2007).

⁶⁸¹ Export figures are based on Chilean export data for frozen red raspberries, including IQF and purees, but excluding raspberries exported in mixed berry packs. IHS Markit, Global Trade Atlas database, Chilean Tariff codes 0811.20.21 and 0811.20.29, accessed March 1, 2021.

⁶⁸² USITC DataWeb/Census, HTS 0811.20.2025, accessed February 11, 2021.

supplier focusing on higher-value products. Three factors that have supported the growth in organic exports are Chile's climate, the prevalence of small-scale raspberry growers, and coordination between processors and large numbers of small-scale growers.

Industry Structure

The Chilean industry is focused on producing frozen red raspberries, particularly IQF. Consequently, growers use primarily raspberry cultivars designed for processing. Chile is estimated to have more than 80 processing plants capable of freezing raspberries.⁶⁸³ These processors typically also supply other IQF fruits and vegetables for export, such as strawberries, blueberries, blackberries, and asparagus. Like many other sectors of the Chilean produce industry, raspberry processing is heavily export-oriented. Several large berry-focused processors supply most of Chile's frozen raspberry exports, but many smaller and less berry-oriented processors also contribute. Most of the supply of raspberry inputs is sourced from independent growers through collection centers, brokers, or direct sales to processing plants. Chile also has three large juice processors that supply nearly all U.S. imports of raspberry juice concentrate from the country.⁶⁸⁴

Regions

Processors are located mostly in central and central-southern Chile, near where most of the raspberries are grown. Raspberry processing and growing operations have traditionally been concentrated in the Maule region, where the Andes Mountains open into a large, wide valley.⁶⁸⁵ However, Chile's raspberry orchards have been shifting south, in response to changing climate conditions for growing berries and other fruit.⁶⁸⁶ Official Chilean survey data suggest the Ñuble region just south of Maule has the most land devoted to raspberry orchards, containing more than half of the total hectares registered nationally for raspberries.⁶⁸⁷ O'Higgins, Biobío, Araucanía, Los Ríos, and Los Lagos are other raspberry-producing regions in Chile.⁶⁸⁸ Chile's climate is considered to have ideal conditions for growing raspberries, with temperature and rain levels that allow farmers to grow organic product. The absence of certain pests

⁶⁸³ USITC, hearing transcript, September 17, 2020, 47 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 2; Dominguez, "Chilean Raspberry Industry Report 2019," August 2020, 2.

⁶⁸⁴ Industry representative, email message to USITC staff, August 10, 2020.

⁶⁸⁵ Jara-Rojas et al., "Technical Efficiency and Marketing Channels," March 20, 2018, 352; ASOEX, "Maule," accessed March 10, 2021.

⁶⁸⁶ Blueberries Consulting, "2019 Fruit Cadastre," September 2, 2019.

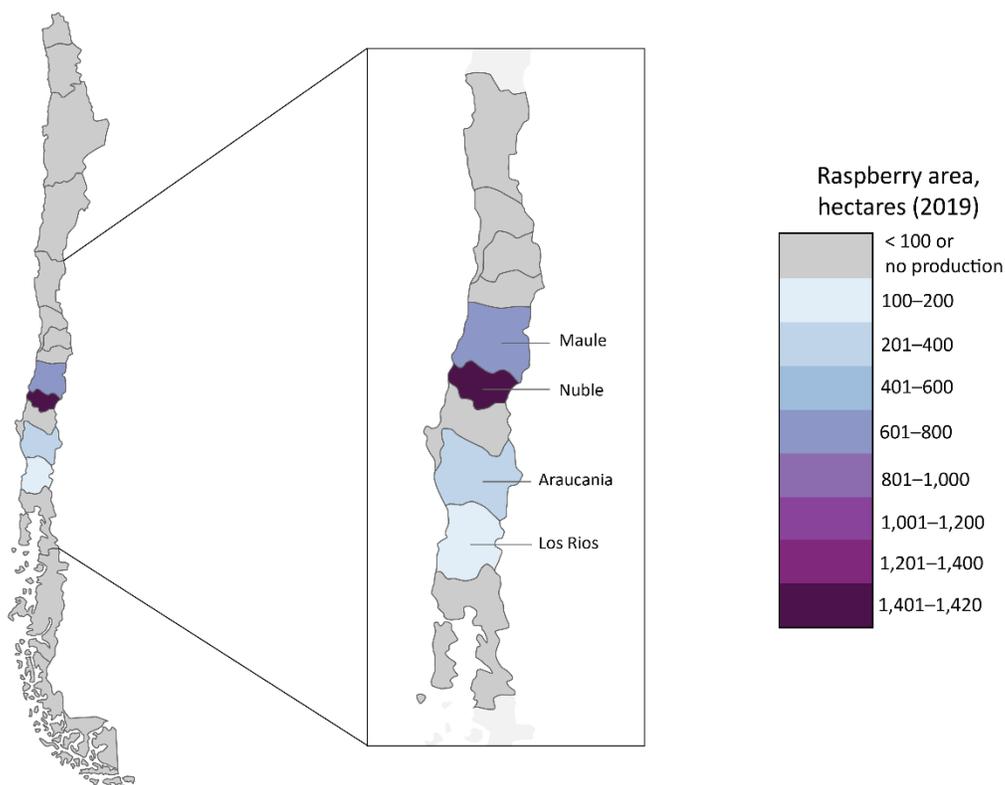
⁶⁸⁷ Official Chilean survey data exclude farms measuring 0.5 hectares or less. Data were collected at different times for different regions. The Ñuble region was formally established in 2018 from communes that previously were assigned to the Ñuble province within the Biobío region. CIREN, *Catastro frutícola Maule (Fruit-growing land registry, Maule region)*, July 2019, 3, 7; BCN, "Creación de la XVI región de Ñuble (Creation of Ñuble, the 16th region)," accessed March 4, 2021.

⁶⁸⁸ CIREN, *Catastro frutícola Maule (Fruit-growing land registry, Maule region)*, July 2019, 7.

such as the spotted wing drosophila also makes it easier to grow organic raspberries in some areas of Chile.⁶⁸⁹

Figure 7.1 Raspberry harvested area in Chile, by region, 2019

In hectares (ha). Underlying data for this figure appear in [appendix H table H.16](#).



Source: CIREN, Catastro frutícola, Maule (Fruit-growing land registry, Maule region), July 2019, 3, 7.

Note: The map excludes farms that are 0.5 hectares or smaller, which are a significant source of raspberries in Chile. Data for some of the regions counting less than 100 hectares for raspberries total were collected in 2017 or 2018.

Industry Composition

The Chilean processing industry includes several large processors exporting various IQF fruit and vegetable products, and many other small and medium-sized processors. The Chilean industry estimates that there are over 80 processing plants capable of freezing raspberries.⁶⁹⁰ Four of the large processors supply the majority of Chile's frozen raspberry product exports to the U.S. market.⁶⁹¹ Unlike processors in the United States, most Chilean processors are not integrated with growing operations.⁶⁹² While a few

⁶⁸⁹ USITC, hearing transcript, September 17, 2020, 141–42 (testimony of Antonio Dominguez, IRO) and 154–55 (testimony of John Tentomas, Nature's Touch).

⁶⁹⁰ USITC, hearing transcript, September 17, 2020, 47 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to USITC, September 8, 2020, 1.

⁶⁹¹ Industry representative, email message to USITC staff, August 10, 2020.

⁶⁹² USITC, hearing transcript, September 17, 2020, 46 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 1.

Chilean processors own orchards, most raspberries are sourced from independent growers.⁶⁹³ Growers in the raspberry industry are dispersed over large parts of the country and operate thousands of small farms. Chilean industry representatives estimate that raspberries are grown on between 9,000 and 10,000 independent farms (usually family-owned), covering between 6,000 and 7,000 hectares.⁶⁹⁴

Many of the large Chilean processors are family-run companies that have been working in the industry for decades, although some have established global business partnerships. VitaFoods was recently formed through a merger of Alifrut (a leading Chilean processor of frozen fruit) and the Chilean frozen berry business segment of Hortifrut (a Chile-based international producer and trader of berries).⁶⁹⁵ Chilean processor Altamira has a joint venture with United Kingdom-based trader Lamex Food Group, while U.S.-headquartered BMC International has an IQF fruit and vegetable processing facility in Chile.⁶⁹⁶

There are reportedly four to five juice plants in Chile.⁶⁹⁷ The majority are large, export-oriented processors focusing on other product lines (particularly juices from other fruits). Most appear to operate primarily within Chile, although Cran Chile (which grows cranberries and processes raspberries and blueberries into juice concentrate) has a strategic partnership with multinational cooperative Ocean Spray.⁶⁹⁸

Industry Organization

Most of Chile's raspberry processing industry is represented through the Chilean Food Processing Companies Association (Chilealimentos), a trade association for Chile's food processing sector. Chilealimentos' members account for about 67 percent of the raspberries processed into frozen form in Chile and 96 percent of the raspberries processed into juice concentrate form in Chile.⁶⁹⁹ Chilealimentos helps processors coordinate with growers and government agencies on matters such as food safety requirements and represents raspberry processors in the public-private working group Mesa Nacional de la Frambuesa (National Raspberry Roundtable).⁷⁰⁰ Chile also has a trade association for fruit growers, Fedefruta. Fedefruta works in areas such as quality control, promotion of Chilean fruit in foreign markets, research, and Good Agricultural Practices (GAP). It also helps manage publicly funded programs

⁶⁹³ Dominguez, "Chilean Raspberry Industry," June 4, 2012, 15.

⁶⁹⁴ USITC, hearing transcript, September 17, 2020, 46 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 1.

⁶⁹⁵ FreshPlaza, "Naturipe Foods Expands with Newly Formed Vitafoods," October 1, 2020.

⁶⁹⁶ Lamex Food Group, "History," accessed March 11, 2021; BMC International, "About Us and Our Market," accessed March 11, 2021.

⁶⁹⁷ Dominguez, "Chilean Raspberry Industry Report 2019," August 2020, 2.

⁶⁹⁸ Ocean Spray, "Ocean Spray Cranberries, Inc., Acquires Cranberry Operations in Chile," January 10, 2013; Cran Chile, "About Us," accessed February 11, 2021; Bayas del Sur, "Contacts," accessed February 11, 2021; Patagoniafresh, "About Us," accessed February 11, 2021.

⁶⁹⁹ USITC, hearing transcript, September 17, 2020, 45 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 1.

⁷⁰⁰ USITC, hearing transcript, September 17, 2020, 48–49 (testimony of Pablo Herrera, JCP Foods). INDAP, "Mesa Nacional de la Frambuesa (National raspberry roundtable)," June 17, 2019.

that offer training classes and financial support to raspberry farmers.⁷⁰¹ A third group, the Chilean Fruit Exporters Association (ASOEX), is working with the Catholic University of Chile and government partners to develop more productive raspberry cultivars.⁷⁰² Additionally, Chile is an active member of the International Raspberry Organization.⁷⁰³

Cultivars

Heritage is the dominant raspberry cultivar grown in Chile, accounting for about 79 to 85 percent of Chile's raspberries.⁷⁰⁴ The Heritage cultivar is well adapted to Chilean growing conditions.⁷⁰⁵ However, Heritage raspberries in Chile reportedly have declined in yield, weakening over time due to the common practice of reproducing plants from existing bushes rather than buying new plantlets.⁷⁰⁶ Regional data also show that some orchards in Chile using other cultivars have significantly higher average yields.⁷⁰⁷ The Heritage has two flowerings, which yield two crops, extending the harvest season but also exposing the crop to a higher risk of poor weather.⁷⁰⁸ The first crop is harvested in November through December, but typically yields lower-quality berries. The canes are cut for a better second crop, which is typically harvested at the end of January through April.⁷⁰⁹

The Meeker cultivar is the next most popular variety, estimated to supply about 8 percent of Chile's raspberry harvest.⁷¹⁰ Other varieties include Dolomia (a cultivar exclusively licensed to Chilean frozen fruit processor Comfrut), Regina, Chilliwack, Santa Teresa, Santa Catalina, and Santa Clara.⁷¹¹ These last three varieties, known as the Santa cultivars, were developed in Chile through a breeding program started in 2009 with the goal of developing raspberry plants optimized for Chilean growing conditions

⁷⁰¹ Fedefruta, "Qué es Fedefruta (What is Fedefruta?)," accessed March 10, 2021; Fedefruta, "Frambuesero de San Carlos logra producir mejor (San Carlos raspberry is able to produce better)," February 19, 2021.

⁷⁰² ASOEX represents fresh fruit growers and exporters, so it is not as directly involved with Chile's frozen raspberry exports as Chilealimentos. ASOEX, "About Us," accessed March 10, 2021; ASOEX, "Frambuesas 100% Chilenas para la reconversión varietal (100% Chilean raspberries in the conversion to new varieties)," October 3, 2019.

⁷⁰³ USITC, hearing transcript, September 17, 2020, 49 (testimony of Pablo Herrera, JCP Foods) and 52 (testimony of Antonio Dominguez, IRO).

⁷⁰⁴ Dominguez, "Chilean Raspberry Industry Report 2019," August 2020, 2; FreshPlaza, "New 100% Chilean Raspberry Varieties," October 7, 2019; ASOEX, "Frambuesas 100% Chilenas para la reconversión varietal (100% Chilean raspberries in the conversion to new varieties)," October 3, 2019.

⁷⁰⁵ Blueberries Consulting, "Better Plants, the Next Revolution," October 27, 2015.

⁷⁰⁶ Expanding an orchard or replacing old plants using existing plants can weaken the plants and spread crop disease; aging orchards are one reason raspberry production has declined in Chile. Heritage cultivars within Chile may vary in productivity. For example, a representative for grower/processor Frule touted the fact that the firm was planting orchards with "a new variety" of Heritage with up to 65 percent higher yields. Ghilotti, "Raspberry Comeback," 2015; Ghilotti, "Selling Food Safety," 2015; Blueberries Consulting, "Better Plants, the Next Revolution," October 27, 2015.

⁷⁰⁷ Data collected from farms of over 0.5 hectares in Ñuble show average yields of 7.1 mt per hectare for Heritage, compared to 8.9 mt per hectare for Meeker and 8.2 mt per hectare for Dolomia. CIREN, *Catastro frutícola Ñuble (Fruit-growing land registry, Ñuble region)*, July 2019, 34.

⁷⁰⁸ Ghilotti, "Raspberry Comeback," 2015.

⁷⁰⁹ Nanni, "Labour Shortage Lifts Chilean Raspberry Prices," January 13, 2021.

⁷¹⁰ Dominguez, "Chilean Raspberry Industry Report 2019," August 2020, 2.

⁷¹¹ Dominguez, "Chilean Raspberry Industry Report 2019," August 2020, 2; Comfrut, "Conventional Fruit - Raspberry," accessed February 11, 2021.

and offering higher yields, larger fruit, and a certain flavor profile. Domestically, these new varieties have been cultivated on small farms in the Maule and Araucania regions through two pilot programs supported by ASOEX. While the Heritage cultivar in Chile typically yields less than 12 metric tons (mt) per hectare, the Santa cultivars have a potential yield of 18 mt per hectare.⁷¹² The breeding program continues to develop cultivars and is focusing on delivering varieties with improved resilience against pests, disease, and water stress by 2024.⁷¹³

Production System

Raspberries in Chile are typically grown in open, unprotected fields, and almost all of the crop is harvested by hand.⁷¹⁴ This is partly due to the small size of Chilean farms, although other factors such as the use of the Heritage cultivar and layout of the farms also accommodate handpicking rather than mechanical harvesting.⁷¹⁵ One industry representative estimated that 60 to 80 percent of Chile's raspberry farms are small farms with acreage of less than half a hectare each.⁷¹⁶ Variability in revenues (due to high price volatility) and the high labor intensity of growing raspberries relative to other fruits reportedly discourage larger Chilean farms from growing raspberries.⁷¹⁷

In the beginning of Chile's harvest season, production is primarily of the Meeker, Regina, and Dolomia varieties, followed by Heritage.⁷¹⁸ Growers mostly supply handpicked raspberries, which break less often during processing than mechanically harvested berries. Handpicked berries also require less pre-sorting than batches of mechanically harvested raspberries, which can contain leaves and sticks that were shaken loose by the harvesting machines.⁷¹⁹ Generally, the raspberry harvest season in Chile runs from December to April.⁷²⁰

⁷¹² ASOEX, "Frambuesas 100% Chilenas para la reconversión varietal (100% Chilean raspberries in the conversion to new varieties)," October 3, 2019.

⁷¹³ SimFruit, "Primero fueron las frambuesas 'Santas' (First came the 'Santa' raspberries)," November 19, 2020.

⁷¹⁴ USITC, hearing transcript, September 17, 2020, 46 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 2; Dominguez, "Chilean Raspberry Industry," June 4, 2012, 11.

⁷¹⁵ USITC, hearing transcript, September 17, 2020, 46–47 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 1; Jara-Rojas et al., "Technical Efficiency and Marketing Channels," March 20, 2018, 352–53.

⁷¹⁶ USITC, hearing transcript, September 17, 2020, 46 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 1.

⁷¹⁷ USITC, hearing transcript, September 17, 2020, 50 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 4; industry representative, interview by USITC staff, February 23, 2021; Jara-Rojas et al., "Production Efficiency and Commercialization Channels," February 2016, 3.

⁷¹⁸ Nanni, "Labour Shortage Lifts Chilean Raspberry Prices," January 13, 2021.

⁷¹⁹ Industry representative, interview by USITC staff, February 3, 2021.

⁷²⁰ USITC, hearing transcript, September 17, 2020, 46 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 1.

Products and Supply Chain

Almost all of Chile’s raspberry crop is processed for export. The majority (over 75 percent) is processed into IQF raspberries (including whole, broken, and crumble)⁷²¹ for export. These IQF exports include organic raspberries (about 21 percent of Chile’s total raspberry production) and raspberries in mixed berry packs.⁷²² Most of the remainder of Chile’s production goes toward juice concentrate for export and various raspberry products sold to the domestic market (about 7 percent and 7–8 percent, respectively).⁷²³ Unlike U.S. processors, Chilean processors rarely produce block frozen raspberries.⁷²⁴

Processors primarily source raspberry inputs from independent growers, often signing contracts with growers in advance and sourcing raspberries from multiple areas.⁷²⁵ For example, processors often employ agronomists and exchange technical assistance for the guarantee that the farmers will sell their crop to the processor.⁷²⁶ While some growers deliver their crop directly to processing plants, most instead sell to collection centers. These centers are located near raspberry fields across Chile, and some are directly operated by processors.⁷²⁷ The centers have cold storage but no freezing capacity, and handle transportation of the raspberries to processing plants.⁷²⁸ Informal brokers also buy raspberries by the tray from growers and then transport and resell the fruit to processors. These intermediaries generally offer growers a lower price, but provide immediate payment and handle transportation from the fields.⁷²⁹ The selling price growers receive for their raspberries also varies based on daily supply-and-demand conditions, as well as on the product quality.⁷³⁰ Industry representatives report that both collection centers and brokers carefully track which farmers they source from, helping processors guarantee traceability and certification of their products.⁷³¹

⁷²¹ One industry representative indicated that IQF generally refers to high-grade product with minimal shares of broken berries or crumble. The representative estimated that a Chilean freezer can process about 70 percent of raspberry inputs into Grade A whole frozen berries (including IQF raspberries packed into mixed berry blends). Industry representative, interview by USITC staff, February 11, 2021.

⁷²² Industry representatives estimate that sales of raspberries in mixed berry packs increased from about 2,000 tons in 2015 to about 3,000 tons in 2019 (about 10 percent of total Chilean raspberry production in 2019). USITC, hearing transcript, September 17, 2020, 49–50 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 3–4.

⁷²³ USITC, hearing transcript, September 17, 2020, 49 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 3; Dominguez, “Chilean Raspberry Industry Report 2019,” August 2020, 3.

⁷²⁴ Industry representative, interview by USITC staff, February 11, 2021.

⁷²⁵ Industry representative, interview by USITC staff, February 23, 2021, and March 5, 2021; Dominguez, “Chilean Raspberry Industry,” June 4, 2012, 15.

⁷²⁶ Industry representatives, interviews by USITC staff, February 11, 2021, and February 23, 2021.

⁷²⁷ Industry representative, interview by USITC staff, March 5, 2021; Jara-Rojas et al., “Production Efficiency and Commercialization Channels,” February 2016, 7; JCP Foods, “Infrastructure,” accessed February 12, 2021.

⁷²⁸ Industry representative, interview by USITC staff, February 11, 2021.

⁷²⁹ Jara-Rojas et al., “Technical Efficiency and Marketing Channels,” March 20, 2018, 354.

⁷³⁰ USITC, hearing transcript, September 17, 2020, 47 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 2.

⁷³¹ Industry representatives, interviews by USITC staff, February 11, 2021, and March 5, 2021.

Raspberries for Processing

Large Chilean processors use some equipment and techniques similar to those of U.S. processors for their frozen raspberry products. In particular, large Chilean processors use similar quality tunnels for IQF products and automate some of the steps involved in freezing, sorting, and packing to save on labor costs.⁷³² However, these processors also use static freezers for overripe berries that tend to clump together if frozen on a moving belt.⁷³³ This allows Chilean processors to obtain more IQF product than if they only used tunnels. The IQF products command much higher prices than common alternatives for overripe berries, such as block frozen or juice stock products. These greater revenues offset the high costs associated with operating static freezers (a slower and more labor-intensive process than tunnels). Chile's handpicked berries are also less prone to breakage than mechanically harvested berries. Consequently, processors report a relatively high share of whole IQF berries compared to countries that mechanically harvest raspberries.⁷³⁴ Like processors in the United States and elsewhere, the main Chilean processors have adopted precise sorting capabilities for IQF products (such as laser sorters).⁷³⁵ Several of the larger processors also operate repacking plants that export IQF raspberries and mixed IQF fruit in customizable retail-size packaging.⁷³⁶

While Chile's raspberry processing industry primarily consists of firms supplying frozen product, there are also several producers of juice concentrate. These juice producers operate independently from frozen raspberry producers. The juice producers may use block frozen raspberries and IQF crumbles as inputs (along with a small quantity of fresh raspberries), but there do not appear to be any direct ownership or management relationships between these two types of processors in Chile.⁷³⁷

Processors in Chile sell frozen raspberries through several different channels. These channels include selling directly to independent foreign importers, selling to brokers or trading companies that market the product, and maintaining foreign subsidiaries that import the product.⁷³⁸ Demand for retail packaged berries (particularly berry mixes) has grown significantly, but most Chilean frozen raspberry exports are still sold in bulk.⁷³⁹

⁷³² Industry representatives, interviews by USITC staff, February 3, 2021, and March 5, 2021.

⁷³³ Industry representative, email message to USITC staff, March 5, 2021; industry representative, interview by USITC staff, March 5, 2021.

⁷³⁴ Industry representatives, interviews by USITC staff, February 3, 2021, February 11, 2021, and March 5, 2021.

⁷³⁵ USITC, hearing transcript, September 17, 2020, 51 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 4.

⁷³⁶ Comfrut, "Packaging," accessed February 10, 2021; JCP Foods, "Infrastructure," accessed February 12, 2021; Alifrut, "Exports," accessed February 10, 2021.

⁷³⁷ USITC, hearing transcript, September 17, 2020, 47 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 2.

⁷³⁸ USITC, hearing transcript, September 17, 2020, 47–48 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 2.

⁷³⁹ Industry representative, email message to USITC staff, March 5, 2021; industry representative, interview by USITC staff, March 5, 2021.

Production, Consumption, and Trade

Production and Consumption

There are no recent official statistics on Chile’s processing or raspberry freezing capacity.⁷⁴⁰ However, Chile’s processed raspberry output is closely linked to its raspberry harvest: over 99 percent of the raspberry harvest is processed, and Chile’s imports of fresh raspberries are minimal.⁷⁴¹ Domestic consumption of both fresh and processed raspberries is low. Industry representatives estimate that the country’s domestic consumption of processed raspberries is about 7 or 8 percent of total production.⁷⁴² Chile’s raspberry harvest season is also longer than in some other countries, allowing processors to freeze, store, and ship raspberries in many batches throughout the harvest.⁷⁴³

Chile is currently the 10th-largest global producer of raspberries by volume and supplies less than 5 percent of total global production.⁷⁴⁴ Data from the United Nations Food and Agriculture Organization (FAO) (table 7.1) and Chilean industry data both show significant declines in raspberry production from 2015 to 2019. However, industry data and official trade statistics indicate that Chilean raspberry production was substantially higher than the FAO data show and steadily declined throughout the 2015 to 2019 period.⁷⁴⁵ Specifically, Chilealimentos reports Chilean raspberry production fell each year, from 37,092 mt in 2015 to 30,389 mt in 2019.⁷⁴⁶ Similarly, Chilealimentos estimates a larger area harvested than FAO estimates, between 6,000 and 7,000 hectares in 2019.

⁷⁴⁰ Industry representative, interview by USITC staff, February 11, 2021.

⁷⁴¹ As discussed further in the “Trade” section, Chile’s raspberry imports totaled about 348 mt in 2019 (about 1 percent of total production). Dominguez, “Chilean Raspberry Industry Report 2019,” August 2020, 3.

⁷⁴² USITC, hearing transcript, September 17, 2020, 47 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 2; Dominguez, “Chilean Raspberry Industry Report 2019,” August 2020, 3.

⁷⁴³ INDAP, “Mesa Nacional de la Frambuesa (National raspberry roundtable),” June 17, 2019; industry representative, interview by USITC staff, February 11, 2021.

⁷⁴⁴ Ranking is based on FAO data, which estimate that Chile supplies about 2 percent of total global output. However, data from the raspberry industry estimate greater Chilean production, ranking Chile as the ninth-largest producer and a supplier of 4.4 percent of total global production. FAO, FAOSTAT database, Crops: Raspberries, accessed January 19, 2021. IRO, “World Raspberry Production,” accessed March 9, 2021; Dominguez, “Chilean Raspberry Industry Report 2019,” August 2020, 3.

⁷⁴⁵ FAO notes that production data completeness “varies substantially by reporter” and that differences in methods and coverage may limit comparability between countries. One reason FAO data may underestimate Chilean production is that official Chilean survey data cover only farms larger than 0.5 hectares, and most of the Chilean raspberry crop is grown on small farms (see “Industry Composition” above). FAO, “Crops—Metadata,” accessed March 9, 2021.

⁷⁴⁶ See “Trade” discussion for data on Chile’s raspberry imports and frozen raspberry exports. Dominguez, “Chilean Raspberry Industry Report 2019,” August 2020, 3.

Table 7.1 Chile: Production, area harvested and yield, 2015–19

Production is in metric tons (mt), area harvested is in hectares (ha), and yield is in mt/ha. Percent change in percentage.

Item	Unit	2015	2016	2017	2018	2019	Absolute	Percent
							change,	change,
							2015–19	2015–19
Production	mt	18,287	19,138	19,300	19,562	15,942	-2,345	-12.8
Area harvested	ha	4,625	4,783	4,784	4,810	3,888	-737	-15.9
Yield	mt/ha	4.0	4.0	4.0	4.1	4.1	0.1	3.7

Source: FAO, FAOSTAT database, Crops: Raspberries accessed January 19, 2021.

Note: FAO data for Chile may be incomplete; alternate, higher estimates from Chilealimentos are shown above for Chilean production and area harvested.

Chile's decline in production between 2015 and 2019 is reportedly a continuation of a longer-term trend, and industry data show annual raspberry production before 2012 was at least 40 percent higher than 2019 levels.⁷⁴⁷ The decline is attributed in part to a shift in production on larger farms away from raspberries and toward more profitable specialty fruit crops such as cherries and blueberries.⁷⁴⁸ These production declines have reduced the supply of fresh raspberry inputs available to processors.

Despite recent declines in total raspberry production, Chilean farmers appear to be growing more organic raspberries. One factor behind this increase is that organic raspberries trade at a significant price premium over conventionally grown raspberries. For example, prices for conventional fresh raspberries for processing in Chile recently ranged from \$2.75 to \$2.80 per kilogram compared to \$3.10 per kilogram for organic.⁷⁴⁹ Industry representatives also report that Chile's climate and the absence of pests such as the spotted wing drosophila (fruit fly) allow farmers to grow organic berries in open fields.⁷⁵⁰ As discussed more below, Chilean exports by quantity of organic frozen raspberries grew significantly from 2015 to 2020. Given Chile's minimal raspberry imports, small domestic consumption, and emphasis on processing raspberries into IQF products, these exports likely reflect a very similar trend in the production of organic raspberry inputs.

Trade

Chile is a net exporter of frozen raspberries and was the second largest supplier of frozen raspberries to the United States in 2020.⁷⁵¹ Before 2020, Chile was the largest supplier, annually supplying more than

⁷⁴⁷ Dominguez, "Chilean Raspberry Industry," June 4, 2012, 16; Dominguez, "Chilean Raspberry Industry Report 2019," August 2020, 3. USITC, hearing transcript, September 17, 2020, 49–50 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 3.

⁷⁴⁸ USITC, hearing transcript, September 17, 2020, 50 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 4; industry representative, interview by USITC staff, February 23, 2021.

⁷⁴⁹ Nanni, "Labour Shortage Lifts Chilean Raspberry Prices," January 13, 2021.

⁷⁵⁰ See "Farm-Level Raspberry Production and Distribution" in chapter 1 for an overview of the different methods for growing raspberries. USITC, hearing transcript, September 17, 2020, 141–42 (testimony of Antonio Dominguez, IRO) and 154–55 (testimony of John Tentomas, Nature's Touch); industry representative, interview by USITC staff, July 24, 2020.

⁷⁵¹ Most of Chile's raspberry processing goes toward frozen product. Moreover, trade data on other processed raspberry products are not cleanly broken out in the HTS. See chapter 1 for discussion on trade data limitations.

twice as many frozen raspberries to the U.S. market as Mexico.⁷⁵² Chile's supply of IQF red raspberry products to the U.S. market in 2019 (9,382 mt) was about 37 percent lower than the estimated U.S. production of IQF red raspberries (15,000 mt).⁷⁵³ The United States has been Chile's leading export market for frozen raspberries for the past six years, followed by Canada (table 7.2). However, these trade data for "frozen raspberries" include frozen blackberries, which made up about 30 percent of Chile's exports of these frozen berries.⁷⁵⁴

Table 7.2 Chile: Exports of frozen raspberries by destination market, 2015–20

In metric tons (mt) and percentages.

Market	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute	Percent
							change 2015–20 (mt)	change 2015–20
United States	21,895	19,604	17,285	18,312	17,434	15,502	-6,393	-29.2
Canada	9,444	10,556	9,717	10,882	8,829	7,863	-1,581	-16.7
Australia	2,531	3,865	4,400	3,475	3,478	4,157	1,626	64.2
France	3,861	2,974	1,718	1,914	1,931	1,811	-2,051	-53.1
Netherlands	3,454	2,891	3,468	2,603	2,245	1,352	-2,103	-60.9
All other	13,312	11,687	9,278	8,619	8,260	7,228	-6,084	-45.7
All destination markets	54,498	51,577	45,866	45,805	42,176	37,913	-16,585	-30.4

Source: IHS Markit, Global Trade Atlas database, Harmonized System (HS) 0811.20, accessed July 7, 2020.

Note: HS 0811.20, covers raspberries, blackberries, mulberries, loganberries, currants, and gooseberries. Chile's raspberry production and exports consist of a high share of IQF (whole, broken, and crumble) and small amounts of frozen puree and block frozen products, relative to other raspberry exporters.

Table 7.3 Chile: Exports of frozen raspberries by destination market, 2015–20

In thousands of U.S. dollars and percentages.

Market	2015 (1,000 \$)	2016 (1,000 \$)	2017 (1,000 \$)	2018 (1,000 \$)	2019 (1,000 \$)	2020 (1,000 \$)	Absolute	Percent
							change 2015–20 (1,000 \$)	change 2015–20
United States	81,856	66,769	42,821	48,069	41,628	40,408	-41,448	-50.6
Canada	30,663	31,656	21,473	26,049	21,989	21,078	-9,585	-31.3
Australia	11,699	17,086	15,491	12,824	12,621	15,314	3,615	30.9
France	10,770	8,422	4,342	5,112	5,773	4,857	-5,913	-54.9
Netherlands	9,108	7,118	5,719	5,552	3,728	2,784	-6,324	-69.4
All other	43,651	35,848	22,968	22,957	21,180	20,629	-23,022	-52.7
All destination markets	187,746	166,899	112,814	120,563	106,920	105,070	-82,676	-44.0

Source: IHS Markit, Global Trade Atlas database, HS 0811.20, accessed July 7, 2020.

Note: HS 0811.20 covers raspberries, blackberries, mulberries, loganberries, currants, and gooseberries. Chile's raspberry production and exports consist of a high share of IQF (whole, broken, and crumble) and small amounts of frozen puree and block frozen products, relative to other raspberry exporters.

⁷⁵² USITC DataWeb/Census, HTS 0811.20.2025, accessed March 26, 2021.

⁷⁵³ The comparison of Chilean supply to U.S. production is based on U.S. imports from Chile of both frozen red raspberries and mixed fruit containing IQF raspberries in 2019 (applying the sorting methodology from appendix E) and the Washington and Oregon fresh raspberry production data and IQF share data in chapter 3 ("United States"). USITC DataWeb/Census, HTS 0811.20.2025, 0811.90.8080, 0811.90.8085, and 0811.90.8095, accessed February 16, 2021.

⁷⁵⁴ Dominguez, "Chilean Raspberry Industry Report 2019," August 2020, 8.

Raspberries for Processing

Chile's total exports of frozen red raspberries (excluding other frozen berries) declined in weight by 35.3 percent between 2015 and 2020, falling from 31,121 mt in 2015 to 20,132 mt in 2020. By value the drop was even steeper, falling from \$121.1 million in 2015 to \$68.1 million in 2020.⁷⁵⁵ Chile's exports of conventional and organic frozen red raspberries both experienced declines in average unit value over the same period (tables 7.6 and 7.9). Lower unit values and reduced quantities of conventional exports drove the overall trend of declining Chilean exports. However, Chile's shift toward greater quantities and higher total dollar value of organic exports (tables 7.4 and 7.5) slightly offset the reductions in conventional exports (tables 7.7 and 7.8).

The United States was consistently Chile's top destination market for frozen raspberries over the past six years and received the bulk of Chile's organic frozen red raspberry exports. In 2020, Chile exported 6,588 mt of frozen red raspberries to the United States, 46.3 percent of which were organic. The United States received about 25.3 percent by weight of Chile's global conventional exports and 49.5 percent of Chile's organic exports (32.7 percent overall). Canada, Chile's second largest export market, received most of the rest of Chile's organic exports (37.7 percent) but similarly received a smaller share of Chile's conventional exports (12.8 percent). Chile's shift from conventional toward more organics kept the overall U.S. share of Chilean frozen red raspberry exports relatively stable over the 2015–20 period, even as Chile increasingly exported organic raspberries to non-U.S. markets like Canada and Australia.

Table 7.4 Chile: Exports of organic frozen raspberries by destination market, by quantity, 2015–20
In metric tons (mt) and percentages. n.c. = not calculable.

Market	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute	Percent
							change 2015–20 (mt)	change 2015–20
United States	2,494	3,470	2,137	3,715	4,135	3,052	558	22.4
Canada	606	880	990	1,693	1,959	2,326	1,720	283.8
Australia	29	66	42	177	293	421	392	1,342.5
Denmark	0	0	40	133	111	224	224	n.c.
New Zealand	123	47	109	140	126	102	-21	-17.0
All other	195	120	156	87	131	47	-148	-75.9
All destination markets	3,446	4,584	3,473	5,944	6,755	6,171	2,725	79.1

Source: IHS Markit, Global Trade Atlas database, Tariff Schedule of Chile 0811.20.21, accessed March 9, 2021.

⁷⁵⁵ Export figures are based on totals for exports of organic frozen red raspberries and conventional frozen red raspberries. IHS Markit, Global Trade Atlas database, Tariff Schedule of Chile 0811.20.21, accessed March 9, 2021.

Table 7.5 Chile: Exports of organic frozen raspberries by destination market, by value, 2015–20

In thousands of U.S. dollars and percentages. n.c. = not calculable.

Market	2015 (1,000 \$)	2016 (1,000 \$)	2017 (1,000 \$)	2018 (1,000 \$)	2019 (1,000 \$)	2020 (1,000 \$)	Absolute	Percent
							change 2015–20 (1,000 \$)	change 2015–20
United States	14,597	20,223	8,382	13,504	13,966	12,335	-2,262	-15.5
Canada	2,681	3,746	3,534	5,981	6,668	8,288	5,608	209.2
Australia	212	476	205	950	1,496	2,232	2,019	952.0
Denmark	0	0	141	514	389	862	862	n.c.
New Zealand	606	255	404	579	525	486	-120	-19.8
All other	950	479	411	219	457	210	-740	-77.9
All destination markets	19,046	25,180	13,078	21,747	23,502	24,413	5,367	28.2

Source: IHS Markit, Global Trade Atlas database, Tariff Schedule of Chile 0811.20.21, accessed March 9, 2021.

Table 7.6 Chile: Average unit value of exports of organic frozen raspberries by destination market, 2015–20

In dollars per metric ton (\$/mt) and percentages. n.c.= not calculable.

Market	2015 (\$/mt)	2016 (\$/mt)	2017 (\$/mt)	2018 (\$/mt)	2019 (\$/mt)	2020 (\$/mt)	Absolute	Percent
							change 2015–20 (\$/mt)	change 2015–20
United States	5,853	5,827	3,923	3,635	3,378	4,042	-1,811	-30.9
Canada	4,423	4,257	3,570	3,533	3,404	3,564	-859	-19.4
Australia	7,260	7,167	4,920	5,367	5,105	5,295	-1,965	-27.1
Denmark	0	0	3,519	3,874	3,506	3,847	3,847	n.c.
New Zealand	4,937	5,424	3,716	4,143	4,181	4,770	-166	-3.4
All other	4,883	3,996	2,640	2,521	3,484	4,479	-404	-8.3
All destination markets	5,526	5,493	3,766	3,659	3,479	3,956	-1,570	-28.4

Source: IHS Markit, Global Trade Atlas database, Tariff Schedule of Chile 0811.20.21, accessed March 9, 2021.

Table 7.7 Chile: Exports of conventional frozen raspberries by destination market, by quantity, 2015–20

In metric tons (mt) and percentages.

Market	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)	2020 (mt)	Absolute	Percent
							change 2015–20 (mt)	change 2015–20
United States	9,187	6,407	6,141	6,441	4,289	3,536	-5,651	-61.5
Australia	2,040	3,224	3,434	2,771	2,756	3,157	1,117	54.7
Canada	4,873	4,899	3,904	3,610	2,876	1,793	-3,080	-63.2
France	2,365	1,868	1,215	1,015	737	931	-1,434	-60.6
Netherlands	1,820	1,442	2,499	1,377	1,755	915	-905	-49.7
All other	7,390	7,102	6,498	4,910	4,546	3,629	-3,761	-50.9
All destination markets	27,675	24,942	23,692	20,124	16,959	13,960	-13,715	-49.6

Source: IHS Markit, Global Trade Atlas database, Tariff Schedule of Chile 0811.20.29, accessed March 9, 2021.

Raspberries for Processing

Table 7.8 Chile: Exports of conventional frozen raspberries by destination market, by value, 2015–20
In thousands of U.S. dollars and percentages.

Market	2015 (1,000 \$)	2016 (1,000 \$)	2017 (1,000 \$)	2018 (1,000 \$)	2019 (1,000 \$)	2020 (1,000 \$)	Absolute	Percent
							change 2015–20 (1,000 \$)	change 2015–20
United States	34,319	22,118	17,197	17,731	11,484	11,769	-22,550	-65.7
Australia	9,846	14,749	12,792	10,498	10,042	11,449	1,603	16.3
Canada	18,043	16,776	9,655	10,030	7,839	5,758	-12,285	-68.1
France	7,545	5,953	3,190	2,482	2,146	2,397	-5,149	-68.2
Netherlands	4,913	3,409	3,339	1,681	2,277	1,451	-3,461	-70.5
All other	27,368	24,307	15,663	13,015	11,539	10,908	-16,460	-60.1
All destination markets	102,034	87,312	61,837	55,436	45,327	43,732	-58,302	-57.1

Source: IHS Markit, Global Trade Atlas database, Tariff Schedule of Chile 0811.20.29, accessed March 9, 2021.

Table 7.9 Chile: Average unit value of exports of conventional frozen raspberries by destination market, 2015–20
In dollars per metric ton (\$/mt) and percentages.

Market	2015 (\$/mt)	2016 (\$/mt)	2017 (\$/mt)	2018 (\$/mt)	2019 (\$/mt)	2020 (\$/mt)	Absolute	Percent
							change 2015–20 (\$/mt)	change 2015–20
United States	3,736	3,452	2,800	2,753	2,678	3,328	-407	-10.9
Australia	4,826	4,575	3,725	3,788	3,644	3,627	-1,199	-24.8
Canada	3,703	3,425	2,473	2,778	2,725	3,212	-491	-13.3
France	3,190	3,186	2,625	2,445	2,911	2,574	-617	-19.3
Netherlands	2,700	2,364	1,336	1,220	1,297	1,586	-1,113	-41.2
All other	3,703	3,423	2,410	2,651	2,538	3,006	-697	-18.8
All destination markets	3,687	3,501	2,610	2,755	2,673	3,133	-554	-15.0

Source: IHS Markit, Global Trade Atlas, Tariff Schedule of Chile 0811.20.29, accessed March 9, 2021.

Chile sources nearly all its raspberries domestically; the country imports a relatively small share of frozen and fresh raspberries. Chile imports and re-exports some frozen raspberries, but these imports were less than 2 percent of production between 2015 and 2019 and sharply declined over most of the period.⁷⁵⁶ Chile's total imports of frozen raspberries fell from 868 mt (\$2.1 million) in 2015 to 241 mt (\$542,730) in 2019, but increased to 1,827 mt (\$4.2 million) in 2020. Its sourcing of frozen raspberry imports also shifted considerably. Reduced imports from Mexico drove most of the overall decline, while imports from China also fell and Serbia emerged as one of the main suppliers.⁷⁵⁷ Chile's imports of fresh raspberries were even smaller than its frozen imports and mostly came from Serbia and Turkey. Despite an uptick (to 193 mt) in 2020, Chile's raspberry imports remained minor compared to its own production and exports.⁷⁵⁸

⁷⁵⁶ IHS Markit, Global Trade Atlas database, Chilean codes 0811.20.21, 0811.20.29, 0810.20.21, and 0810.20.29, accessed March 29, 2021; Dominguez, "Chilean Raspberry Industry Report 2019," 4.

⁷⁵⁷ IHS Markit, Global Trade Atlas database, Chilean codes 0811.20.21 and 0811.20.29, accessed March 2, 2021.

⁷⁵⁸ IHS Markit, Global Trade Atlas database, Chilean codes 0810.20.21 and 0810.20.29, accessed March 2, 2021.

While Chile previously was among the top three sources of raspberry exports to the U.S. fresh market, it has shifted almost entirely to exporting processed raspberries. Rising fresh raspberry exports from Mexico rapidly displaced most of the Chilean fresh raspberries in the U.S. market in the late 2000s.⁷⁵⁹ Chile's overall exports of fresh raspberries have remained volatile year to year, but since 2012 have stayed below 300 mt.⁷⁶⁰ Chile supplied less than 0.1 percent of U.S. imports of fresh raspberries during 2015–20.⁷⁶¹

Government Programs

The Chilean government has some programs in place to support farmers and the broader food processing industry, but it is difficult to say the extent to which the raspberry industry is impacted by these programs. Government support for the broader agro-industrial sector primarily consists of research and technical support. In particular, the Ministry of Agriculture's Institute for Agricultural Development (INDAP) focuses on promoting the economic, social, and technological development of small farms through local offices located across the country.⁷⁶² Direct support to farmers is among the lowest of Organisation for Economic Co-operation and Development (OECD) member countries, at about 2.7 percent of gross farm receipts in 2019.⁷⁶³

INDAP's technical assistance is one of its most far-reaching support programs. Since the 1980s, INDAP has offered technical support by partnering with private consultant services. For raspberry farmers, INDAP's agricultural extension assistance focuses on helping farmers with production and compliance with GAP regulations.⁷⁶⁴

The Chilean government generally prefers to coordinate its policies and support programs with trade associations.⁷⁶⁵ Publicly funded support programs and training often directly involve trade associations or other private organizations. For example, the trade association Fedefruta manages some training and financing programs funded by the Chilean economic development agency, the Chilean Production Development Corporation or Corporación de Fomento de la Producción de Chile (Corfo).⁷⁶⁶ Efforts to develop Chilean raspberry cultivars are also supported with public funding from Corfo and have been publicized in conferences organized with INDAP.⁷⁶⁷

⁷⁵⁹ USITC DataWeb/Census, HTS 0810.20.1020 and 0810.20.9020, accessed March 2, 2021.

⁷⁶⁰ Chilean raspberry trade data from before 2012 are classified under different codes. IHS Markit, Global Trade Atlas database, Chilean codes 0810.2021 and 0810.2029, accessed March 2, 2021.

⁷⁶¹ USITC DataWeb/Census, HTS 0810.20.1020, 0810.20.9020, 0810.20.1022, 0810.20.1024, 0810.20.9022, and 0810.20.9024, accessed March 2, 2021.

⁷⁶² INDAP, "Quiénes somos (Who we are)," accessed March 11, 2021.

⁷⁶³ OECD Data, "Agricultural Support," accessed March 10, 2021.

⁷⁶⁴ Jara-Rojas et al., "Production Efficiency and Commercialization Channels," February 2016, 14–15.

⁷⁶⁵ USDOS, U.S. Embassy, Santiago, "Chile Raspberry Market and Production Data," December 2, 2020.

⁷⁶⁶ Fedefruta, "Frambuesero de San Carlos logra producir mejor (San Carlos raspberry is able to produce better)," February 19, 2021.

⁷⁶⁷ FreshPlaza, "New 100% Chilean Raspberry Varieties," October 7, 2019.

Compliance with Food Safety Standards

On the policy side, the Chilean regulator Agricultural and Livestock Service, or Servicio Agrícola y Ganadero (SAG) developed food safety legislation (Regulation SAG 3410/2002) with input from the Chilean raspberry industry in 2002. Implemented in 2003, objectives include ensuring product traceability and verifying safety of the product for consumption.⁷⁶⁸ The law also covers farmers' welfare, fresh fruit collecting points, processors, exporters, and transport.⁷⁶⁹ Under the legislation, all raspberry farmers have to be registered, the raspberry industry supply chain is audited to confirm that certain requirements are met to gain approval to export fruit, and water is sampled for agrochemicals.⁷⁷⁰ Industry representatives state that the regulation is being updated based on the Chilean industry's experience with the U.S. Food Safety Modernization Act (FSMA) enacted in 2011.⁷⁷¹

In addition, many Chilean growers have Good Agricultural Practices (GAP) certification, and the industry is generally able to meet U.S. FSMA requirements for the United States as well as the food safety regulations of other importing markets such as the EU, Canada, and Australia.⁷⁷²

Factors Affecting Competitiveness

As described in chapter 2 of this report, the competitiveness of raspberries for processing and of processed raspberry products can be measured by comparing delivered costs, product differentiation, and supplier reliability for U.S. products against those of imports. While Chile is an experienced, export-oriented raspberry processing industry that can produce large shares of high-value IQF product (including organic), limited access to needed fresh raspberry inputs has prevented its processors from expanding.

Chile supplies products from its experienced industry.

Chile has an experienced, export-oriented raspberry industry that focuses on supplying high-value IQF raspberry products. The Chilean industry uses a combination of production systems and processing equipment that result in higher shares of IQF products than in other countries. In particular, Chile's handpicked berries yield relatively high ratios of whole IQF berries. While the overall production system is labor-intensive, the resulting IQF products sell at substantially higher prices than non-IQF products like juice stock. As shown in chapter 2, Chile's average costs of production for processed raspberries are

⁷⁶⁸ Dominguez, "Chilean Raspberry Industry," June 4, 2012, 14; BCN, "Resolución 3410 Exenta (Exempt Resolution no. 3410)," November 11, 2002.

⁷⁶⁹ IHS Markit, "Chile's Raspberry Processors Must Choose Correct Market," November 22, 2007.

⁷⁷⁰ Dominguez, "Chilean Raspberry Industry," June 4, 2012, 14.

⁷⁷¹ USITC, hearing transcript, September 17, 2020, 48 (testimony of Pablo Herrera, JCP Foods); Herrera, written testimony to the USITC, September 8, 2020, 2.

⁷⁷² USITC, hearing transcript, September 17, 2020, 48 (testimony of Pablo Herrera, JCP Foods) and 140–41 (testimony of John Tentomas, Nature's Touch); Herrera, written testimony to the USITC, September 8, 2020, 2.

close to the costs of production in the United States and Canada. Large Chilean processors can also sort and package IQF products to customer specifications. A few processors sell retail-sized bags of berry mixes to grocery stores for an even greater profit margin than for IQF products in bulk packaging.⁷⁷³ Key factors that support Chile's status as a supplier of relatively high-quality IQF product include (1) the emphasis on growing raspberries for processing, (2) growers' familiarity with traceability and food safety requirements, (3) the prevalence of handpicked harvesting, and (4) processors' strategic use of both belt and static freezers. Moreover, as the Chilean industry is almost exclusively export-oriented, Chilean producers are known to adhere to strict food safety requirements and have a reputation for high quality.

Chilean processors are also able to supply significant quantities of organic IQF raspberries and organic frozen berry mixes for export due to the country's fresh production system described earlier. Representatives of the U.S. raspberry industry note that it is extremely challenging to control pests and disease using organic methods in the United States, severely limiting the number of organic raspberries grown in this country. By contrast, Chile's climate is not conducive to the survival of pests such as the spotted wing drosophila that threaten raspberry cultivation in the United States, and also has microclimates that favor organic raspberry farming.⁷⁷⁴ Small farms also are better suited to the intensive work of organic farming and caring for the plants by hand.⁷⁷⁵ This provides a competitive advantage to Chile, where processors already regularly coordinate with many small-scale growers. For example, processors often sign contracts to secure a supply of berry inputs; send agronomists to advise growers on food safety and maximizing yields; and operate collection centers to trace raspberry input sourcing, provide cold storage, and transport raspberry inputs from multiple farming areas to the processing plant.

Chile offers reliable exports of processed raspberries, but a declining supply of fresh raspberries prevents growth.

Shrinking quantities of fresh raspberry inputs prevent competitive Chilean processors from significantly expanding their business. Despite these declines, Chilean processors have several advantages because of reliability and availability. The raspberry crop has an unusually long harvest season, due to both the dual-harvest nature of the Heritage cultivar and the range of climates where raspberries are grown. This long harvest reduces the risk of weather events significantly disrupting the availability of raspberry inputs.⁷⁷⁶ Larger processors in Chile also have the capability to finance storage of their frozen product, allowing them to meet customer demand for year-round deliveries (which is often a requirement for

⁷⁷³ Industry representative, interview by USITC staff, February 11, 2021.

⁷⁷⁴ USITC, hearing transcript, September 17, 2020, 154–55 (testimony of Jon Maberry, Washington Red Raspberry Commission and John Tentomas, Nature's Touch).

⁷⁷⁵ Industry representative, interview by USITC staff, February 11, 2021.

⁷⁷⁶ Industry representative, interview by USITC staff, February 11, 2021.

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contracts with retailers).⁷⁷⁷ Smaller processors are less likely to be able to hold inventory and cover freezing expenses for several months, but benefit from Chilean raspberry production peaking during the northern hemisphere's winter months.⁷⁷⁸

⁷⁷⁷ This observation is reinforced by monthly data from 2015 to 2019, which show Chile typically supplying at least 15 percent of U.S. imports of frozen red raspberry products (even during off-season months). USITC DataWeb/Census, HTS 0811.20.2025, accessed February 12, 2021; industry representative, interview by USITC staff, February 11, 2021.

⁷⁷⁸ By contrast, the U.S. industry harvest is in summer. Industry representative, interview by USITC staff, February 11, 2021; industry representative, email message to USITC staff, March 5, 2021.

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Chapter 8

Pricing Analysis: Relationship between Imports and Prices in the U.S. Market

Summary

The Commission’s analysis in this chapter considers the relationship between imports and U.S. prices (as represented by price data from Washington) during 2015–20. The analysis finds that price trends based on available annual data appear to be most closely related to changes in the total supply of processed raspberries in the U.S. market. This is particularly true of the U.S. market for non-IQF raspberries. Only in 2018 did higher import levels coincide with lower Washington sales prices for processed raspberries, although imports in other years may have kept prices lower than they otherwise would have been.

As described in the previous chapters of this report, there are a variety of factors that affect processed raspberry pricing. Among the factors most relevant to pricing in the U.S. market are those related to the total supply of processed products (differentiated by quality and type), which is made up of domestic production, stocks, and imports. Because all processed raspberry products start from fresh raspberries, supply of these products depends on growing conditions in Washington and the countries that are major sources of U.S. imports. For example, industry representatives cite weather during the production season as a major driver of processed raspberry prices due to its effect on yields of fresh raspberry inputs.⁷⁷⁹ Seasonality (both the timing of the harvest season and the timing of imports relative to U.S. supplies) is also an important factor affecting the volume of raspberries in the U.S. market at any given time. Stocks are a more minor factor but can also affect total supply.

U.S. industry representatives, such as the Washington Red Raspberry Commission (WRRRC), have stated there is a clear relationship between increased imports and lower Washington sales prices. For example, WRRRC president Jon Maberry noted that since 2015, trends in the U.S. market included “increased imports and downward pricing, leading to lower profits, fewer acres, and far fewer growers.”⁷⁸⁰ In his request letter, the U.S. Trade Representative asked that this report contain a pricing analysis that includes “the relationship between prices of domestic products and imports of fresh and processed raspberries in the U.S. market to the extent such data [are] available.” This chapter responds to the request by comparing available pricing data with imports from major supplying countries.

⁷⁷⁹ Industry representatives, interviews by USITC staff, September 15, 2020, and December 18, 2020; Government of British Columbia, “A Global Export Market Overview,” 2010, 6.

⁷⁸⁰ USITC, hearing transcript, September 17, 2020, 12 (testimony of Jonathan Maberry, WRRRC).

Description of Price Data

Any attempt to draw conclusions about the relationship between imports and U.S. prices for processed raspberries is confounded by three data limitations. The first limitation is the lack of import data before July 2018 on fresh raspberries for processing. Previously, the Harmonized Tariff Schedule of the United States (HTS) combined imports of fresh raspberries for processing with those packed for fresh consumption. This aggregation in the trade data prohibits precise analysis of import trends for fresh raspberries for processing because, as described in chapter 1, market characteristics and pricing for these raspberries are very different from those for raspberries for fresh consumption. The Washington industry believes that there has been a sharp increase in U.S. imports of fresh raspberries for processing and that these imports led to lower prices for Washington raspberries for processing. However, the pricing analysis that follows cannot fully evaluate the relationship between imports of fresh raspberries for processing and Washington sales prices because of the lack of data before July 2018 on U.S. imports of fresh raspberries for processing.⁷⁸¹ For this reason, the analysis focuses only on frozen straight pack—that is, raspberries packed and frozen in their own juices without sugar—and individually quick frozen (IQF) raspberries. For these two categories of products, sufficient Washington price and U.S. import data are available since 2011.⁷⁸²

The second limitation related to import data is that such data do not distinguish between imports of IQF raspberries and non-IQF frozen raspberry products, such as block frozen raspberries and puree.⁷⁸³ This aggregation in the trade data is problematic since, as described below, IQF and non-IQF raspberries face different supply and demand conditions, which affect prices. In particular, non-IQF products are more likely to face an oversupply in the market that results in price reductions, whereas IQF raspberry suppliers consistently struggle to meet high demand that results in price increases for IQF raspberries. As a result, industry representatives report that price pressure from imports is greater for non-IQF products.⁷⁸⁴ However, the two industries are closely related and prices in one market tend to move in tandem with the other, as shown below.

Despite the fact that import data for frozen raspberries do not differentiate between products, the ability to draw conclusions from the data is aided by the fact that the major countries supplying imports in this category tend to specialize in one product or the other: Mexico and Canada ship mostly non-IQF raspberries, while Chile and Serbia ship mostly IQF raspberries. The representative Washington sales prices used below for non-IQF frozen raspberry products are for “straight pack” raspberries. In the analysis of import data for frozen raspberries below, observations of imports from Mexico and Canada were used to represent straight pack prices most closely, while observations of U.S. frozen imports from only Chile and Serbia were used to analyze IQF product prices.

The third limitation is the lack of data on prices of imported products in the U.S. market. This limits the ability to compare the price of imports to Washington industry sales prices. The only data available on

⁷⁸¹ Monthly data on the volumes of fresh raspberries for processing can be found in chapter 5, “Mexico.”

⁷⁸² By focusing on IQF and non-IQF frozen raspberries, this section accounts for about 80 percent of the Washington processed raspberry market. The other 20 percent of Washington production goes to the juice market, which is not considered in this section due to data limitations.

⁷⁸³ Block frozen raspberries can also be used to make puree.

⁷⁸⁴ USITC, hearing transcript, September 17, 2020, 137 (testimony of Jon Maberry, WRRRC).

the value of imports are average unit values (AUVs). Import AUVs are not prices, but instead reflect the value of shipments declared in customs forms at the point of import. For this reason, import AUVs may not reflect the U.S. market price that the product will sell for, or the total cost of the imported product versus the domestic product to a purchaser.⁷⁸⁵ In addition, import AUVs reflect a mix of products shipped under the same tariff code, despite variations in product characteristics and quality. This makes import AUVs unlike market prices, which better reflect differences between products and quality levels. Nevertheless, in the absence of pricing data on imports other than AUVs, some of the figures below compare import AUVs to Washington sales prices. Although the price levels between these different sources are not directly comparable, the comparisons are made in order to show price trends and assess the degree to which changes in Washington prices and import AUVs appear to be linked. These comparisons are supplemented by figures that compare import volumes to Washington sales prices, since U.S. industry representatives have linked price changes to an increased quantity of imported raspberries in the U.S. market since 2015.

U.S. industry representatives have acknowledged these data limitations and found them to be challenges to analyzing prices in their industry.⁷⁸⁶ For example, at the Commission hearing, an industry representative testifying on behalf of the WRRRC stated that, due partly to lack of product-specific codes in the HTS, U.S. import data “simply does not align with our extensive market experience and other objective data regarding market conditions.”⁷⁸⁷ Aware of these challenges, U.S. industry representatives provided a variety of pricing data (table 8.1) that informed the analysis shown below.⁷⁸⁸

⁷⁸⁵ For instance, imports might be brought in by a marketer and later sold to a domestic purchaser with an additional mark up when sold to the final customer. Alternatively, if the importer is a direct importer of the product, they might incur additional costs to import the product.

⁷⁸⁶ In addition to the pricing analysis below, this report also considers the relationship between imports and Washington prices in the economic modeling exercise presented in chapter 9. The model is fundamentally different from the analysis below because it holds all features in a year constant, changing only the quantity of imported processed raspberries and raspberries for processing and evaluating the resulting short-run adaptations to prices and quantities in the domestic market.

⁷⁸⁷ USITC, hearing transcript, September 17, 2020, 14 (testimony of Brad Rader, Rader Farms).

⁷⁸⁸ Price information from Washington Red Raspberry Commission reflects estimated average prices of surveyed WRRRC members, not actual prices paid by customers. WRRRC, email message to USITC staff, December 18, 2021.

Table 8.1 Categories for Washington and import pricing data presented in pricing analysis

AUV = average unit value.

U.S. processed raspberry product	Washington price data	Relevant HTS provision for import AUV	Countries used to represent imports of product in analysis	Pricing comparisons presented in this chapter
All U.S. raspberries for processing	Washington raspberries for processing (field price)	n.a.	All imports	<ul style="list-style-type: none"> Comparison of import volumes to Washington. Production and field prices, 2015–20 (figure 8.1)
Non-IQF raspberries	Straight pack (sales price)	0811.20.2025	Mexico (shipments to the U.S. market are 50% non-IQF); Canada (shipments to the U.S. market are 60% non-IQF)	<ul style="list-style-type: none"> Comparison of import volumes to Washington production and sales prices, 2011–20 (figure 8.3) Comparison of import volumes by country to Washington sales prices, 2015–20 (figure 8.4) Comparison of import AUVs to Washington sales prices (figure 8.5)
IQF raspberries	IQF (sales price)	0811.20.2025	Chile (shipments to the U.S. market are 80% IQF); Serbia (shipments to the U.S. market are 75% IQF)	<ul style="list-style-type: none"> Comparison of import volumes to Washington production and sales prices, 2011–20 (figure 8.6) Comparison of import volumes by country to Washington sales prices, 2015–20 (figure 8.7) Comparison of import AUVs to Washington sales prices (figure 8.8)

Source: Compiled by USITC.

Note: IQF/non-IQF shares are estimates by USITC based on correspondence with various industry and academic representatives. Average unit values (AUVs) for raspberries for processing under HTS 0810.20.1024 and 0810.20.9024 were not available at the time of publication due to ongoing Census revisions of the relevant statistical reporting numbers.

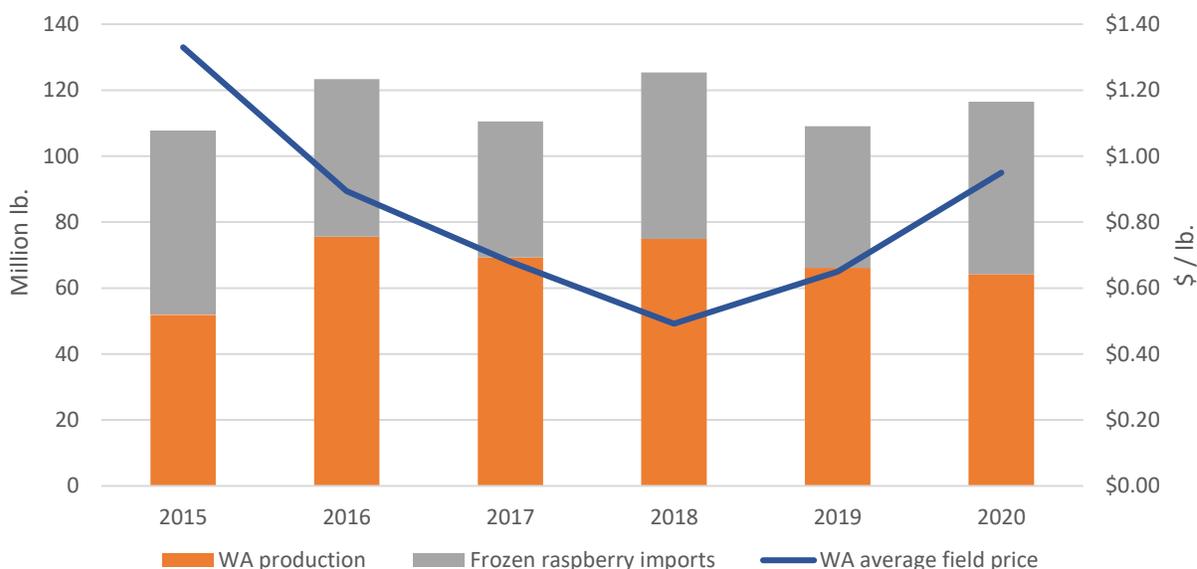
Observed Prices and Trends in the U.S. Market for Processed Raspberries

At the beginning of the 2015–20 period, Washington field prices of raspberries for processing were at high levels due to lingering effects from low domestic production in 2014–15, leading to an associated increase in imports (figure 8.1). From 2015 to 2017, prices declined from their 2015 highs as Washington production recovered, even though import volumes also declined. Stocks that were carried over from a record-high 2016 Washington crop may have contributed to lower imports and prices in 2017. In 2018, imports increased substantially, and prices reached their low point for the six-year period. Referring to 2018, one industry representative noted this low point in pricing coincided with an unusually large

volume of product in the U.S. market, especially from Serbia.⁷⁸⁹ Prices then rebounded in 2019 as the volume of imports dropped. In 2020, the industry reports that COVID-19 related factors generated additional demand for processed raspberries, and as a result, U.S. import levels and prices both increased.⁷⁹⁰ During the COVID-19 global pandemic customers sought less perishable food items to decrease visits to the grocery store, which led to increase demand for frozen fruit and vegetables.⁷⁹¹ Despite some key differences, these overall pricing trends were observed for both straight pack and IQF products, as described below.

Figure 8.1 U.S. imports of frozen raspberries; Washington production and field prices of raspberries for processing, 2015–20

Imports and production are in million lb. (left axis) and field prices are in dollars per lb. (right axis). Underlying data for this figure can be found in [appendix H table H.1](#).



Source: USITC DataWeb/Census, imports for consumption, HTS 0811.20.2025, accessed February 4, 2021 (for frozen raspberry imports); WRRRC, email message to USITC staff, December 18, 2020 (for Washington production and Washington average field price).

Note: The prices provided by WRRRC are estimated average prices and do not represent actual prices paid by their customers.

Estimating supply of raspberries in the U.S. processing market

As described in the data limitations section above, lack of data on U.S. imports of fresh raspberries for processing before July 2018 complicates analysis of the total supply of raspberries in the Washington processing (and processed product) market. Because the U.S. industry in Washington has stated that a sharp increase in U.S. imports of fresh raspberries for processing has contributed to lower prices, figure 8.2 compares supply (including these imports) to Washington sales prices. The figure shows actual 2019 and 2020 trade data for these imports and estimated import volumes before 2019, along with the same

⁷⁸⁹ Industry representative, interview by USITC staff, September 24, 2020.

⁷⁹⁰ Industry representative, email message to USITC staff, November 19, 2021.

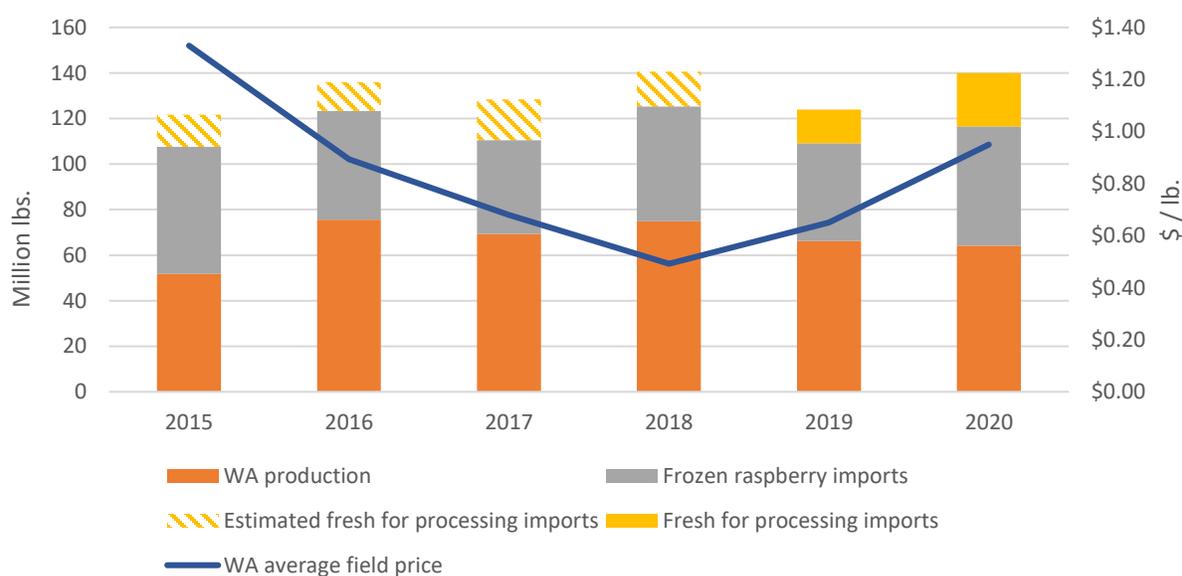
⁷⁹¹ Food Tank, "COVID-19 Spurs Demand in the Frozen Food Industry," February 2021.

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Washington production and frozen raspberry import data shown in figure 8.1.⁷⁹² The figure shows that in 2019 and 2020, the years for which actual import volumes are available, increased U.S. imports of fresh raspberries for processing did not result in a price decline (prices in those years were increasing, as described above). However, prices might have risen further if these imports had not entered the market. The data show that any price effects from increased imports were not sufficient to offset the rise in prices due to increasing demand. Before 2019, estimated volumes of imported fresh raspberries for processing appeared to also be a smaller component of total U.S. supply than either Washington production or U.S. imports of processed raspberries. In 2017, estimated imports of fresh raspberries for processing were significantly higher than in other years. However, frozen raspberry imports were lower in that year, resulting in stable import supply overall. Over the entire 2015–20 period, unless actual import volumes of fresh raspberries for processing for those years far exceeded the estimated volumes, it is unlikely that these imports had a greater effect on Washington prices than either Washington production or frozen imports. Reliable pricing or AUV data on imports of fresh raspberries for processing are not available and are not used in this analysis.

Figure 8.2 U.S. imports of frozen raspberries and fresh raspberries for processing; Washington production and field prices of raspberries for processing, 2015–20

Imports and production are in million lb. (left axis) and field prices are in dollars per lb. (right axis). Underlying data for this figure can be found in [appendix H table H.17](#).



Source: USITC DataWeb/Census, imports for consumption, shares of HTS 0810.20.1020 and 0810.20.9020, 0810.20.1024, and 0810.20.9024 (for fresh for processing raspberry imports), 0811.20.2025 (for frozen raspberry imports), accessed February 4, 2021; WRRRC, email message to USITC staff, December 18, 2020 (for Washington production and average field price); USITC estimates (for fresh for processing imports from 2015–18).

⁷⁹² As described in appendix E (“HTS Sorting for Modeling Inputs”), volumes of imports of fresh raspberries for processing before 2019 were estimated by examining the share of 2019 and 2020 fresh raspberry imports that entered under the HTS statistical reporting numbers that were established for fresh raspberries for processing, and applying this share to the years before the breakout was added.

Frozen Raspberries: Non-IQF

The United States imports non-IQF raspberry products mainly from Mexico and Canada, which are the import sources used to compare U.S. imports to Washington sales prices in this section.⁷⁹³ According to industry representatives, the U.S. market for straight pack frozen raspberries is characterized by oversupply due to relatively cheap imports, and purchasers hold pricing power because of this excess supply.⁷⁹⁴ The block frozen segment of the market was the segment of particular concern to WRRRC at the Commission hearing due to what it views as a clear effect of imports from Mexico on Washington prices. According to WRRRC, block frozen raspberries are imported from Mexico at “prices 50 to 75 percent below U.S. market prices. Such substantial underselling, particularly during harvest time, has a very serious adverse effect on overall prices.”⁷⁹⁵

Supply and Price Trends, 2011–20

After several years of relative stability, imports of frozen raspberries from Canada and Mexico in the U.S. market increased substantially in 2015. As noted in table 8.1, imports of frozen raspberries from Canada and Mexico are about 60 percent and 50 percent non-IQF products, respectively, and are used in this section to analyze the relationship between imports and prices in the non-IQF market. These imports were purchased to partially offset the shortfall in domestic supply, which fell 23 percent between 2014 and 2015 owing to poor weather conditions.⁷⁹⁶ This shortage led to Washington straight pack frozen raspberry prices reaching 10-year highs in 2015, despite high volumes of imports (figure 8.3).⁷⁹⁷ The period from 2016 to 2018 was characterized by high Washington production volumes that seemed to be correlated with declining prices, despite low-to-average volumes of imports. In 2019 and 2020, Washington production declined while imports and prices rose.

⁷⁹³ As shown in table 8.1, the other major suppliers of U.S. frozen raspberry imports—Chile and Serbia—ship mostly IQF raspberries.

⁷⁹⁴ USITC, hearing transcript, September 17, 2020, 136 (testimony of Rolf Haugen, Northwest Berry Co-op).

⁷⁹⁵ USITC, hearing transcript, September 17, 2020, 13 (testimony of Brad Rader, Rader Farms).

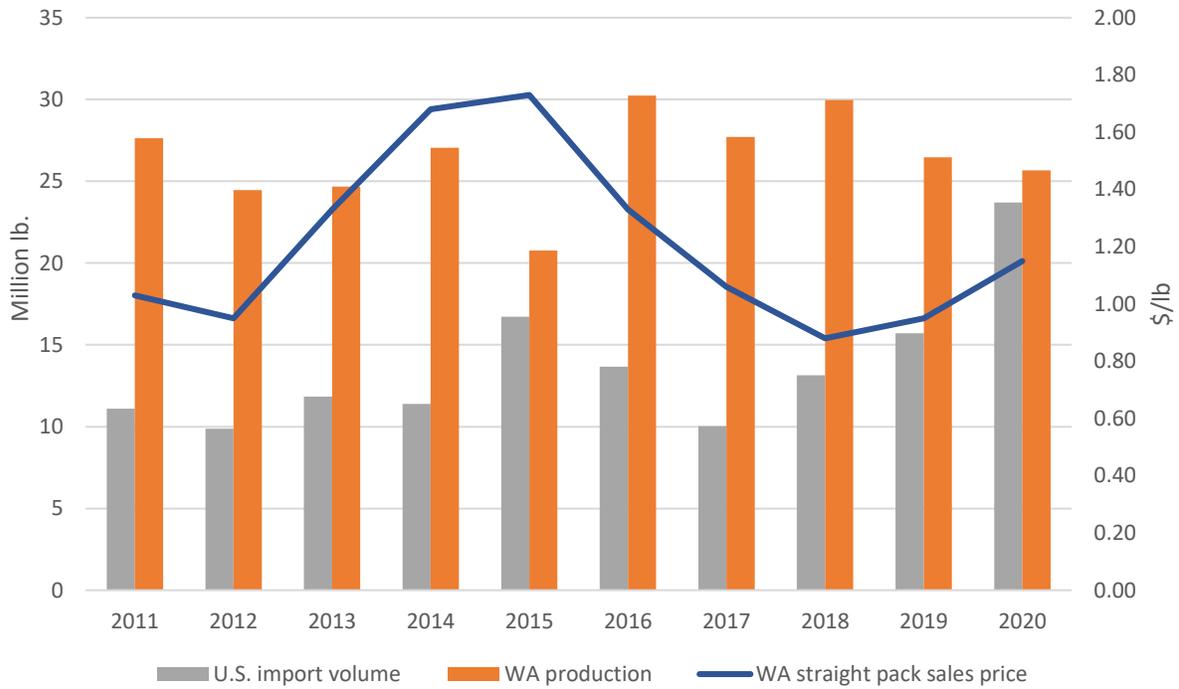
⁷⁹⁶ Smuckers, written submission to the USITC, posthearing brief, December 4, 2020, 2; industry representative, email message to USITC staff, December 18, 2021; Relyea, “Whatcom Country Raspberry Harvest Down,” November 15, 2015.

⁷⁹⁷ Smuckers, written submission to the USITC, posthearing brief, December 4, 2020, 2.

Raspberries for Processing

Figure 8.3 U.S. imports of frozen raspberries from Mexico and Canada, Washington production of straight pack raspberries, and Washington selling prices for straight pack frozen raspberries, 2011–20

Imports and production are in million lb. and prices are in dollars per lb. Underlying data for this figure can be found in [appendix H table H.18](#).



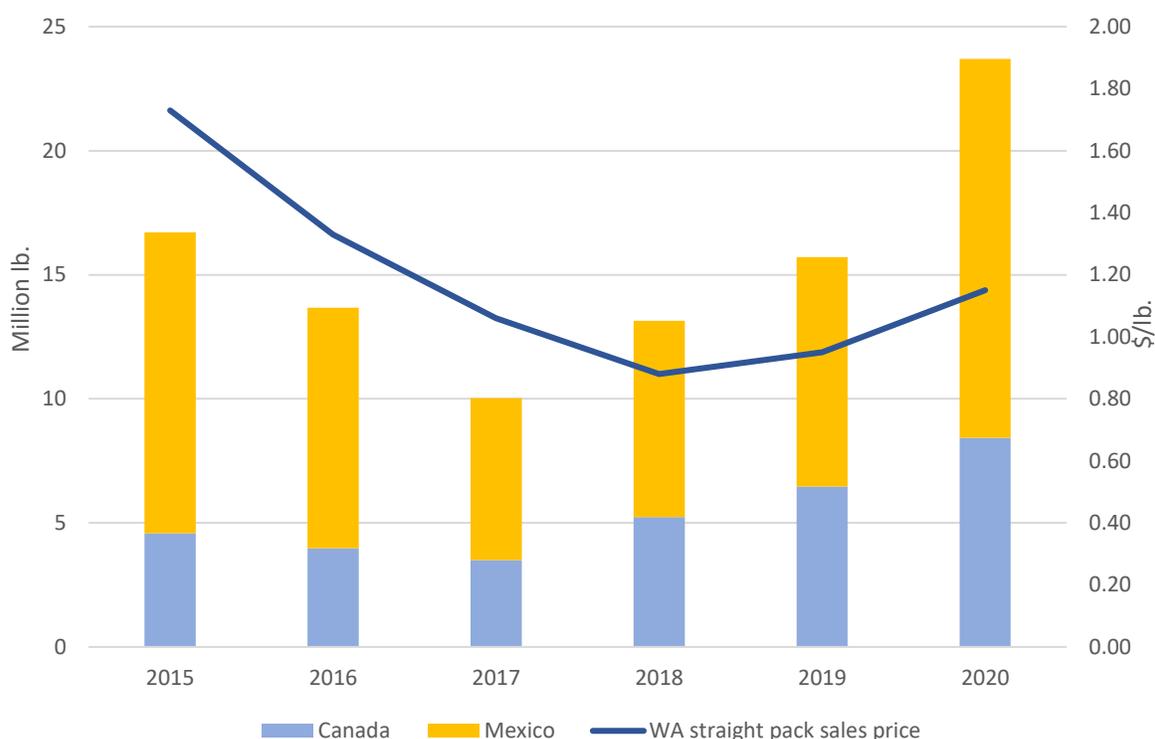
Source: USITC DataWeb/Census, imports for consumption, HTS 0811.20.2025, accessed February 4, 2021 (for U.S. import volume); WRRRC, email message to USITC staff, December 18, 2020 (for Washington production and straight pack sales price).

Relationship between Imports and Prices during 2015–20

Comparing import volumes to Washington sales prices during 2015–20, imports of frozen raspberries from both Canada and Mexico declined between 2015 and 2017, as did Washington straight pack prices from their 2015 high. After 2017, imports rose rapidly, particularly from Mexico, while Washington prices also increased (figure 8.4), suggesting little direct relationship between increasing frozen raspberry imports and declining straight pack prices. Overall, available annual data from the 2015–20 data period do not show an obvious relationship between higher volumes of imports in the U.S. market and lower Washington prices. Instead, using these data and at this level of analysis, prices seem to be more closely tied to Washington production, as shown in figure 8.2.

Figure 8.4 Volume of U.S. processed raspberry imports from Canada and Mexico, and Washington straight pack selling prices, 2015–20

Imports are in million lb. and prices are in dollars per lb. Underlying data for this figure can be found in [appendix H table H.19](#).

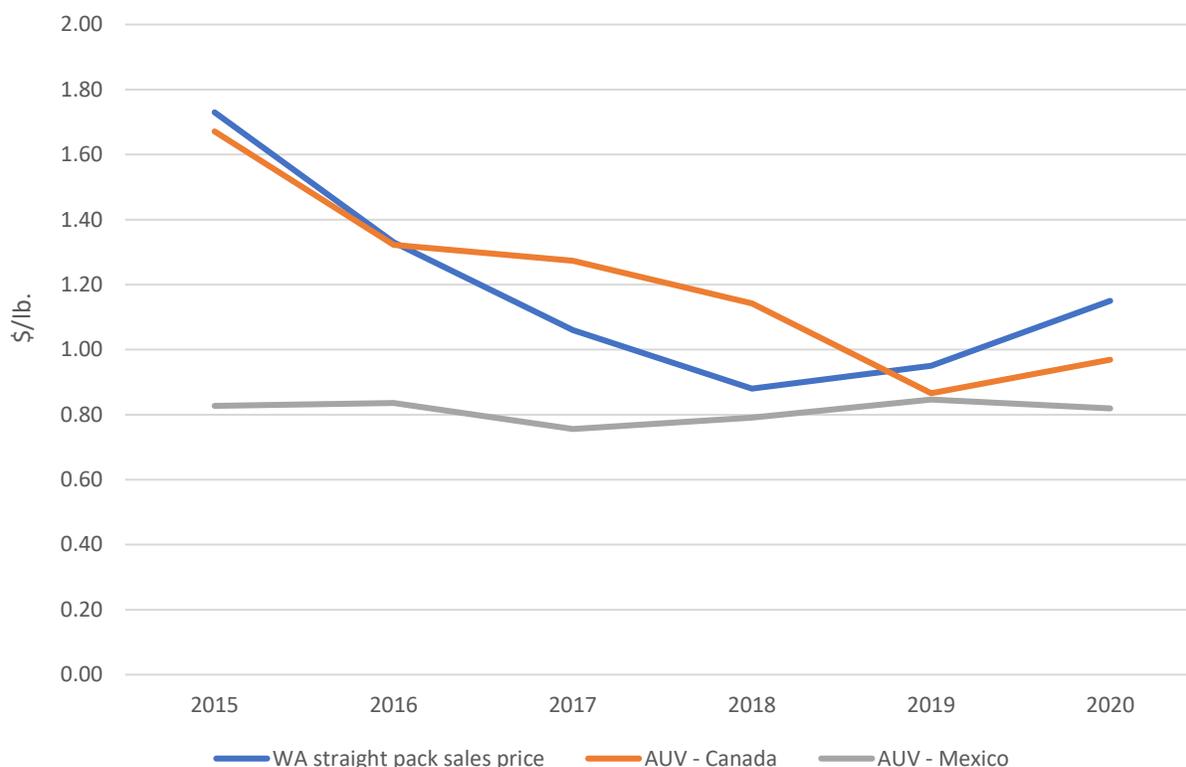


Source: USITC DataWeb/Census, imports for consumption, HTS 0811.20.2025 (for U.S. imports from Canada and Mexico), accessed February 4, 2021; WRRC, email message to USITC staff, December 18, 2020 (for Washington straight pack sales price).

Another approach to analyzing the relationship between prices of Washington and imported processed raspberries is to compare domestic prices with import AUVs. For non-IQF raspberries, comparisons of import AUVs and Washington straight pack sales prices reveal that imports from Mexico tend to offer stable pricing, as described in chapter 5, which is reflected in largely flat Mexican AUVs (figure 8.5). Washington prices and Canadian AUVs tended to move in the same direction during the period, except between 2018 and 2019, when Washington prices increased while Canadian AUVs declined. Observed differences in trends between import AUVs and Washington prices may reflect instances in which other factors, such as quality, product mix, or market timing, affected the various suppliers differently.

Figure 8.5 Washington sales price of straight pack raspberries and AUVs for frozen raspberry imports from Canada and Mexico, 2015–20

In dollars per lb. Underlying data for this figure can be found in [appendix H table H.20](#).



Source: USITC DataWeb/Census, imports for consumption, CIF (cost, insurance, freight) values, HTS 0811.20.2025, accessed February 4, 2021 (for average unit values for Canada and Mexico); WRRRC, email message to USITC staff, December 18, 2020 (for Washington sales price).

Because other factors affected Washington prices of non-IQF raspberries in the U.S. market, it is difficult to discern the impact of imports on Washington prices based on the available data. Such factors may include market cyclicality, substitutability, and stocks. Several industry representatives stated that when Washington prices are high, food and beverage manufacturers reportedly turn first to import supplies to meet their demand. However, if they still cannot find available supplies of raspberries at the desired price point, where possible, they substitute other fruits in their applications or use artificial flavoring in processed products.⁷⁹⁸ This may lower purchases of raspberries the following year (since raspberry customers have changed their behavior and, in some cases, their processed product formulations). The resulting price decline from low demand makes purchases of raspberries attractive again, creating a cyclical pattern.⁷⁹⁹

Because frozen raspberries can be held in inventory, stocks may also affect pricing in the market for this product. Frozen raspberries (IQF and straight pack) only have a shelf life of 12–18 months, and it is risky for even large processors to hold sizeable amounts of stocks; therefore stocks have only a limited ability to smooth out supply from year to year.⁸⁰⁰ However, U.S. monthly stock levels are relatively high compared to the volume of straight pack raspberry imports and thus may have an effect on total supply,

⁷⁹⁸ Industry representatives, interviews by USITC staff, July 24, 2020, September 15, 2020, and October 20, 2020.

⁷⁹⁹ Industry representatives, interviews by USITC staff, July 29, 2020, and September 15, 2020.

⁸⁰⁰ Industry representative, interview by USITC staff, February 11, 2021.

and therefore on prices, under certain market conditions (for more information on stocks see chapter 3, “United States”).

Frozen Raspberries: IQF

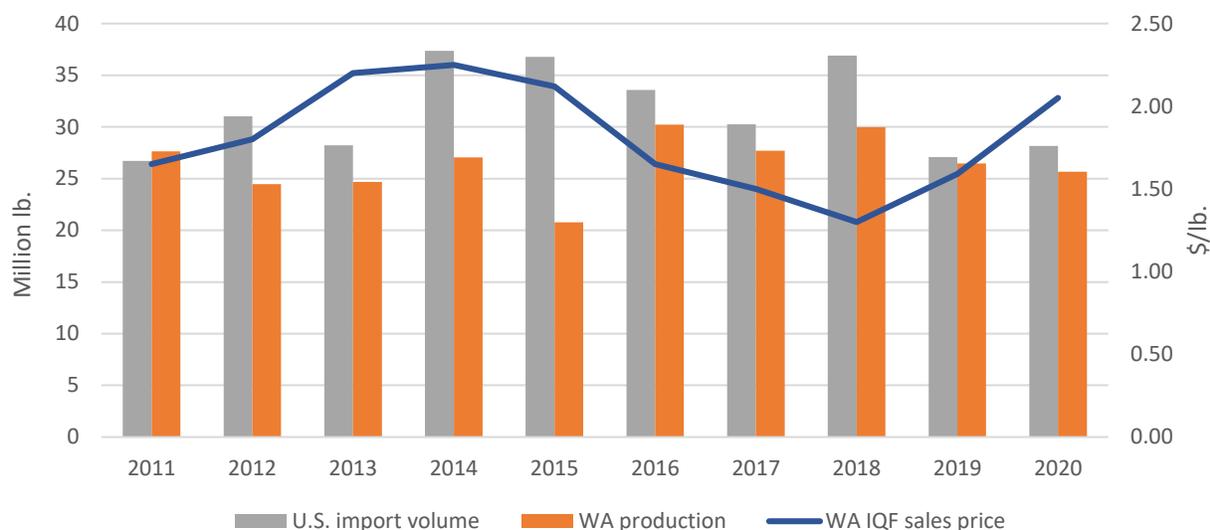
Unlike straight pack raspberries, U.S. markets for IQF raspberries are typically characterized by demand that is greater than supply, resulting in narrower price fluctuation and more negotiating power for producers. As described in chapter 9, IQF raspberry production capacity in the United States is constrained and, as a result, any reductions in the volume of imports are more likely to result in higher prices in the U.S. market. The major suppliers of U.S. IQF raspberry imports are Chile and Serbia, and trade data below are for those countries only.

Supply and Price Trends, 2011–20

Between 2011 and 2020, Washington IQF raspberry prices followed a similar trend to straight pack raspberry prices—peaking in 2014, declining through 2018, and then beginning to recover (figure 8.6). As with straight pack raspberries, the price peak was driven by scarce U.S. supply due to poor growing conditions during 2014–15. However, based on available annual data, import volumes and U.S. prices seem to be slightly more related for IQF raspberries than for non-IQF; U.S. prices began to increase when import volumes were relatively low in 2012 and 2013, and then declined after import volumes increased sharply in 2014 and 2015. In 2016 and 2017, both imports and Washington production were relatively high, leading to the price decline that culminated in 2018. These observations are broadly consistent with the model results for the U.S. IQF market shown in chapter 9. To the extent there is a readily apparent relationship between import levels and Washington sales prices for IQF raspberries, prices seem to show a slight lag in responding to import volumes, with the expected price changes often seen in the year after a major change in imports rather than in the same year.

Figure 8.6 U.S. imports of frozen raspberries from Chile and Serbia, Washington production of IQF raspberries, and U.S. selling prices for IQF raspberries, 2011–20

Imports and production are in million lb. and prices are in dollars per lb. Underlying data for this figure can be found in [appendix H table H.21](#).



Source: USITC DataWeb/Census, imports for consumption, HTS 0811.20.2025, accessed February 4, 2021 (for U.S. import volume from Chile and Serbia); WRRRC, email message to USITC staff, December 18, 2020 (for Washington production and IQF sales price).

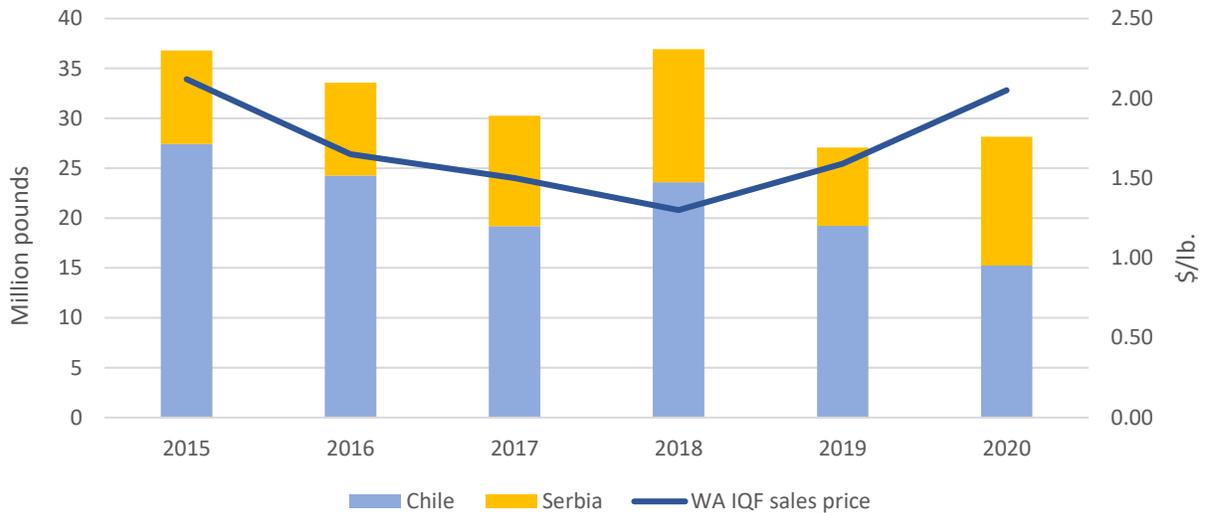
Relationship between Imports and Prices during 2015–20

The 2015–20 period was characterized by a continued increase in imports of processed (mostly IQF) raspberries from Serbia. Though Serbia was not historically a major supplier of processed raspberries in the U.S. market, it increased its shipments of frozen raspberries to the United States, from just over 1 million pounds in 2011 to nearly 13 million pounds in 2020. During 2015–20, the increase in imports from Serbia was mostly at the expense of imports from Chile, except in 2018, when imports of processed raspberries from both countries rose substantially from 2017 levels (figure 8.7). In 2018, the U.S. selling price for IQF raspberries was also at its lowest point of the period, suggesting at least some association between the quantity of imports in the market that year and U.S. prices. As mentioned in the price overview, 2020 was a year of unusually high demand for IQF raspberries due to COVID-19 related factors (increased consumer purchases of healthy foods for home consumption), which led to an increase in prices.⁸⁰¹

⁸⁰¹ Industry representative, interview by USITC staff, February 26, 2021.

Figure 8.7 U.S. imports of frozen raspberries from Chile and Serbia and Washington selling prices for IQF raspberries, 2015–20

Imports are in million lb. and prices are in dollars per lb. Underlying data for this figure can be found in [appendix H table H.22](#).



Source: USITC DataWeb/Census, imports for consumption, HTS 0811.20.2025, accessed February 4, 2021 (for U.S. import volume from Chile and Serbia); WRRRC, email message to USITC staff, December 18, 2020 (for Washington IQF sales price).

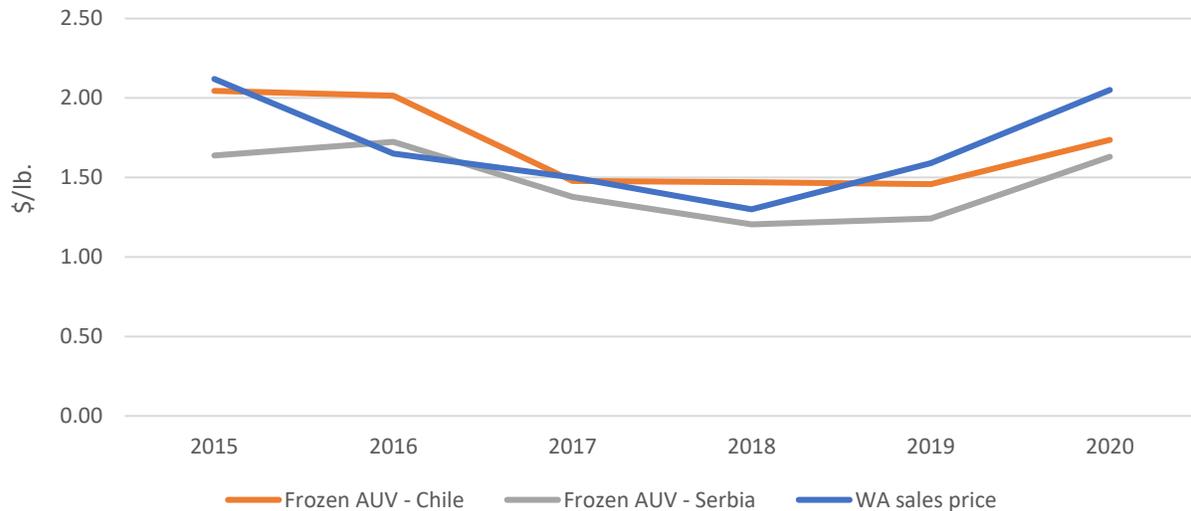
Prices for IQF raspberries from Washington, Chile, and Serbia appear to be closely linked, despite the slight shift in supply from Chile to Serbia. AUVs for processed raspberry imports from Chile and Serbia generally tracked Washington selling prices during 2015–20 (figure 8.8), with all three prices moving in the same direction most years. According to one industry representative at the Commission hearing, U.S., Chilean, and Serbian producers of IQF raspberries all face similar challenges from increasing price pressure that has reduced profitability, and farms producing raspberries for processing have gone out of business in all three countries as a result.⁸⁰²

⁸⁰² USITC, hearing transcript, September 17, 2020, 129 (testimony of John Tentomas, Nature's Touch).

Raspberries for Processing

Figure 8.8 Import AUVs of frozen raspberries from Chile and Serbia and Washington selling prices for IQF raspberries, 2015–20

In dollars per lb. Underlying data for this figure can be found in [appendix H table H.23](#)



Source: USITC DataWeb/Census, imports for consumption, CIF (cost, insurance, freight) values, HTS 0811.20.2025, accessed February 4, 2021 (for import AUVs of frozen raspberries from Chile and Serbia); WRRRC, email message to USITC staff, December 18, 2020 (for Washington IQF sales price).

Seasonality plays a larger role in prices for IQF raspberries, especially since the largest import supplier (Chile) has a different growing season from that in Washington, while Serbia has much the same growing season. U.S. monthly import data show imports of frozen raspberries from Serbia tend to arrive shortly after the Washington harvest period, when U.S. stocks are highest, whereas imports from Chile tend to arrive in higher quantities during the period when U.S. stocks are drawing down (as described in chapter 3). As a result, it is possible that imports from Serbia have a greater effect on Washington prices than imports from Chile since they are more likely to compete directly with Washington domestic supplies.

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Chapter 9

Economic Impacts of Imports

Individually quick frozen (IQF) and non-IQF raspberries (fresh for processing, block frozen, puree, and juice concentrate) face very different environments in terms of production and competition.⁸⁰³ Whereas the previous chapters compare the competitive position of Washington State with those of U.S. top import suppliers of processed raspberries and fresh raspberries for processing, this chapter quantifies the impacts of imported raspberries on the prices and production of producers in Washington based on data from 2010–20. The model only covers U.S. production of IQF and non-IQF raspberries produced in Washington, and not California or Oregon due to data limitations.⁸⁰⁴ Observing that both markets experienced surges in the growth rates of imports during the 2010–2015 period, the partial equilibrium models simulate counterfactual scenarios in which the surges did not occur and the growth rates of imports of IQF and non-IQF raspberries are reduced. The surge in growth rates had a lasting effect after 2015; import levels of IQF and non-IQF raspberries did not return to earlier levels. Thus, without the surge, imports of these products are reduced both during the surge years and over the latter part of the period modeled. The full period is used to estimate the model, but the model results focus on the most recent five years, i.e., 2016–20.

Modeling results show that for both the IQF and non-IQF markets, reducing imports would have increased revenue (i.e., gross sales) for Washington processors. The non-IQF market faced faster-growing import competition than the IQF market during the period of analysis. The simulated reduction in imports in this market from actual levels, results in estimated prices and production of non-IQF raspberries from Washington that are much higher than those observed in the actual market in 2016–20. The estimated impact in the IQF market by the counterfactual reduction in imports was less over the period of analysis. In those years, domestic revenue from IQF raspberries would have been higher. Due to capacity constraints in the production of IQF raspberries, that increased revenue would have mostly come through higher prices, with smaller effects on production levels.

The results in this chapter are complementary but not directly comparable to the pricing analysis in chapter 8. Chapter 8 analyzes observed changes and trends in pricing data for raspberries for processing. These models hold all things constant except the quantity of imported raspberries for processing, allowing the Washington market to adapt with changes in prices and quantities.⁸⁰⁵ In both chapters 8 and 9, Washington prices in the IQF market are found to be relatively responsive to imports.

⁸⁰³ As discussed in chapter 1, IQF raspberry products include whole berries, products with varying percentages of whole and broken raspberries, and crumbles of raspberries; non-IQF raspberry products include straight- and sugar-packed raspberries and purees, and juice. Non-IQF raspberry products also include fresh raspberries intended for processing, which is further explained in appendix E. Throughout this chapter, IQF and non-IQF raspberries refer only to processed raspberries and raspberries for processing, not raspberries for the fresh market.

⁸⁰⁴ Domestic data on U.S. production of IQF and non-IQF raspberries are limited. Only data for Washington production, provided by the Washington Red Raspberry Commission, were used to calibrate the models presented in this chapter.

⁸⁰⁵ The changes should be interpreted as short-run effects, as the model does not incorporate dynamic features. Chapter 8 discusses the role of lagged responses to price changes, which do not occur in the static models.

Data availability limits the chapter 8 pricing analysis to specific subsets of non-IQF products, whereas the modeling for this chapter incorporates all non-IQF products, limiting direct comparisons between the two chapters for those products. The primary results of the models are the simulated Washington shares of the value of total sales. Levels of revenue, production, and prices are evaluated in the context of the model, with discussion in the chapter and in appendix F on how additional considerations would likely impact the precise values of those estimates.

Model Description

The quantitative analysis in this report uses separate partial equilibrium models⁸⁰⁶ for the IQF and non-IQF raspberry markets. Both models use three parameters that are held constant across all years: a constant elasticity of substitution between foreign and Washington sources, a price elasticity of total demand, and one of the supply function parameters. All other model parameters are year specific.⁸⁰⁷

While the models for the two markets are similar, both have some unique features due to differences in the supply and demand between IQF and non-IQF raspberries. The IQF model uses a capacity-constrained marginal cost function to account for the limited IQF freezing capacity in the Washington industry. Given the market features described in chapter 3, information from industry representatives, and limited availability of data, the Washington IQF sector of the market is modeled using a monopoly pricing structure as an approximation of the market. The non-IQF model uses constant price elasticity of supply and perfectly competitive pricing for the Washington market.⁸⁰⁸

Both models assume that the historical surge in imports was driven by supply conditions in the exporting countries, not by price changes in the U.S. market. This assumption is reasonable for non-IQF raspberry imports based on staff analysis as well as public hearing testimony and industry interviews. In particular, Mexico is the largest source of non-IQF raspberry imports to the United States. Non-price factors affected the increased non-IQF raspberry imports from Mexico to the United States. This is because the supply of raspberries for processing is the byproduct of the production of raspberries for fresh consumption. Given that and the fact that the price for fresh raspberries for consumption is so much higher than the price of raspberries for processing, the quantities of raspberries grown in Mexico and then exported to the United States as raspberries for processing are responding to factors other than the price of raspberries for processing.⁸⁰⁹ The IQF model uses the same assumption, although there is little evidence that IQF imports should be insensitive to price. However, the construction of the

⁸⁰⁶ Partial equilibrium models estimate the way a market might react to changes in policy, technology, or other factors, holding other markets or features of the overall economy constant.

⁸⁰⁷ The markets are modeled using different forms of supply functions, but each function is characterized by two parameters. One parameter is held constant across years and is set by USITC staff based on qualitative market features. The other parameter is calibrated each year. More details about the estimation and calibration of model parameters can be found in appendix F.

⁸⁰⁸ The capacity constraint for IQF raspberries is applied due to the specialized equipment required for the IQF process and the limited excess capacity of that equipment. While the production of non-IQF raspberries is constrained by land dedicated to growing raspberries for processing, this constraint is assumed to not bind production within the model for the reasons explained in appendix F.

⁸⁰⁹ The United States also imports non-IQF raspberries from Canada and other countries, but Mexico is the biggest source; as such, the models apply the assumption that imports respond to changes in the exporting country, not price changes in the United States to imports from all countries.

simulation scenario means the import supply function would have limited impact on results for the Washington market.⁸¹⁰ This modeling assumption means that prices of IQF and non-IQF raspberries in the United States respond to changes in the quantity of imports, but the quantity of imports will not respond to changes in U.S. prices—in other words, the interaction only goes one way.

After the models are calibrated using actual trade and sales data and the parameters described above, the models are used to simulate the impact of reducing U.S. imports of raspberries for processing and processed raspberries beginning in 2012 and continuing through 2020. The simulation allows Washington prices and production and import prices to adjust to a new equilibrium with the lower quantity of imports.⁸¹¹

Modeling Limitations

Some of the assumptions used in these models are shaped by data availability. For example, products had to be aggregated into IQF and non-IQF categories, but the makeup of non-IQF products is not the same across Washington and import data. Commission staff used product and country information to map 10-digit statistical reporting numbers of the Harmonized Tariff Schedule of the United States (HTS) in the import data to the IQF and non-IQF categories.⁸¹² Model parameters allow for differences in product quality to account for differences between Washington and imported products.

In addition, due to limitations in data on investment and dynamic features of the market, the model is static, i.e. it estimates and simulates each year separately. Thus, the models do not account for any increased investment that may have occurred due to higher prices and led to increased domestic production in later years. In particular, this limits the IQF model due to the constraint put on capacity. For instance, investment in IQF machinery might have increased if IQF prices had been higher, which could have raised maximum IQF capacity in later years in the model.⁸¹³ The non-IQF model is also static, but unlike the IQF model, capacity constraints are not imposed. The static nature of the model does not take into account that available acreage is an important factor limiting production and is strongly influenced by acreage in previous years. This means that in years of the simulation where Washington production greatly increases, ignoring the current year's production limitations based on prior years' capacity will lead to an overestimate of increases in production but underestimate of increases in price. However, the results focus on later years in the period, when actual imports (and as a result, simulated Washington production) do not see a big increase between years, so this limitation would not have a big effect on the results in the years of interest.⁸¹⁴ These assumptions are discussed in greater detail in appendix F, along with the limitations resulting from these assumptions.

⁸¹⁰ The simulation reduces the quantity of raspberry imports and lets prices for those imports adapt. While the model uses an inelastic supply function, the same quantities could be generated in the simulation with an elastic supply function by adjusting marginal costs.

⁸¹¹ Additional results, robustness checks, and alternate specifications are presented in appendix F.

⁸¹² This process is detailed in appendix E of this report.

⁸¹³ More details regarding model and data limitations are discussed in appendix F.

⁸¹⁴ This limitation is discussed in more detail in appendix F.

Data and Trends

Eleven years of annual Washington revenue data come from estimates provided by the Washington Red Raspberry Commission. The publicly available data for domestic raspberry production and sales value were not sufficient for the modeling in this report, as most of those data do not differentiate raspberries for consumption from raspberries for processing, and raspberries for processing would not be further subdivided into IQF and non-IQF categories. The data are aggregated into IQF and non-IQF revenues for the two models. Surge years are identified as consecutive years with especially high year-over-year percentage changes in imports of IQF or non-IQF raspberries. The counterfactual imports used in the model simulations reduce the average growth rates in imports during the surge years to match the average growth rate in the non-surge years. The growth rates of non-surge years are left unchanged. The simulation then uses the modified sequence of growth rates to construct new import levels for IQF and non-IQF raspberries, starting with the actual import value in 2010 but diverging from the actual data starting from the beginning of the surge.⁸¹⁵

Imports for consumption data come from the Commission's DataWeb, which draws its data from the U.S. Census Bureau.⁸¹⁶ The data are aggregated into IQF and non-IQF revenues for the two models. Some HTS 10-digit statistical reporting numbers are split between the IQF and non-IQF categories. Other HTS 10-digit statistical reporting numbers are partially out of scope, containing one or more products that do not belong to either type of raspberries for processing. The value for those HTS statistical reporting numbers is allocated to the appropriate category based on values for similar statistical reporting numbers (especially the more precise statistical reporting numbers introduced in recent years) or by product-specific or country-specific analysis by Commission staff. More detail on this aggregation is provided in appendix E.

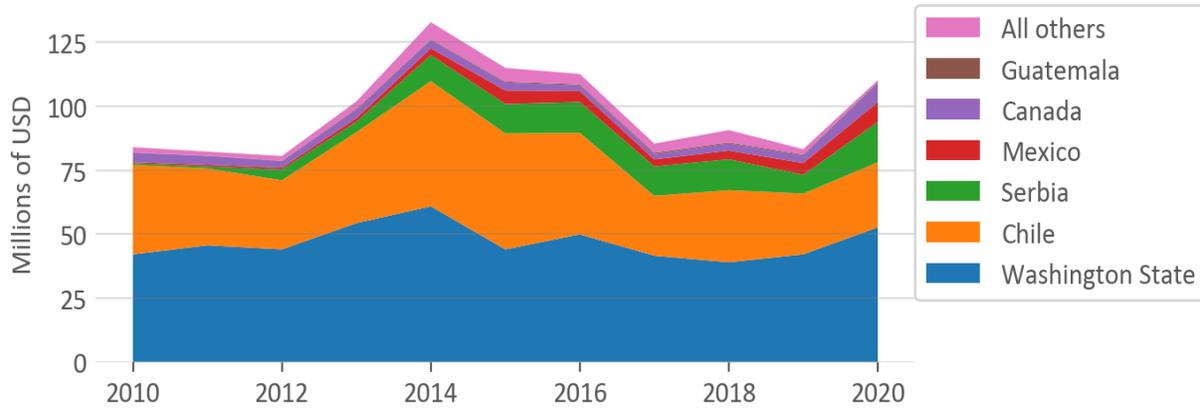
IQF raspberry imports saw a sharp surge around 2013–14, but then declined to levels comparable to 2010 and 2012 before increasing again in 2020. When the surge years are excluded, the average growth rate of IQF imports over the period is negative so that the counterfactual models a decline in the value of IQF imports in the later years of the period from levels seen in 2010–12. Gross sales of raspberries produced in Washington saw a modest increase from 2013–14, but to a lesser degree than actual imports and, like imports, they declined in the later years of the period until 2020 (figure 9.1).

⁸¹⁵ More details on how the counterfactual values were generated are in appendix F.

⁸¹⁶ USITC DataWeb/Census, data for U.S. imports for consumption of 17 HTS 10-digit statistical reporting numbers, accessed March 19, 2021. The statistical reporting numbers used are listed in appendix E. The data processing and aggregation method is also described in the same appendix.

Figure 9.1 U.S. imports for consumption and Washington State sales of IQF raspberries, by country, 2010–20

In millions of U.S. dollars. Underlying data for this figure can be found in [appendix H table H.24](#).

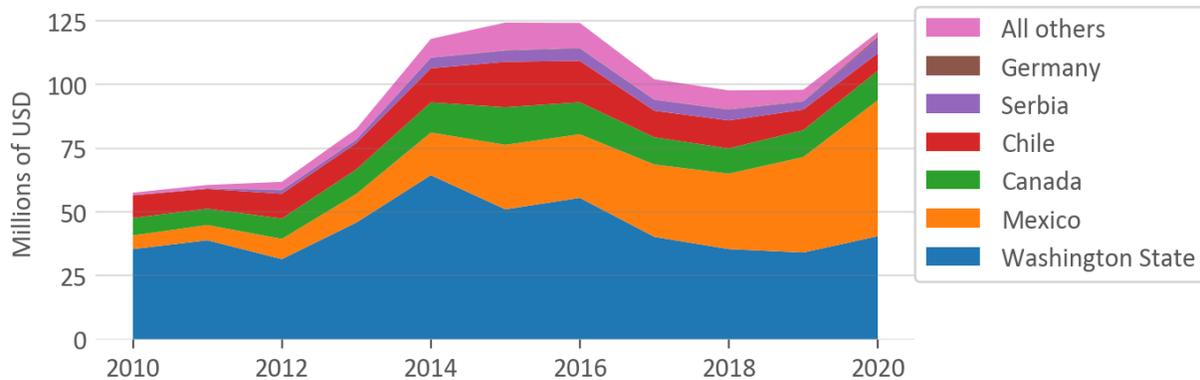


Source: USITC DataWeb/Census, accessed March 19, 2021, and domestic sales estimates from the Washington Red Raspberry Commission, received March 18, 2021. The statistical reporting numbers used are described in appendix E.

Non-IQF raspberry imports saw a sharp increase in value between 2012 and 2015 and then remained elevated as compared to 2010 and 2011.⁸¹⁷ When the surge years are excluded, the average growth rate of non-IQF imports over the period is relatively small but positive so that the counterfactual models the value of non-IQF imports remaining fairly steady over the entire period, 2010–20. Meanwhile, the value of sales of Washington non-IQF processed raspberries stayed comparatively flat over the same period (figure 9.2).

Figure 9.2 U.S. imports for consumption and Washington State sales of non-IQF raspberries, by country, 2010–20

In millions of U.S. dollars. Underlying data for this figure can be found in [appendix H table H.25](#).



Source: USITC DataWeb/Census, accessed March 19, 2021, and Washington state sales estimates from the Washington Red Raspberry Commission, received March 18, 2021. The statistical reporting numbers used are described in appendix E.

⁸¹⁷ Imports also rose sharply between 2018 and 2020, but only the earlier surge period was used to construct the counterfactual imports for the simulation.

Estimated Economic Effects of Imports on the Raspberries for Processing Market

The value of gross sales of both IQF and non-IQF raspberries from Washington sources would have been higher between 2016 and 2020 in the counterfactual scenario (table 9.1). The increased sales value in the IQF market would have come primarily from higher prices since there is limited additional capacity to produce IQF raspberries in Washington. The increased sales value in the non-IQF market would have come from both higher prices and higher production. In both cases, the Washington market share (calculated as the percentage of total gross sales from Washington and foreign sources) increases in the counterfactual. This effect is especially large in the non-IQF market, where the estimate shows that the Washington market share would have been nearly double the actual Washington market share from this period due to increases in both prices and quantities. The estimation method used for the modeling is based on the percentage change in price and quantity in the counterfactual simulation as compared to the actual market outcomes.

A distribution of potential elasticities of substitution between Washington and imported raspberries for processing were generated and used as a robustness check. The main results presented are the median results for each outcome variable. Some figures also present the likely range of potential outcomes based on outcomes from running the model with other elasticities while keeping all other parameters the same. Appendix F includes more details about the robustness checks and presents additional percentile values for more variables.

Table 9.1 Summary of estimated impact of imports on the Washington State markets for IQF and non-IQF raspberries, 2016–20
In U.S. dollars and percentages.

Product	Actual value of Washington gross sales (million \$)	Simulated value of Washington gross sales (million \$)	Actual Washington market share (% of sales)	Simulated Washington market share (% of sales)	Simulated change in price (% over actual)	Simulated change in production (% over actual)
IQF	225.1	295.2	46.7	61.2	29.4	1.3
Non-IQF	205.5	373.3	37.9	68.8	34.7	34.7
Total	430.6	668.4	42.0	65.3	32.0	17.1

Source: Model estimates by USITC.

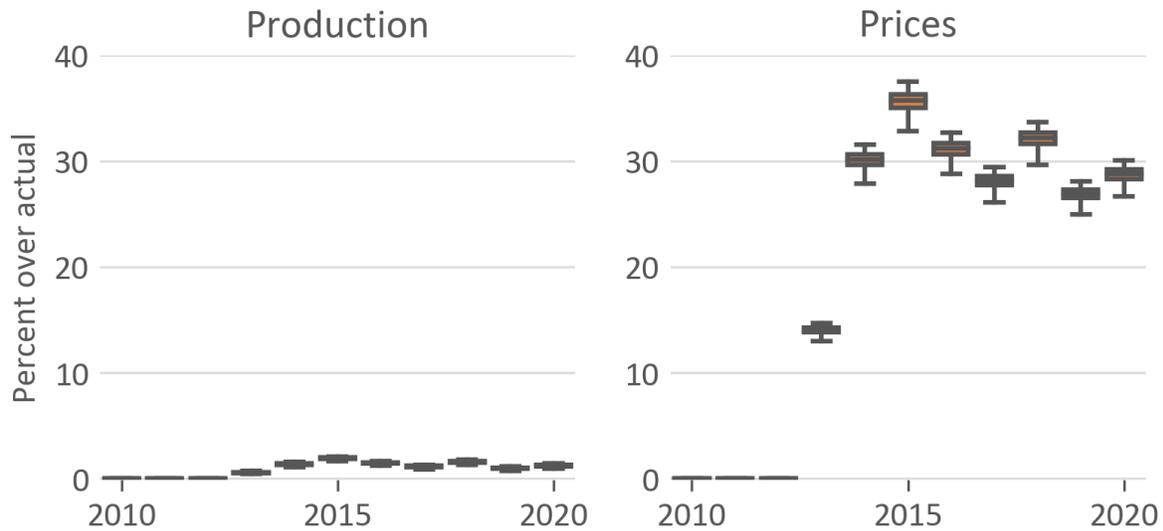
Note: The model used values reported by the WRRC for actual domestic sales value and U.S. import values as reported in official U.S. import statistics. The market share columns show Washington State's share of the sum of sales value for Washington and imported products. IQF and non-IQF raspberries from California or other states are not included in the total. The actual and simulation values are based on the total values from 2016 to 2020. The simulation changes in price and production are expressed as a weighted average (based on actual domestic value) of the percentage above the actual prices and production in each year from 2016 to 2020.

IQF Raspberries

Total Washington IQF raspberry sales would have been an estimated 31.1 percent higher between 2016 and 2020 in the counterfactual scenario. The estimated increase in revenue would have mostly come from an estimated 29.4 percent rise in prices, while production is estimated to have been only 1.1 percent higher due to capacity constraints (table 9.1 and figure 9.3).

Figure 9.3 Simulation of Washington IQF production and prices, 2010–20

In percent over actual. Underlying data for this figure can be found in [appendix table H.26](#).



Source: USITC calculations from model simulations.

Note: Simulation production and prices are displayed as percentages over the actual production and prices for each year. The box and whiskers plots show the distribution of likely outcomes for each year. The middle line shows the median result, with the box bounding the 25th through 75th percentiles and the whiskers bounding the maximum and minimum. See appendix F for details on how the confidence intervals were generated.

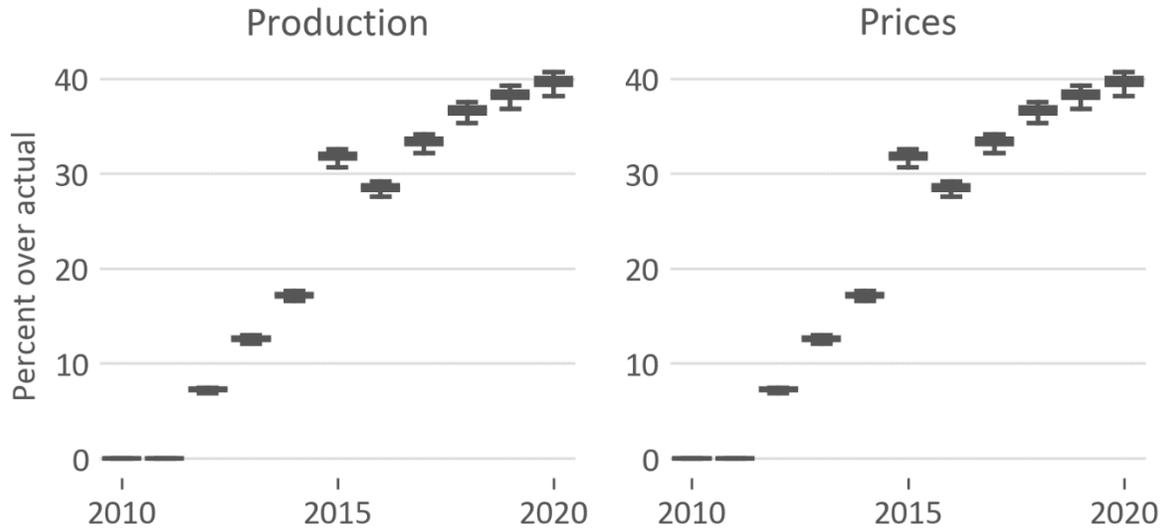
Non-IQF Raspberries

On average, total Washington non-IQF raspberry sales between 2016 and 2020 would have been an estimated 81.7 percent higher in the counterfactual scenario. This increase in revenue is estimated to have come from 34.7 percent higher prices and production (table 9.1 and figure 9.4). The fact that the percentage changes in prices and production are identical is due to the assumption that the value change was split equally between output and prices.⁸¹⁸

⁸¹⁸ This limitation, along with other model assumptions, is discussed in appendix F.

Figure 9.4 Simulation of Washington non-IQF production and prices, 2010–20

In percent over actual. Underlying data for this figure can be found in [appendix table H.27](#).



Source: USITC calculations from model simulations.

Note: Simulation production and prices are displayed as percentages over the actual production and prices for each year. The box and whiskers plots show the distribution of likely outcomes for each year. The middle line shows the median result, with the box bounding the 25th through 75th percentiles and the whiskers bounding the maximum and minimum. See appendix F for details on how the confidence intervals were generated.

Appendix A Request Letter



THE UNITED STATES TRADE REPRESENTATIVE
EXECUTIVE OFFICE OF THE PRESIDENT
WASHINGTON

April 9, 2020

The Honorable David S. Johanson
Chairman
U.S. International Trade Commission
500 E Street SW
Washington, DC 20436

Dear Chairman Johanson:

The Administration is interested in obtaining information on the conditions of competition between the United States and foreign suppliers of raspberries meant for processing. The Washington State Red Raspberry Commission and its producer members have raised concerns about imports of fresh raspberries for processing (not fresh consumption) and processed raspberries (including frozen), citing unfair practices. They have also raised concerns with increased pesticide residue violations of imported product, and with misleading labeling of frozen mixed berry packs imported from Canada, which do not accurately identify the source of raspberries in the pack.

Therefore, under authority delegated by the President to the United States Trade Representative, and pursuant to section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)), I request that the Commission conduct an investigation and prepare a report that provides an overview of the U.S. raspberry industry in Washington state and assesses the conditions of competition between U.S. and foreign suppliers of raspberries meant for processing.

The report should contain:

- An overview of the U.S. raspberry industry in Washington State – including fresh raspberries for processing, frozen raspberries, and raspberry juice – as well as an overview of the industries producing fresh and processed raspberries in major producing and exporting countries. The overviews should include information on production and processing volumes and trends, planted acreage, processing capacity, supply chains, domestic consumption, and imports and exports of fresh and processed raspberries.
- Production, pricing, and consumption trends for fresh and processed raspberries in the United States and other major producing and exporting countries over the last five years. Pricing analysis should include the relationship between prices of domestic products and imports of fresh and processed raspberries in the U.S. market to the extent such data is available.

- An overview of U.S. imports of fresh and processed raspberries including information on the main country sources of supply, trade patterns, and supply chains of major suppliers to the United States, as well as an overview of country of origin labeling practices in major U.S. supplier countries.
- A description of foreign government policies, financial aid, and programs that directly or indirectly affect production, infrastructure, exports, and imports of fresh and processed raspberries, including product labeling and food safety regulations, producer support, and tariff and nontariff measures.
- A comparison of the competitive strengths and weaknesses of production and exports of fresh and processed raspberries in the United States and other major producing and exporting countries, including such factors as costs of production, industry structure, technology, product innovation, exchange rates, supply chains and distribution, pricing, marketing regimes, and government policies.
- A qualitative and, to the extent possible, quantitative assessment of the economic impact of imports from major producing and exporting countries on production and prices of U.S. fresh and processed raspberries.

The report should primarily focus on the 2015 to 2019 time period. I request that the Commission transmit its report no later than 14 months following receipt of this request. It is my intent to make the Commission's report available to the public in its entirety; therefore, the report should not include any confidential business information.

I appreciate the Commission's assistance and cooperation in this matter.

Sincerely yours,



Robert E. Lighthizer

Appendix B

Federal Register Notices



30736

Federal Register / Vol. 85, No. 98 / Wednesday, May 20, 2020 / Notices

Issued: May 15, 2020.

Lisa Barton,

Secretary to the Commission.

[FR Doc. 2020–10894 Filed 5–19–20; 8:45 am]

BILLING CODE 7020–02–P

INTERNATIONAL TRADE COMMISSION

[Investigation No. 332–577]

Raspberries for Processing: Conditions of Competition Between U.S. and Foreign Suppliers, With a Focus on Washington State

ACTION: Notice of Investigation and Scheduling of a Public Hearing.

SUMMARY: Following receipt on April 9, 2020, of a request from the U.S. Trade Representative (USTR), under section 332(g) of the Tariff Act of 1930, the U.S. International Trade Commission (Commission) instituted Investigation No. 332–577, *Raspberries for Processing: Conditions of Competition between U.S. and Foreign Suppliers, with a Focus on Washington State*, for the purpose of providing a report that provides an overview of the U.S. raspberry industry in Washington state and assesses the conditions of competition between U.S. and foreign suppliers of raspberries meant for processing. The USTR requests that the Commission transmit its report no later than 14 months following receipt of this request.

DATES:

August 27, 2020: Deadline for filing requests to appear at the public hearing.

September 8, 2020: Deadline for filing prehearing briefs and statements.

September 17, 2020: Public hearing.

September 24, 2020: Deadline for filing post-hearing briefs and statements.

December 6, 2020: Deadline for filing all other written submissions.

June 9, 2021: Transmittal of Commission report to the Committee.

ADDRESSES: All Commission offices, including the Commission's hearing rooms, are located in the U.S. International Trade Commission Building, 500 E Street SW, Washington, DC. All written submissions should be addressed to the Secretary, U.S. International Trade Commission, 500 E Street SW, Washington, DC 20436. The public record for this investigation may be viewed on the Commission's electronic docket (EDIS) at <https://edis.usitc.gov>.

FOR FURTHER INFORMATION CONTACT:

Project Leader Jessica Pugliese (jessica.pugliese@usitc.gov) or Deputy Project Leader Mary Roof (202–708–

2277 or mary.roof@usitc.gov) for information specific to this investigation. For information on the legal aspects of this investigation, contact William Gearhart of the Commission's Office of the General Counsel (202–205–3091 or william.gearhart@usitc.gov). The media should contact Margaret O'Laughlin, Office of External Relations (202–205–1819 or margaret.o'laughlin@usitc.gov). Hearing-impaired individuals may obtain information on this matter by contacting the Commission's TDD terminal at 202–205–1810. General information concerning the Commission may also be obtained by accessing its website (<https://www.usitc.gov>). Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202–205–2000.

Background

As requested by the USTR, the Commission will conduct an investigation and prepare a report that provides, to the extent practical, the following information:

(1) An overview of the U.S. raspberry industry in Washington State—including fresh raspberries for processing, frozen raspberries, and raspberry juice—as well as an overview of the industries producing fresh and processed raspberries in major producing and exporting countries. The overviews should include information on production and processing volumes and trends, planted acreage, processing capacity, supply chains, domestic consumption, and imports and exports of fresh and processed raspberries.

(2) Production, pricing, and consumption trends for fresh and processed raspberries in the United States and other major producing and exporting countries over the last five years. Pricing analysis should include the relationship between prices of domestic products and imports of fresh and processed raspberries in the U.S. market to the extent such data is available.

(3) An overview of U.S. imports of fresh and processed raspberries including information on the main country sources of supply, trade patterns, and supply chains of major suppliers to the United States, as well as an overview of country of origin labeling practices in major U.S. supplier countries.

(4) A description of foreign government policies, financial aid, and programs that directly or indirectly affect production, infrastructure, exports, and imports of fresh and processed raspberries, including

product labeling and food safety regulations, producer support, and tariff and nontariff measures.

(5) A comparison of the competitive strengths and weaknesses of production and exports of fresh and processed raspberries in the United States and other major producing and exporting countries, including such factors as costs of production, industry structure, technology, product innovation, exchange rates, supply chains and distribution, pricing, marketing regimes, and government policies.

(6) A qualitative and, to the extent possible, quantitative assessment of the economic impact of imports from major producing and exporting countries on production and prices of U.S. fresh and processed raspberries.

The USTR requested that the report primarily focus on the 2015 to 2019 time period. The USTR requested that the Commission transmit its report no later than 14 months following receipt of this request. In his request letter, the USTR stated that his office intends to make the Commission's report available to the public in its entirety and asked that the Commission not include any confidential business information.

Public Hearing

A public hearing in connection with this investigation will be held at the U.S. International Trade Commission Building, 500 E Street SW, Washington, DC, beginning at 9:30 a.m. on September 17, 2020. Requests to appear at the public hearing should be filed with the Secretary no later than 5:15 p.m., August 27, 2020, in accordance with the requirements in the "Written Submissions" section below. All prehearing briefs and statements should be filed not later than 5:15 p.m., September 8, 2020, and all post-hearing briefs and statements should be filed not later than 5:15 p.m., September 24, 2020. Post-hearing briefs and statements should address matters raised at the hearing. In the event that, as of the close of business on September 8, 2020, no witnesses are scheduled to appear at the hearing, the hearing will be canceled. Any person interested in attending the hearing as an observer or nonparticipant should contact the Office of the Secretary at 202–205–2000 after September 8, 2020, for information concerning whether the hearing will be held.

Written Submissions

In lieu of or in addition to participating in the hearing, interested parties are invited to file written submissions concerning this investigation. All written submissions

should be addressed to the Secretary, and should be received not later than 5:15 p.m., December 6, 2020. All written submissions must conform to the provisions of section 201.8 of the Commission's Rules of Practice and Procedure (19 CFR 201.8), as temporarily amended by 85 FR 15798 (March 19, 2020). Under that rule waiver, the Office of the Secretary will accept only electronic filings at this time. Filings must be made through the Commission's Electronic Document Information System (EDIS, <https://edis.usitc.gov>). No in-person paper-based filings or paper copies of any electronic filings will be accepted until further notice. Persons with questions regarding electronic filing should contact the Office of the Secretary, Docket Services Division (202-205-1802) or consult the Commission's Handbook on Filing Procedures.

Confidential Business Information

Any submissions that contain confidential business information must also conform to the requirements of section 201.6 of the Commission's Rules of Practice and Procedure (19 CFR 201.6). Section 201.6 of the rules requires that the cover of the document and the individual pages be clearly marked as to whether they are the "confidential" or "non-confidential" version, and that the confidential business information is clearly identified by means of brackets. All written submissions, except for confidential business information, will be made available for inspection by interested parties.

As requested by the USTR, the Commission will not include any confidential business information in its report. However, all information, including confidential business information, submitted in this investigation may be disclosed to and used: (i) By the Commission, its employees and Offices, and contract personnel (a) for developing or maintaining the records of this or a related proceeding, or (b) in internal investigations, audits, reviews, and evaluations relating to the programs, personnel, and operations of the Commission including under 5 U.S.C. Appendix 3; or (ii) by U.S. government employees and contract personnel for cybersecurity purposes. The Commission will not otherwise disclose any confidential business information in a way that would reveal the operations of the firm supplying the information.

Summaries of Written Submissions

Persons wishing to have a summary of their position included in the report

should include a summary with their written submission and should mark the summary as having been provided for that purpose. The summary should be clearly marked as "summary for inclusion in the report" at the top of the page. The summary may not exceed 500 words, should be in MS Word format or a format that can be easily converted to MS Word, and should not include any confidential business information. The summary will be published as provided if it meets these requirements and is germane to the subject matter of the investigation. The Commission will list the name of the organization furnishing the summary and will include a link to the Commission's Electronic Document Information System (EDIS) where the full written submission can be found.

By order of the Commission.

Issued: May 15, 2020.

Lisa Barton,

Secretary to the Commission.

[FR Doc. 2020-10893 Filed 5-19-20; 8:45 am]

BILLING CODE 7020-02-P

DEPARTMENT OF LABOR

Office of the Secretary

Agency Information Collection Activities; Submission for OMB Review; Comment Request; Prohibited Transaction Class Exemption 1985-68 To Permit Employee Benefit Plans To Invest in Customer Notes of Employers

ACTION: Notice of availability; request for comments.

SUMMARY: The Department of Labor (DOL) is submitting this Employee Benefits Security Administration (EBSA)-sponsored information collection request (ICR) to the Office of Management and Budget (OMB) for review and approval in accordance with the Paperwork Reduction Act of 1995 (PRA). Public comments on the ICR are invited.

DATES: The OMB will consider all written comments that agency receives on or before June 19, 2020.

ADDRESSES: Written comments and recommendations for the proposed information collection should be sent within 30 days of publication of this notice to www.reginfo.gov/public/do/PRAMain. Find this particular information collection by selecting "Currently under 30-day Review—Open for Public Comments" or by using the search function.

Comments are invited on: (1) Whether the collection of information is necessary for the proper performance of

the functions of the Department, including whether the information will have practical utility; (2) if the information will be processed and used in a timely manner; (3) the accuracy of the agency's estimates of the burden and cost of the collection of information, including the validity of the methodology and assumptions used; (4) ways to enhance the quality, utility, and clarity of the information collection; and (5) ways to minimize the burden of the collection of information on those who are to respond, including the use of automated collection techniques or other forms of information technology.

FOR FURTHER INFORMATION CONTACT: Anthony May by telephone at 202-693-4129 (this is not a toll-free number) or by email at DOL_PRA_PUBLIC@dol.gov.

SUPPLEMENTARY INFORMATION: This class exemption exempts from the prohibited transaction provisions of ERISA, certain transactions involving the purchase of customer notes of an employee by an employee benefit plan. The class exemption requires plans to maintain for a period of six years all necessary records pertaining to the affected transactions and to make those records available to certain designated persons upon request. For additional substantive information about this ICR, see the related notice published in the **Federal Register** on October 10, 2019 (84 FR 54642).

This information collection is subject to the PRA. A Federal agency generally cannot conduct or sponsor a collection of information, and the public is generally not required to respond to an information collection, unless the OMB approves it and displays a currently valid OMB Control Number. In addition, notwithstanding any other provisions of law, no person shall generally be subject to penalty for failing to comply with a collection of information that does not display a valid OMB Control Number. See 5 CFR 1320.5(a) and 1320.6.

DOL seeks PRA authorization for this information collection for three (3) years. OMB authorization for an ICR cannot be for more than three (3) years without renewal. The DOL notes that information collection requirements submitted to the OMB for existing ICRs receive a month-to-month extension while they undergo review.

Agency: DOL-EBSA.

Title of Collection: Prohibited Transaction Class Exemption 1985-68 to Permit Employee Benefit Plans to Invest in Customer Notes of Employers.

OMB Control Number: 1210-0094.

Affected Public: Private Sector: Businesses or other for-profits, not-for-profit institutions.

Appendix C

Calendar of Hearing Witnesses

CALENDAR OF PUBLIC HEARING

Those listed below appeared as witnesses at the United States International Trade Commission’s hearing via videoconference:

Subject: Raspberries for Processing: Conditions of Competition between U.S. and Foreign Suppliers, with a Focus on Washington State

Inv. No.: 332-577

Date & Time: September 17, 2020 – 9:30 a.m.

ORGANIZATION AND WITNESSES:

King & Spalding LLP
Washington, DC
on behalf of

Washington Red Raspberry Commission

Jon Maberry, Vice President for Farming, Maberry Packing LLC
President, Washington Red Raspberry Commission

Brad Rader, Vice President and General Manager, Rader Farms
Member of the Board, Washington Red Raspberry Commission

Henry Bierlink, Executive Director, Washington Red Raspberry Commission

Stephen J. Orava)
) – OF COUNSEL
Bradford L. Ward)

Northwest Berry Co-Op
Everson, WA

Rolf Haugen, Manager

Driscoll’s, Inc.
Watsonville, CA

Ryan Commons, Attorney

Nature's Touch Frozen Foods LLC
Front Royal, VA

John Tentomas, President and Chief Executive Officer

Raspberries for Processing

ORGANIZATION AND WITNESSES:

Fresh Produce Association of the Americas
Nogales, AZ

Lance Jungmeyer, President

Cameron LLP
Washington, DC
on behalf of

Aneberries, A.C.

Tony Miller, President, Cascade International Foods, Inc.

Jean-Christophe Hesteau, Managing Director, Mexico for SunOpta Inc.

Thomas Skilton) – OF COUNSEL

Chilean Food Processing Companies Association (“Chilealimentos”)
Metropolitana, Chile

Pablo Herrera G., Commercial Director of JCP Foods,
Member of Chilealimentos

International Raspberry Organization
Santiago, Chile

Antonio Dominguez, President

-END-

Appendix D

Summary of Views of Interested Parties

Positions of Interested Parties

Interested parties had the opportunity to file written submissions to the Commission in the course of this investigation and to provide summaries of the positions expressed in the submissions for inclusion in this report. This appendix contains these written summaries, provided that they meet certain requirements set out in the notice of investigation. The Commission has not edited these summaries. A copy of all written submissions is available in the Commission's Electronic Docket Information System (EDIS), <https://www.edis.usitc.gov>. The Commission also held a public hearing in connection with this investigation on September 3, 2020, on a virtual platform. The full text of the transcript of the Commission's hearing is also available on EDIS.

Written Submissions

Government of Canada

The Government of Canada (Canada) welcomes the opportunity to provide this submission to the United States International Trade Commission (the "Commission") as part of the Commission's investigation into Raspberries for Processing: Conditions of Competition Between U.S. and Foreign Suppliers, With a Focus on Washington State. In this submission, we describe how Canada's raspberry industry has seen decreasing production in the last decade as a result of factors such as increasing input costs, strong global competition and challenging weather conditions.

We understand that these are circumstances also facing the raspberry industry in the United States. As per the Commission's request, Canada has also provided information regarding its labelling regulations or policies and information on government support provided at the federal level. We trust that this submission will assist the Commission in gaining a better understanding of the overall structure of Canada's raspberry industry, with a particular focus on exports to the United States and related conditions of competition.

Aneberries, A.C.

Aneberries, A.C. ("Aneberries") is the principal trade association for Mexican berry producers and exporters. Its members account for approximately 90% of Mexico's fresh raspberry exports and 80% of the country's processed raspberry exports. Since its founding, Aneberries has focused its efforts on ensuring that Mexican berries meet the highest global phytosanitary, food safety, and quality standards. Aneberries also assists its members in identifying and opening new markets around the world. Unlike some countries that grow raspberries primarily to produce frozen raspberry products, the Mexican raspberry industry is geared toward fresh product for export. As such, the raspberry varieties utilized by Mexican farmers are those developed with the superior color, texture and taste expected by consumers of fresh raspberries. And the rigorous phytosanitary, food safety and quality requirements adhered to by Mexican farms are those required for fresh berry exports to the U.S. and other markets. Mexican growers utilize the same methods employed by U.S. farmers of raspberries for fresh consumption which bestows significant advantages over many operations geared towards processed products. Aneberries estimates that less than 10% of total Mexican raspberry production is diverted to processing. Generally,

Raspberries for Processing

Mexican raspberry processors produce frozen product, principally individually quick frozen (IQF) raspberries. Importantly, unlike most other IQF raspberry producing countries including the United States, the vast majority of Mexican processors utilize static blast freezers, as opposed to continuous tunnel freezers. Using blast freezers reduces breakage of the raspberries so that the final frozen product best maintains the integrity of the original fresh berries.

The Mexican raspberry industry adheres to best production practices at all levels, including compliance with the highest national and international standards. Because of the emphasis on exports, Mexican growers, shippers and processors comply with the food safety requirements of the United States, including those set forth in the Food Safety Modernization Act of 2011 and the multiple rules issued to implement it. Additionally, Mexican regulations (including NOM-251-SSA1-2009) set forth requirements for good hygiene practices that must be observed at all stages in the production of food, beverages and nutritional supplements in Mexico, including production of raw materials, in order to avoid contamination at any point in the production process. These laws and regulations apply to all persons in the food production chain and are enforced by the Mexican Ministry of Health (Secretaría de Salud). Furthermore, many Mexican raspberry processors maintain additional commercial food safety certifications that are preferred by foreign importers and purchasers. As consumer demand for year-round supply of fresh raspberries has grown in the United States and other countries, Mexico has risen to the occasion and increased its cultivation of this fruit over the past five years. Exports to the U.S. of frozen raspberries, however, have remained steady (and declined in some categories) as the demand for fresh raspberries continues to outpace supply and as Mexican processors continue to develop new markets around the world for their raspberry products. For example, during this period, Mexican processors exported frozen raspberries to 29 countries.

British Columbia Raspberries

British Columbia (BC) raspberry growers face many of the same competitive challenges as growers in Washington. High land and labour costs, as well as continuously increasing agricultural input costs, are challenges that Canadian and US growers share. When selling and marketing our raspberries, we compete in a global raspberry market against countries that have much lower land, labour, and input costs. In addition to scarcity of labour, exceptionally high land prices make it difficult for Canadian growers to justify purchasing new land to plant raspberries, resulting in the re-use of land that has been in raspberry production for decades. Therefore, viability of Canadian production will require adaptation in farming practices to minimize labour and input costs, just to stay in business. For these reasons, the BC raspberry industry has consistently declined over the past 20 years in both acreage and production volume. In just the last few years, production volume has declined from 19.9 million pounds in 2016 to 14.9 million pounds in 2019. During this time, Canada has gone from being a net exporter of frozen raspberries to the US to a net importer from the US. Further, Canada has always been a net importer of fresh raspberries, a large portion of this product coming from the US. Ensuring food safety is essential to raspberry production in British Columbia.

With the implementation of the Food Safety Modernization Act (FSMA), any Canadian growers shipping raspberries to the US must complete a food safety audit. Consequently, most processors/packers now require growers to conduct an annual third-party food safety audit. Despite the US/Canada border, the BC and Washington raspberry industries have a unique relationship as part of the broader Pacific

Northwest region. Representing BC growers, the BC Raspberry Industry Development Council (RIDC) has a long history of collaboration in research and breeding with the Washington Red Raspberry Commission (WRRRC). Many BC growers also own land in the US, growing raspberries on both sides of the border. Moreover, Canadian growers rely on US-based companies for planting material. Also, with the ability to freely move goods back and forth, growers on both sides of the border utilize packing and processing facilities in both Canada and the US. In summary, growers in BC have many of the same concerns as growers in Washington. The increase of cheaper fruit from other countries has led to the decline of the BC raspberry industry, both in acreage and production. However, we understand that Washington growers' primary concern is the ability of Canadian end-use processors to bring in fruit from other countries and then export into the US market. All raspberry product must be labelled according to the policies of the country where it is sold. Consequently, the RIDC believes that all raspberry product labels should indicate the country of origin.

Chilealimentos

Chilealimentos (The Chilean Food Processing Companies Association) is a non-profit organization dedicated to developing and representing Chilean companies in the food processing sector. Of particular importance to Chilealimentos and its members is food safety and ensuring that Chilean food products satisfy the most stringent quality standards in the world. Chilealimentos estimates that its members account for approximately 67% of the raspberries processed into frozen form in Chile and 96% of the raspberries processed into juice concentrate in Chile. The Chilean raspberry industry focuses on the production of processed (as opposed to fresh) raspberries for export. Chilealimentos estimates that 92% of Chile's total raspberry production is processed and exported, with the vast majority (>90%) of these exports consisting of individually quick frozen (IQF) raspberry products. Food safety is of paramount importance to Chile's raspberry farmers and processors. As a food exporting country, Chilean farmers and food processors know that they must satisfy the highest global standards.

As such, Chilean raspberry processors ensure that their plants and entire supply chain satisfy the legal requirements of the United States (including the Food Safety Modernization Act) and of other specific export markets like Australia, Canada and the EU. Chile also has implemented rigorous domestic food safety practices legislation such as Regulation 3410 that specifically is designed for the raspberry industry and which is overseen and enforced by the Servicio Agrícola y Ganadero (SAG), an arm of the Chilean Government, which also imposes significant requirements on the entire production chain. The Chilean frozen raspberry industry also utilizes state-of-the-art processing equipment, including precise laser sorters, that ensure superior quality. Chile and its raspberry industry have been responsible leaders in developing and fostering the global market for raspberries. Chileans founded the International Raspberry Organization (IRO) in 1998 to promote the fruit and good production practices. More recently, Chilean raspberry processors joined with their U.S. colleagues in establishing the National Processed Raspberry Council, a commodity research and promotion program overseen by the U.S. Department of Agriculture. In recent years, Chilean raspberry production and resulting processed raspberry exports have declined, in part because farmers have switched to other crops. Since 2015, overall raspberry production has declined in Chile from approximately 39,119 MT to 31,633 MT. This decrease is a continuation of a longer trend, as the Chilean raspberry harvest is roughly half of what it was ten years ago.

Raspberries for Processing

During the past five years, processed raspberry exports to the U.S. have decreased from approximately 14,019 MT to 9,431 MT, with only the frozen organic raspberry subproduct seeing an increase. Furthermore, exports to the U.S. have decreased as a percentage of total Chilean processed raspberry exports as Chilean producers have successfully sought new markets for their products. Competing globally is a hallmark of Chile. The country has free trade agreements with countries representing 88% of the world's GDP and 67% of the world's population. Going forward, Chile will continue to grow and process raspberries of the highest quality, and export these products to markets around the globe.

Driscoll's, Inc.

My name is Ryan Commons and I am corporate counsel for Driscoll's, Inc., with oversight over our domestic and foreign transactional legal matters. Driscoll's is a family-owned company headquartered in California. We breed strawberry, raspberry, blueberry, and blackberry plants through traditional plant breeding techniques. Independent farmers then grow the fruit and we market it. Driscoll's berries are now grown in 19 countries on six continents to provide reliable year-round supply to consumers. In the United States, Driscoll's sources from independent growers in California, Florida, Georgia, New Jersey, Oregon, and Washington. Driscoll's began sourcing fresh raspberries from regions of Mexico in the early 1990s to provide U.S. consumers fresh raspberries year-round. Most of Driscoll's imported fresh raspberries originate in Mexico. Driscoll's has filed written comments on the fresh raspberry and processed raspberry industries.

I will briefly summarize those comments. With very few exceptions, raspberries that are grown for fresh are not sold for processing. To the best of our knowledge, raspberries grown for processing are never sold as fresh. The fate of a raspberry to the fresh or the processed market is determined before plants even go into the ground. There are four important differences between raspberries grown for fresh and raspberries grown for processing: (1) the variety of raspberry, (2) field setup, (3) harvesting methods, and (4) packaging. These differences economically incentivize all parties involved in the production and marketing of fresh raspberries to sell the berries as fresh raspberries. I will briefly expand on each difference. First, raspberry varieties for processing prioritize the ease of mechanical harvesting and high yields at the expense of appearance, taste, texture, and shipping durability. In contrast, fresh raspberry varieties are developed for appearance, taste, texture, and shipping durability— and they must be picked by hand. Second, all fresh raspberries sold by Driscoll's are grown under tents in a semi-controlled environment. These tents are comprised of metal hoops with plastic covers that provide a protected environment for the raspberries. The field setup cost (including labor, tents, and materials) for fresh raspberries is about \$40,000/acre comprising a material part of a grower's total cost of production. In contrast, raspberries for processing are rarely grown in controlled environments.

They are typically grown in open fields to reduce cost. Third, raspberry varieties used for processing nearly fall off the plant and are harvested using large machines that efficiently harvest raspberries with little concern for mitigating damage to the raspberries. Meanwhile, each fresh raspberry is carefully hand harvested to preserve appearance and avoid damage that may accelerate the degradation of a raspberry in transit Raspberries for Processing (Inv. No. 332-577) Ryan Commons, Driscoll's Inc. between the field and end customer. As a result, the labor cost associated with fresh raspberries is much higher than for raspberries for processing. Fourth, raspberries for processing use bulk packaging. Fresh raspberries are packaged in small volumes in consumer-focused clamshells. Driscoll's experience is that

the packaging cost for fresh raspberries can be up to 15 times higher per pound for fresh raspberries compared to raspberries for processing. These four differences result in a significant cost differential between producing and marketing fresh and processed raspberries. As a result, selling fresh raspberries into the processed market is economically unattractive as compared to selling to the fresh market. Driscoll's sees fresh raspberries selling for over \$3 per pound and processed berries selling between \$0.30 - \$1.20 per pound, not including juice. Given the less attractive economics in selling fresh raspberries as processed berries, Driscoll's does not import raspberries to the United States and then sell them into the processing market. Rejected fruit instead goes to the secondary market (sold through wholesalers) and our experience is that they do not sell into the processing market for two reasons.

First, wholesalers' receive higher prices in the secondary fresh market than in the processing market. Second, the cost of transporting and unpacking clamshells is generally higher than the revenue wholesalers could receive in the processing market, such that it would be more economical to simply discard the berries. Less than 2% of Driscoll's raspberries grown in Mexico are sold to the juice or frozen processing industry, but these sales occur in Mexico, prior to importation into the United States. As a final matter, we respectfully submit that the Commission's investigation should be limited to products covered under Harmonized Tariff Schedule subheadings 0810.20.1024 and 0810.20.9024 (which generally cover raspberries packed in units weighing more than 5 kg), and should exclude HTSUS subheadings 0810.20.1022 and 0810.20.9022 (which generally cover raspberries packed in units weigh 5 kg or less). The Commission can distinguish between raspberries grown for fresh consumption and those grown for processing by the weight of the packed unit. Fresh raspberries are carefully packed in small volumes in clamshells, while raspberries grown for processing are packaged in bulk. This administrable distinction will allow the Commission to focus on the market that is the target of its investigation: raspberries for processing in units weighing more than 5.0 kg. To conclude, given the significant differences between raspberries grown for fresh and raspberries grown for processing, we do not see any reason for Washington growers to be concerned about competition from raspberries grown for fresh consumption in Mexico. Thank you for your time and attention. I would be happy to address any questions the Commission may have.

The J.M. Smucker Company

Smucker Position on Red Raspberry Sourcing We need the flexibility of sourcing Red Raspberries globally as necessary to guarantee a steady supply of berries that meet our quality standards at a competitive price. Red Raspberries are sourced from different areas of the world, such as Washington, California, Mexico, Chile and Serbia. Red Raspberries require a specific climate and weather changes are always a concern, particularly on the west coast. Weather changes can drastically impact Red Raspberry crop yields which, in turn, impact price.

1. **About The J.M. Smucker Company** Each generation of consumers leaves their mark on culture by establishing new expectations for food and the companies that make it. At The J.M. Smucker Company, it is our privilege to be at the heart of this dynamic with a portfolio that appeals to each generation of people and pets and is found in 90 percent of U.S. homes and countless restaurants. This includes a mix of iconic brands consumers have always loved such as Smucker's®, Folgers®, Jif® and Milk-Bone® and new favorites like Café Bustelo®, Smucker's® Uncrustables® and Rachael Ray® Nutrish®. Over the past

two decades, The J.M. Smucker Company has grown rapidly while mindfully ensuring the business has a positive impact on its employees, the communities in which it operates, and the planet.

2. Raspberries for Processing Versus Raspberries for Fresh Consumption We primarily source Whole and Broken Red Raspberries. These are good quality berries for processed products; however, they do not meet the quality requirements of individually quick frozen (IQF) berries or berries for fresh consumption. Raspberries vary in flavor and color profiles depending on growing region. We may blend small percentages of berries from different regions to achieve the consistent flavor and color profile consumers expect in fruit-based products.

3. Pricing and Quality of Raspberries by Source All Red Raspberries, whether foreign or domestically sourced by our Company, must meet our very strict quality requirements. Qualified suppliers have excellent programs in place that guarantee the quality of the berries we source. Our qualified foreign suppliers have excellent field programs, and pesticide residues have not been an issue. Prices vary depending on region. Washington raspberries are sold at a premium cost compared to other raspberries. This can create a competitive imbalance for products to the consumer. This year has been very challenging for buyers as demand for Whole and Broken Red Raspberries exceeded supply and prices are up 20% plus vs. prior year.

4. Contracts with Suppliers Working with reliable and reputable sources that can deliver value, quality and consistent supply of berries is very important to us. As with any other commodity and agricultural product, Raspberry pricing is dependent on crop yield, weather, supply and demand. It is very important to maintain sustainable prices and a consistent supply to remain competitive on shelf and bring value to the consumer.

5. Pricing Spike in 2014/2015 The 2015 crop in Washington State was down approximately 30% (vs. prior year) which drove up prices of Raspberries. This was the lowest crop yield in the past 10 years. Bad weather and acreage reductions are drivers for shorter crops. Raspberry pricing is set every year. Weather, demand, limited supply base are factors that affect pricing. Based on the industry-wide supply conditions described above, we respectfully urge the maintenance of flexibility of sourcing Red Raspberries globally. Thank you for your consideration of these comments.

King and Spalding on behalf of the Washington Red Raspberry Commission

As explained in the WRRC's pre-hearing brief and at the hearing, a number of serious problems threaten the continued viability of the processed red raspberry industry in the Pacific Northwest. Imports of various red raspberry products from Mexico, particularly block frozen imports, are entering the U.S. market in higher volumes and at ultra-low prices that are 50 to 75 percent below U.S. market prices. Low-priced individually quick frozen ("IQF") red raspberries from Eastern Europe, with support from various governments including our own, are of significant concern because import volumes are increasing and import prices are decreasing. Overall, as a result of these imports, the value of U.S. harvested and processed red raspberries have dropped significantly since 2015.

The disruptive nature of these imports, however, is only partially apparent in the official import statistics, given that various types of frozen red raspberries are classified in a single Harmonized Tariff

item number and that a significant volume of fresh raspberries are imported but not intended for sale on the fresh market. Repackaging and mislabeling of the country of origin further obscures the impact and source of these and other disruptive imports. Finally, the inadequate inspection and testing of imports exacerbates the harm to the U.S. market because exporters are able to avoid compliance costs and undercut the domestic industry, to the detriment of the health of U.S. consumers. Attached hereto as Exhibit 1 are Answers to Questions posed during the recent Hearing. The WRRRC looks forward to a comprehensive examination of these and other issues as the Commission conducts this investigation and prepares its report.

Northwest Berry Co-Op

Thank you for taking the time to listen to our concerns about the survival of the raspberry industry in the USA. Like many forms of agriculture, the Washington state raspberry industry faces multiple serious challenges including cheap labor that is available in other parts of the world and the cost to US farmers to follow the rules to produce the safest food in the world here at home. Buyers of berries like other fruit and agriculture products, are telling the world that they want to be friendly to the environment, practice sustainability, use fewer and safer chemicals, grow perfect fruit without a single blemish, pay for health care for all our workers, give the worker a safe work environment and a living wage equal to the average person working in the USA. We as growers think these are all good things and we work hard to do them all and we like doing this for all the people that work so hard for us.

The problem comes when companies, some of them being US companies, move their production to Mexico where they are paying at the most \$7.00 per day for a worker in the raspberry field and then let them bring those raspberries to the USA and sell them at 1/3 or less of what it costs the USA farmer to produce the same fruit. Their quality of fruit is not better. The head of one company that has moved production says that he needs to work with his plant breeders to get some flavor into the fresh raspberries they are growing in Mexico. We all see what is going on whether it is cars, tennis shoes, electronic, appliances or raspberries. People are moving their production to where the costs are the lowest and where they can make the most profit. Raspberry growers can't compete against the cheap labor and lack of regulations in the Mexican raspberry production. The new rules that we thought might protect us against imports have only added another layer of regulations on to the US producers. Eastern Europe is different than Mexico where farms that are controlled by big companies from the USA.

Eastern Europe is made up of small farms with 1 or 2 acres of raspberries with most of the labor being supplied by the family that owns the farm. If they work out, they are making \$600 per month working 6 days a week. That gives them a yearly income of \$7,200 per year. If they have 2 acres of raspberries and they pick 7,000 pounds per acre and they get paid \$.50 per pound on their 2 acres they have a gross income of \$7,000 for that 2 acres and they probably have almost no cost to go against this income. They have doubled their income and they are very excited. Almost all of these people have been encouraged to plant raspberries by their government, the EU or even our own USAID. Encouragement comes in the form of grants.

Appendix E

Import Data Sorting for Modeling Inputs

This appendix shows the breakouts of in-scope, partially in-scope, and out-of-scope but related statistical reporting numbers in the Harmonized Tariff Schedule of the United States (HTS) that are used in this report to construct the aggregated values of imported individually quick frozen (IQF) and non-IQF raspberries.⁸¹⁹ Out of scope products could be non-raspberry content contained in certain packaged raspberry products, raspberries that are not processed or intended for processing, or processed raspberries that are further along the value chain than the processed raspberries considered in this report. The HTS numbers are sorted into subcategories based on product characteristics and available import data on similar products.

Fresh Raspberries

Fresh raspberries are imported into the United States under six different 10-digit statistical reporting numbers (table E.1). The 7th and 8th digits of each number (which are either 10 or 90) indicate the time of year the product entered the United States. The final 2 digits indicate whether the raspberries came in small-container packaging (22) or larger containers (24). Before July 2018, this distinction did not exist so two of the HTS numbers end with 20.

Table E.1 Fresh raspberries: U.S. HTS statistical reporting numbers and descriptions for imports
n.e.s.o.i. = not elsewhere specified or included.

HTS statistical reporting number	Description
0810.20.1020	Raspberries, fresh, if entered during the period from September 1 in any year to June 30 of the following year
0810.20.1022	Raspberries, fresh, packed in units weighing 5kg or less, if entered during the period from September 1 in any year to June 30 of the following year
0810.20.1024	Raspberries, fresh, if entered during the period from September 1 in any year to June 30 of the following year, n.e.s.o.i.
0810.20.9020	Raspberries, fresh, if entered during the period from July 1 to August 31
0810.20.9022	Raspberries, fresh, packed in units weighing 5kg or less, if entered during the period from July 1 to August 31
0810.20.9024	Raspberries, fresh, if entered during the period from July 1 to August 31, n.e.s.o.i.

Source: USITC DataWeb/Census, accessed March 19, 2021.

The small-container HTS statistical reporting numbers indicate that the product is for fresh consumption and therefore out-of-scope. The bulk packaging indicates that the product is in-scope but not suitable for IQF processing since raspberries intended for IQF processing need more protection than is offered by bulk packaging.

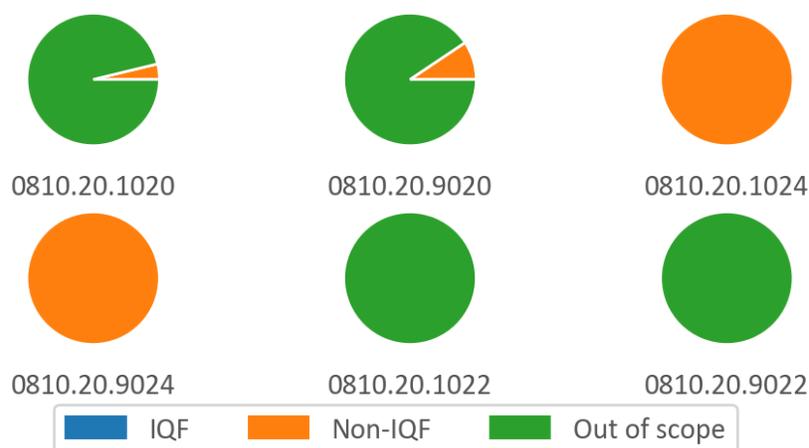
For the HTS statistical reporting numbers that do not specify packaging size, raspberries are sorted into non-IQF or out-of-scope subcategories based on the fraction of berries that came in under the more precise headings introduced in recent years. The fraction is calculated based on the 10-digit HTS statistical reporting number and therefore takes into account the time of year (the 7th and 8th digits) the goods entered but it is not country specific (figure E.1).

⁸¹⁹ USITC DataWeb/Census, data for U.S. imports for consumption of 17 HTS 10-digit statistical reporting numbers, accessed August 24, 2020.

Raspberries for Processing

Figure E.1 Fresh raspberries: Share of value of imports for consumption classified as IQF, non-IQF, or out-of-scope by HTS statistical reporting number, total value 2010–20

Note: None of the raspberries in this figure are classified as IQF. Underlying data for this figure can be found in [appendix H table H.28](#).



Source: USITC DataWeb/Census, accessed March 19, 2021 and calculations by USITC.

Table E.2 shows the values of imports coming in under these HTS statistical reporting numbers between 2010 and 2020. Notice that the numbers ending in 20 expired on June 30, 2018, and that the numbers ending in 22 and 24 came into effect on July 1, 2018. Table E.3 shows the top five U.S. import sources for each HTS number in 2010–20.

Table E.2 Fresh raspberries: Annual value of U.S. imports by HTS statistical reporting number, 2010–20
In millions of U.S. dollars; — (em dash) = not applicable.

HTS statistical reporting number	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0810.20.1020	124.5	146.9	199.6	256.9	362.4	514.6	535.8	659.5	446.5	—	—
0810.20.1022	—	—	—	—	—	—	—	—	257.8	896.4	952.1
0810.20.1024	—	—	—	—	—	—	—	—	6.8	31.1	44.5
0810.20.9020	0.8	1.0	1.2	6.1	5.8	3.9	7.7	12.4	—	—	—
0810.20.9022	—	—	—	—	—	—	—	—	18.5	25.1	34.7
0810.20.9024	—	—	—	—	—	—	—	—	2.9	2.7	2.5
Total	125.3	147.9	200.8	262.9	368.2	518.5	543.5	671.9	732.5	955.3	1,033.8

Source: USITC DataWeb/Census, accessed March 19, 2021.

Notes: Landed duty-paid value of imports for consumption. HTS statistical reporting number 0810.20.1020 expired June 2018 and was replaced with HTS 0810.20.1022 and 0810.20.1024 in July 2018. Similarly, HTS statistical reporting number 0810.20.9020 expired June 2018, and was replaced with HTS 0810.20.9022 and 0810.20.9024.

Table E.3 Fresh raspberries: Top five sources of U.S. imports by value by HTS statistical reporting number, for total imports 2010–20
— (em dash) = not applicable.

Rank	0810.20.1020	0810.20.1022	0810.20.1024	0810.20.9020	0810.20.9022	0810.20.9024
1	Mexico	Mexico	Mexico	Mexico	Mexico	Mexico
2	Chile	Guatemala	Guatemala	Canada	Canada	Canada
3	Canada	Canada	Serbia	Chile	Guatemala	—
4	Guatemala	—	—	Guatemala	Netherlands	—
5	Argentina	—	—	—	—	—

Source: USITC DataWeb/Census, accessed March 19, 2021.

Note: Total landed duty-paid value of imports for consumption. If there are fewer than five countries listed for a given HTS statistical reporting number, then those are the only source countries for U.S. imports in that HTS statistical reporting number in 2010–20. Some of the HTS numbers were only used for a subset of these years.

Frozen Mixed Fruit

Frozen mixed fruit contains IQF raspberries in addition to out-of-scope products. They are classified in HTS statistical reporting numbers 0811.90.8080, 811.90.8085, and 0811.90.8095. The HTS statistical reporting number ending in 8080 designates a fruit and nut mix but does not specify whether raspberries are included in the mix. This number was divided into two new numbers in July 2019. The new number ending in 8085 indicates mixes that specifically contain raspberries, although not the exact share. The new number ending in 8095 may or may not contain raspberries (table E.4).

Table E.4 Frozen mixed fruit: U.S. HTS statistical reporting numbers and descriptions for imports
n.e.s.o.i. = not elsewhere specified or included.

HTS statistical reporting number	Description
0811.90.8080	Fruits and nuts, uncooked or cooked by steaming or boiling in water, whether or not sweetened, frozen, n.e.s.o.i.
0811.90.8085	Frozen mixes only of combinations of strawberries, blueberries, red raspberries or blackberries, uncooked or cooked only by steam or boiling in water
0811.90.8095	Fruits and nuts, uncooked or cooked by steaming or boiling in water, frozen, n.e.s.o.i.

Source: USITC DataWeb/Census, accessed March 19, 2021.

For the purposes of sorting the data, product under these three HTS statistical reporting numbers is assumed to be IQF or out of scope. Products under the number ending in 8095 are assumed to be fully out of scope. Since the all-fruit mixes under the number ending in 8085 often contain three or four types of fruit, products under that number are assumed to be 7/24 (the average of 1/3 and 1/4) in scope. This is based on the fact that blended bags have roughly even percentages of each berry, with packs generally having three or four types of berries.⁸²⁰ The 7/24 number assumes half of the bags have three fruits and half have four, and assumes that all berries in a bag account for an even share of the value of that bag.

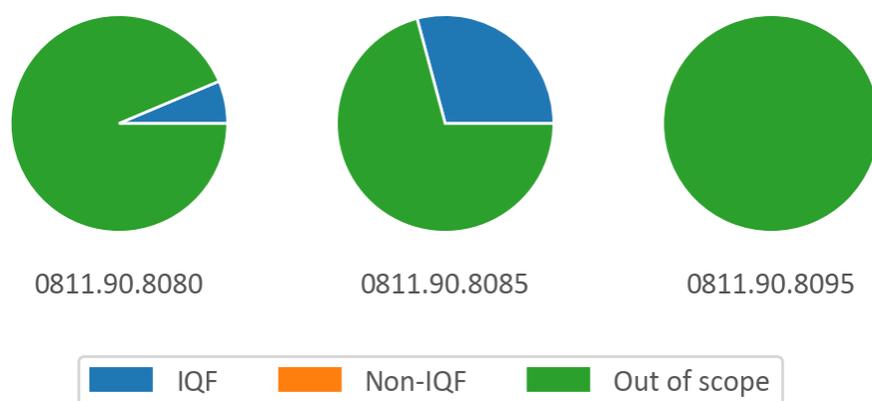
⁸²⁰ Industry representatives, interview by USITC staff, June 1, 2020.

Raspberries for Processing

Finally, the allocation of the earlier 8080 HTS number (2010–19) is based on the ratio of 8085 and 8095 HTS number imports in 2019 and 2020. The remainder of the imports under the 8080 number are assumed to be out of scope (figure E.2).

Figure E.2 Frozen mixed fruit: Share of value of imports for consumption classified as IQF, non-IQF, or out-of-scope by HTS statistical reporting number, total value 2010–20

Underlying data for this figure can be found in [appendix H table H.29](#).



Source: USITC DataWeb/Census, accessed March 19, 2021 and calculations by USITC.

Table E.5 shows the values of imports coming in under these HTS statistical reporting numbers between 2010 and 2020. Note that the number ending in 8080 expired June 2019 and the numbers ending 8085 and 8095 came into effect July 2019. Table E.6 shows the top five U.S. import sources for these HTS numbers.

Table E.5 Mixed frozen fruit: Annual value of U.S. imports by HTS statistical reporting number (millions of U.S. dollars), 2010–20

In millions of U.S. dollars; — (em dash) = not applicable.

HTS statistical reporting number	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0811.90.8080	28.3	29.5	34.3	44.8	52.8	61.9	73.6	72.8	95.7	38.0	—
0811.90.8085	—	—	—	—	—	—	—	—	—	9.2	36.4
0811.90.8095	—	—	—	—	—	—	—	—	—	48.1	115.5
Total	28.3	29.5	34.3	44.8	52.8	61.9	73.6	72.8	95.7	95.3	151.9

Source: USITC DataWeb/Census, accessed March 19, 2021.

Note: Landed duty-paid value of imports for consumption.

Table E.6 Mixed frozen fruit: Top five sources of U.S. imports by value by HTS statistical reporting number, for total imports 2010–20

Rank	0811.90.8080	0811.90.8085	0811.90.8095
1	Thailand	Chile	Vietnam
2	Chile	Canada	Chile
3	China	Mexico	Peru
4	Greece	Guatemala	Thailand
5	Guatemala	Thailand	Greece

Source: USITC DataWeb/Census, accessed March 19, 2021.

Note: Total landed duty-paid value of imports for consumption.

Single-Product Frozen

These HTS statistical reporting numbers—0811.20.2025 and 0811.20.2035—contain only frozen raspberries (table E.7).

Table E.7 Single-product frozen: U.S. HTS statistical reporting numbers and descriptions for imports

HTS statistical reporting number	Description
0811.20.2025	Raspberries, red, frozen, uncooked or cooked by boiling or steaming in water, whether or not sweetened
0811.20.2035	Raspberries, frozen, uncooked or cooked by boiling or steaming in water, whether or not sweetened, excluding red raspberries

Source: USITC DataWeb/Census, accessed March 19, 2021.

The HTS statistical reporting number ending in 2035 is frozen black or gold raspberries and is considered out of scope. The number ending in 2025 is red raspberries but is not precise enough to sort IQF from non-IQF raspberries. The allocation of this number to IQF and non-IQF is based on country-level approximations provided by Commission staff according to table E.8. The default value is used in the absence of a country-specific approximation. Table E.9 shows U.S. import values by HTS number and table E.10 shows the top sources for U.S. imports in 2010–20 by HTS number.

Table E.8 Country-level approximations of IQF percentage under HTS statistical reporting number 0811.20.2025

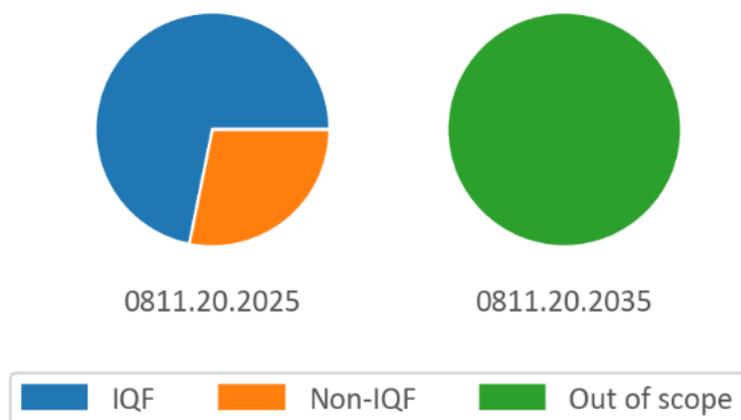
Country	IQF approximation (%)
Canada	40
Chile	80
Mexico	50
Serbia	75
<i>Default</i>	60

Source: Estimates by USITC based on industry interviews and email messages to various industry and academic representatives.

Note: The default value is used for all other countries that exported products under these HTS statistical reporting numbers to the United States.

Figure E.3 Single-product frozen: Share of value of imports for consumption classified as IQF, non-IQF, or out-of-scope by HTS statistical reporting number, total value 2010–20

Underlying data for this figure can be found in [appendix H table H.30](#).



Source: USITC DataWeb/Census, accessed March 19, 2021 and calculations by USITC.

Table E.9 Single-product frozen: Annual value of U.S. imports by HTS statistical reporting number, 2010–20

In millions of U.S. dollars.

HTS statistical reporting number	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0811.20.2025	55.3	48.4	47.0	61.6	94.4	93.5	79.6	54.3	63.5	51.5	69.0
0811.20.2035	7.8	11.9	8.7	14.7	8.6	7.4	3.9	7.0	6.2	4.8	1.7
Total	63.1	60.3	55.7	76.4	103.0	100.8	83.5	61.4	69.7	56.3	70.7

Source: USITC DataWeb/Census, accessed March 19, 2021.

Note: Landed duty-paid value of imports for consumption.

Table E.10 Single-product frozen: Top five sources of U.S. imports by value by HTS statistical reporting number, for total imports 2010–20

Rank	0811.20.2025	0811.20.2035
1	Chile	Chile
2	Serbia	Mexico
3	Canada	Belgium
4	Mexico	Serbia
5	China	Canada

Source: USITC DataWeb/Census, accessed March 19, 2021.

Note: Total landed duty-paid value of imports for consumption.

Cooked, Juices, and Other Preparations

This category includes cooked raspberries, juices, and “other preparations” (table E.11). These HTS statistical reporting numbers are all assumed to be fully in-scope non-IQF products. Table E.12 shows import values by year and table E.13 shows the top sources for U.S. imports in 2010–20 by HTS statistical reporting number.

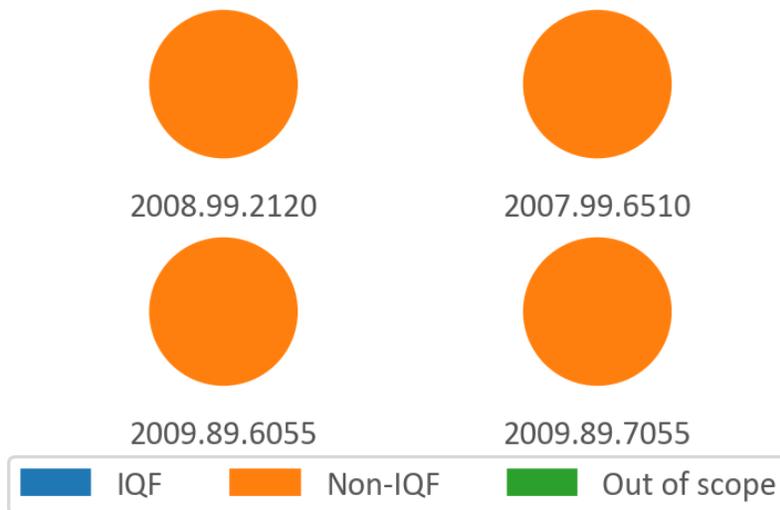
Table E.11 Cooked raspberries, raspberry juices, and other preparations: U.S. HTS statistical reporting numbers and descriptions for imports

HTS statistical reporting number	Description
2007.99.6510	Red raspberry pastes and purees, cooked preparations, whether or not sweetened
2008.99.2120	Red raspberries, prepared or preserved
2009.89.6055	Red raspberry juice, not fortified, including concentrate
2009.89.7055	Red raspberry juice, not fortified, including concentrate

Source: USITC DataWeb/Census, accessed March 19, 2021.

Figure E.4 Cooked raspberries, raspberry juices, and other preparations: Share of value of imports for consumption classified as IQF, non-IQF, or out-of-scope by HTS statistical reporting number, total value 2010–20

Underlying data for this figure can be found in [appendix H table H.31](#).



Source: USITC DataWeb/Census, accessed March 19, 2021, and calculations by USITC.

Table E.12 Cooked raspberries, raspberry juices, and other preparations: Annual value of U.S. imports by HTS statistical reporting number, 2010–20

In millions of U.S. dollars; — (em dash) = not applicable.

HTS statistical reporting number	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
2007.99.6510	2.2	2.5	3.6	4.6	5.4	4.8	4.1	3.4	3.1	2.5	1.5
2008.99.2120	—	—	1.5	1.8	1.9	7.5	8.1	7.6	6.5	6.4	6.0
2009.89.6055	—	—	4.9	3.2	6.3	14.8	14.1	9.7	7.4	—	—
2009.89.7055	—	—	—	—	—	—	—	—	0.9	5.7	3.6
Total	2.2	2.5	10.0	9.6	13.6	27.2	26.3	20.7	17.9	14.7	11.1

Source: USITC DataWeb/Census, accessed March 19, 2021. Landed duty-paid value of imports for consumption.

Notes: HTS codes 2008.99.2120 and 2009.89.6055 did not yet exist in 2010–11; HTS code 2009.89.7055 did not yet exist in 2010–17. HTS code 2009.89.6055 no longer existed after 2018.

Table E.13 Cooked raspberries, raspberry juices, and other preparations: Top five sources of U.S. imports by value by HTS statistical reporting number, for total imports 2010–20

Rank	2007.99.6510	2008.99.2120	2009.89.6055	2009.89.7055
1	Canada	Canada	Chile	Canada
2	France	France	Poland	Chile
3	Chile	Chile	Italy	Austria
4	Mexico	Switzerland	Canada	Germany
5	Belgium	Serbia	Austria	Italy

Source: USITC DataWeb/Census, accessed March 19, 2021.

Note: Total landed duty-paid value of imports for consumption.

Related Products

These are jams or other raspberry-related but out-of-scope products (table E.14). They are not included in the economic modeling in this report. Table E.15 shows import values by HTS statistical reporting numbers and table E.16 shows the top sources for U.S. imports in 2010–20 by HTS number.

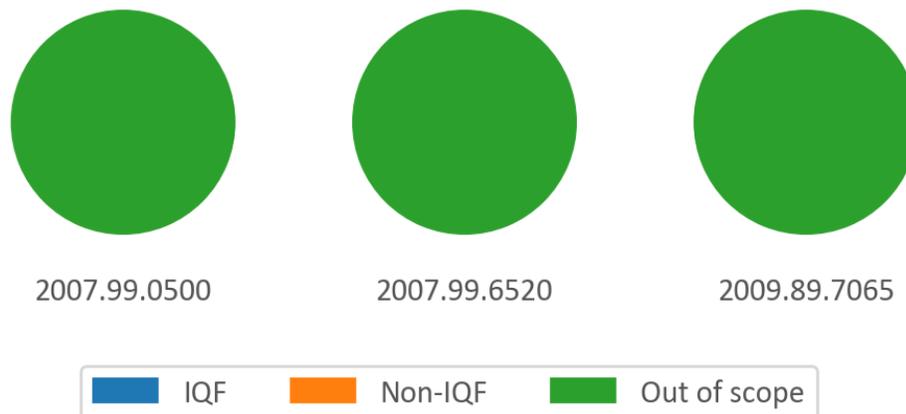
Table E.14 Related products: U.S. HTS statistical reporting numbers and descriptions for imports
n.e.s.o.i. = not elsewhere specified or included.

HTS statistical reporting number	Description
2007.99.0500	Lingonberry and raspberry jams
2007.99.6520	Fruit or nut pastes and purees, cooked preparations, whether or not sweetened, n.e.s.o.i.
2009.89.7065	Berry juice, not fortified with vitamins or minerals, unfermented and not containing added spirit, whether or not sweetened, n.e.s.o.i.

Source: USITC DataWeb/Census, accessed March 19, 2021.

Figure E.5 Related products: Share of value of imports for consumption classified as IQF, non-IQF, or out-of-scope by HTS statistical reporting number, total value 2010–20

Note: All of the raspberries in this category are classified as out of scope. Underlying data for this figure can be found in [appendix H table H.32](#).



Source: USITC DataWeb/Census, accessed March 19, 2021 and calculations by USITC.

Table E.15 Related products: Annual value of U.S. imports by HTS statistical reporting number, 2010–20
In millions of U.S. dollars; — (em dash) = not applicable.

HTS statistical reporting number	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
2007.99.0500	13.5	18.0	16.8	17.1	19.9	21.5	24.1	25.9	28.8	30.8	33.5
2007.99.6520	8.2	20.0	23.5	27.0	25.2	28.8	29.1	32.9	41.1	51.7	54.4
2009.89.7065	—	—	—	—	—	—	—	—	13.2	49.2	55.1
Total	21.7	38.0	40.3	44.1	45.1	50.3	53.3	58.8	83.1	131.7	142.9

Source: USITC DataWeb/Census, accessed March 19, 2021.

Note: Landed duty-paid value of imports for consumption. HTS statistical reporting number 2009.89.7065 did not yet exist in 2010–17.

Table E.16 Related products: Top five sources of U.S. imports by value by HTS statistical reporting number, for total imports 2010–20

Rank	2007.99.0500	2007.99.6520	2009.89.7065
1	France	France	Brazil
2	Canada	Chile	Poland
3	Sweden	Canada	Austria
4	Belgium	Spain	Turkey
5	Switzerland	Mexico	Canada

Source: USITC DataWeb/Census, accessed March 19, 2021.

Note: Total landed duty-paid value of imports for consumption.

Appendix F

Economic Modeling Details

Model Details

In this report, the markets in Washington State for individually quick frozen (IQF) and non-IQF⁸²¹ raspberries, either processed or intended for processing, are analyzed using separate partial equilibrium models. The models assume that the prices in the IQF market have no bearing on the non-IQF market and vice versa. This is consistent with the limited substitutability between IQF and non-IQF raspberries, and the fresh raspberries used to produce each, as evidenced by the distinct market channels for the two product categories described in chapter 3. Buyers' preferences in each market are modeled by demand in which there is a constant elasticity of substitution between the domestic and imported products.⁸²² The two models account for supply of raspberries from two sources, Washington and imports. Consumers in the models do not differentiate between raspberries from different countries of import, which would have limited impact on the domestic results.⁸²³ The model estimates the elasticity of substitution between Washington raspberries and imports based on the elasticity of substitution from different source countries using trade data and an econometric model. The model is then calibrated to the market shares of Washington raspberries and imports in order to capture the extent of substitution between these sources.

In the model markets for both product categories, the quantity of imports is treated as exogenous to the model, meaning that changes in the price of imports (an output of the model) do not change the quantities of imports (treated as an input to the model).

The Washington marginal cost curve in the IQF market is upward sloping, reflecting capacity constraints stemming from limited availability of freezing tunnels and specialized equipment.⁸²⁴ As discussed in chapter 3, five to six processors account for three-fourths of Washington production. Because of the high cost of the equipment, most small processors do not have IQF capacity. As a result, these few processors may have an even higher market share in IQF production and likely have some price setting power. Given these market features, information from industry representatives, and limited availability of data, the Washington IQF sector of the market is modeled using a monopoly pricing structure as an approximation of the market. The Washington industry for non-IQF raspberries is less concentrated, with more growers and processors than the IQF sector. Washington supply of non-IQF raspberries is modeled as perfectly competitive and with a constant elasticity of supply. While available acreage would also limit the maximum capacity for non-IQF raspberry product, that constraint is assumed not to bind in

⁸²¹ The IQF and non-IQF classifications are described in chapter 9. Both product categories are limited to raspberries for processing and processed raspberries—raspberries intended for fresh consumption are not included in either product category.

⁸²² The constant elasticity of substitution structure assumes that in percentage terms, the rate at which consumers are willing to substitute between domestic and imported versions of the product does not change based on the amount of each that they are currently consuming.

⁸²³ For instance, Serbia and Chile have differentiated their products by producing organic raspberries. This limits their direct competition with domestic and other import sources that do not supply organic products. See chapter 2 for a further discussion of competitive factors between sources.

⁸²⁴ Industry representative, email message to USITC staff, August 2020.

the model estimation or simulation and is not modeled allowing production to change significantly in response to changes in market prices.⁸²⁵

For each product category, the model is calibrated to annual data from 2010 to 2020.⁸²⁶ The model is then used to simulate a counterfactual scenario by reducing the quantity of imports for that product category. The amount of reduction to imports in the counterfactual is based on observed features of the growth rates of imports in each market, further described below. In both counterfactual model scenarios, prices for both domestic and imported raspberries and production for domestic raspberries adjust to a new equilibrium level.

Model Equations

In the following equations, subscripts $i \in \{IQF, non-IQF\}$ and $x \in \{d, f\}$ are used to denote product-specific and source-specific variables. The d subscript denotes the domestic source and the f subscript denotes the foreign (imported) source. The total demand shifter for product i is K_i , and the weight for source x for product i is $\alpha_{i,x}$. The price elasticity of total demand for product i is denoted as E_i and the elasticity of substitution between sources of product i is denoted as e_i . Given the prices for each source of product i , the quantity demanded for product i from source x is given below.

$$Q_{i,x}^D = K_i * P_i^{E_i} * \alpha_{i,x} * \left(\frac{p_{i,x}}{P_i}\right)^{e_i}$$

The price index P_i is given by the following equation.

$$P_i = \left(\alpha_{i,d} p_{i,d}^{1-e_i} + \alpha_{i,f} p_{i,f}^{1-e_i}\right)^{\frac{1}{1-e_i}}$$

The two models use different forms for domestic supply functions. The IQF market has an asymptotic supply function representing the capacity constraints present in that market. The non-IQF market has a constant elasticity of substitution supply function.

$$Q_{IQF,d}^S = Q_{\{IQF,d\}}^S - \frac{s_{IQF}}{p_{IQF,d}}$$

$$Q_{non-IQF,d}^S = s_{non-IQF} * p_{non-IQF,d}^{h_{non-IQF}}$$

In the IQF supply function, $Q_{IQF,d}^S$ is the maximum capacity for quantity, and s_{IQF} is a parameter that determines the curvature of the asymptotic function. In the non-IQF supply function, $s_{non-IQF}$ is a supply shifter and $h_{non-IQF}$ is the price elasticity of supply.

⁸²⁵ More details about these assumptions and their effects are described in the “Limitations” section below. More details about the Washington raspberries for processing industry, including differences in the IQF and non-IQF markets, are described in chapter 3 of this report.

⁸²⁶ The period of analysis was chosen based on the availability of Washington sales value data. Results focus on the most recent five years of available data.

The quantity of imports is treated as exogenous in both models, so the supply functions for imports are given trivially by $Q_{i,f}^S = Q_{i,f}^S$ where $Q_{i,f}^S$ is the fixed level of quantity imported of product i from the foreign source.

In the IQF market, the equilibrium is defined by a pair of prices $p_{IQF,d}$ and $p_{IQF,f}$ such that (1) the marginal revenue of the Washington good equals the marginal cost of production of the Washington good and (2) the quantity demanded of the foreign good equals the quantity supplied of the foreign good.⁸²⁷ In the non-IQF market, the perfectly competitive equilibrium is defined by a pair of prices $p_{non-IQF,d}$ and $p_{non-IQF,f}$ such that (1) the quantity demanded of the Washington good is equal to the quantity supplied of the Washington good and (2) the quantity demanded of the foreign good equals the quantity supplied of the foreign good.

Estimation and Calibration

Constant and annual parameters are shown in tables F.1 and F.2. The demand parameters are estimated directly from the market data for the Washington industry. Some elasticity parameters could not be precisely estimated with the available data, so unit elastic parameters are used.⁸²⁸ The unit elasticity assumption is applied to the total price elasticity of demand for both markets, implying that overall expenditure (price times quantity) in a year does not change with price. While this assumption is common in similar models and has been found to hold for many products, analysis elsewhere in this report suggests that buyers may switch to other fruits if raspberry prices rise. However, data to estimate these parameters were unavailable and the use of unit elastic parameters was unlikely to substantially alter the results. The demand elasticities of substitution are estimated through trade costs following the econometric methodology described in Riker 2020.⁸²⁹ Prices are normalized to 1 and the demand weights for Washington and imported raspberries are calculated from their respective shares of total expenditure in each market. The domestic data cover only processed raspberries (e.g., IQF, bulk frozen, puree, juice, etc.) from Washington, while the import data encompass both processed raspberries and fresh raspberries intended for processing. In the absence of end-use data for imports, including the fresh raspberries for processing in the non-IQF aggregation provides the best approximation of the competition that Washington producers and processors face.⁸³⁰ The preference weights calculated for the demand function implicitly take into account the differences in quality (in this case, stemming from some imports being less processed) between Washington and imported sources. The total price elasticity of demand is assumed to be -1 in both industries, effectively holding total expenditure on each category fixed while allowing the share of expenditure on domestic or imported products to change.

⁸²⁷ As previously described, the IQF model uses a monopoly pricing assumption to approximate the highly concentrated market. Marginal revenue and marginal cost functions can be derived from the demand and supply functions given.

⁸²⁸ “Unit elasticity” refers to elasticity parameters equal to one, indicating that one variable responds one-to-one with the other variable in terms of percentage changes. These are identified as “chosen—common value” in table F.1.

⁸²⁹ Riker, “A Trade Cost Approach to Estimating,” 2020.

⁸³⁰ Non-IQF raspberries in this chapter are defined to include imported fresh raspberries intended for processing. As discussed in chapter 5, Mexico is the largest source of this type of non-IQF product. These fresh raspberries for processing are usually raspberry seconds, which are generally unsuitable for IQF processing due to their quality and the way they are packaged.

The marginal cost functions each have one parameter with a selected value and one parameter that is calibrated in the model. For the asymptotic marginal cost function in the IQF market, the maximum possible quantity in each year was set at 10 percent past the actual quantity produced in Washington.⁸³¹ The curvature of the asymptotic marginal cost function was calibrated so that the equilibrium production in the model matched the actual production given the selected capacity constraint. In the non-IQF market, the constant price elasticity of supply was set to a standard value of 1.0 given data limitations preventing estimating this parameter. This assumption means that percentage changes in the quantity supplied are exactly equal to percentage changes in price. The supply shift parameter was calibrated so that the equilibrium production in the model matched the actual production, given the selected supply elasticity.

Table F.1 Constant parameters

Parameter	Symbol	Value	Method
IQF Total elasticity of demand	E_{IQF}	-1	Chosen—common value
Non-IQF total elasticity of demand	$E_{non-IQF}$	-1	Chosen—common value
Non-IQF elasticity of supply	$h_{non-IQF}$	1	Chosen—common value
IQF elasticity of substitution	e_{IQF}	4.7	Econometric estimate
Non-IQF elasticity of substitution	$e_{non-IQF}$	8.5	Econometric estimate
IQF normalized price	$p_{IQF,x}$	1	Numeraire
Non-IQF normalized price	$p_{non-IQF,x}$	1	Numeraire

Source: USITC staff.

Table F.2 Annual parameters

Parameter	Symbol	Method
IQF supply function curvature	S_{IQF}	Calibrated to match observed quantity given normalized price
Non-IQF supply shifter	S_{IQF}	Calibrated to match observed quantity given normalized price
IQF demand shifters	$\alpha_{IQF,x}$	Matched ratio of Washington to imported sales
Non-IQF demand shifters	$\alpha_{non-IQF,x}$	Matched ratio of Washington to imported sales
IQF import quantity	$Q_{IQF,f}^S$	IQF imported customs value given normalized price
Non-IQF import quantity	$Q_{non-IQF,f}^S$	Non-IQF imported customs value given normalized price
IQF capacity constraint	$Q_{IQF,d}^S$	Observed quantity multiplied by 1.1 (see explanation in text)

Source: Model calibration performed by USITC staff from multiple data sources.

Counterfactual Scenarios

The counterfactual scenarios do not correspond to any analysis of specific policy alternatives. Instead, they were chosen based on aggregate import trends. The country profiles in chapters 4–7 discuss the country-specific factors that impacted the overall U.S. import trade trends.

Both scenarios involve identifying a marked increase or surge in the value of imports and then reducing the growth rate of imports in the identified surge years to simulate growth rates in the years outside of

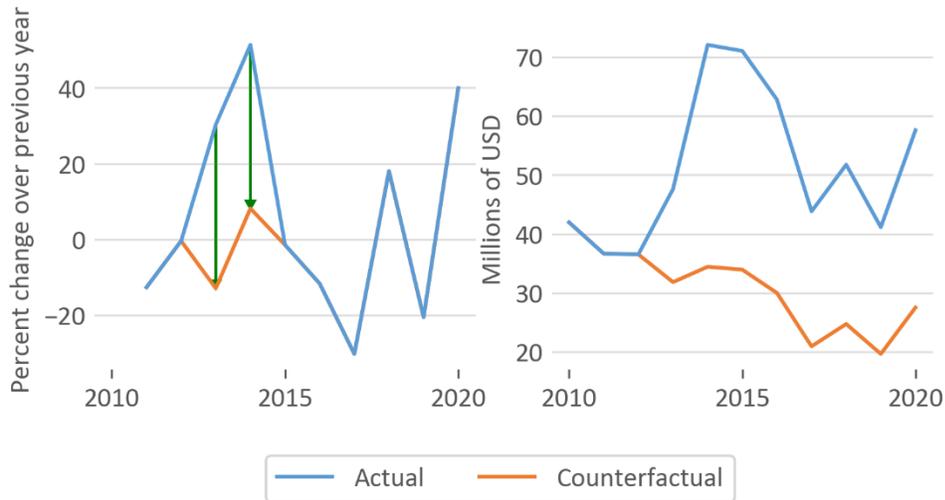
⁸³¹ Given that maximum, the curvature of the marginal cost function was calibrated for each year so that, given all other model parameters estimated from the actual data, the equilibrium quantity in the model matches the actual quantity.

the surge. A surge here refers to a short number of years with growth rates that are significantly higher than the average growth rate in the period overall. For the counterfactual scenario, the difference between the average surge growth rate and the average non-surge growth rate is subtracted from the growth rate in each surge year. The simulation then creates a counterfactual level of imports for each year from the beginning of the surge to 2020 based on the import volume of the prior year and the new counterfactual growth rate in the surge years, or actual growth rate in the non-surge years, for each year in IQF and non-IQF imports. This brings the average growth rate of the 11-year period down to the average non-surge growth rate while still allowing variation between years.

In the IQF scenario, raspberry imports saw a sharp surge in imports from 2013–14, but then declined to levels comparable to 2010 and 2012 before increasing again in 2020. The average growth rate in the surge years is 40.8 percent, compared to –2.3 percent for non-surge years. When the surge is removed, the counterfactual models a decline in the value of IQF imports in the later years of the period from levels seen in 2010–12. Figure F.1 shows the actual and counterfactual percentage change in value of IQF imports and value of IQF imports.

Figure F.1 Actual and counterfactual percentage changes and levels for gross sales of imported IQF raspberries, 2010–20

In percent change over previous year and millions of U.S. dollars. Underlying data for this figure can be found in [appendix H table H.33](#).



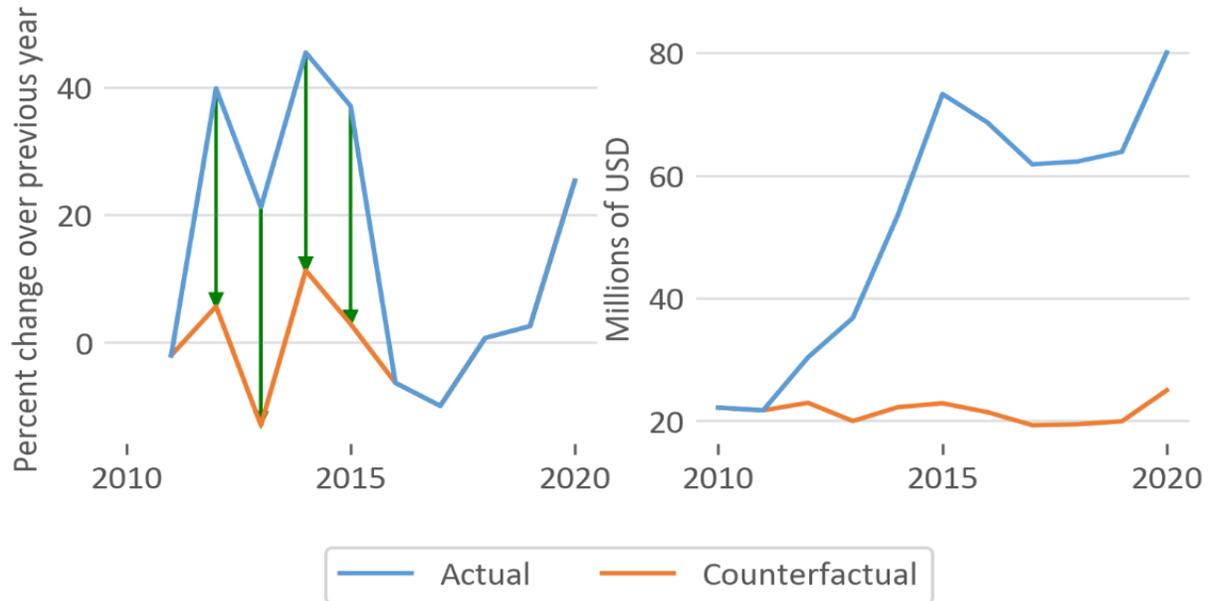
Source: USITC DataWeb/Census, accessed March 19, 2021 and calculations by USITC.

In the non-IQF scenario raspberry imports saw a sharp increase in value between 2012 and 2015 and then remained elevated as compared to 2010 and 2011.⁸³² The average growth rate in the surge years is 35.9 percent, compared to 1.7 percent for non-surge years. When the surge years are excluded, the value of sales of the Washington non-IQF processed raspberries stayed comparatively flat over the same period. Figure F.2 shows the actual and counterfactual percentage change in value of non-IQF imports and value of non-IQF imports.

⁸³² Imports also rose sharply between 2018 and 2020, but only the earlier surge period was used to construct the counterfactual imports for the simulation.

Figure F.2 Actual and counterfactual percentage changes and levels for gross sales of imported non-IQF raspberries, 2010–20

In percentage change over previous year and millions of U.S. dollars. Underlying data for this figure can be found in [appendix H, table H.34](#).



Source: USITC DataWeb/Census, accessed March 19, 2021, and calculations by USITC.

Limitations

The model only includes Washington production for the domestic market. While California and some other states produce some raspberries for processing, data limitations for the U.S. industry required restricting analysis to Washington State. Throughout chapter 9 and this appendix, domestic prices and production refer specifically to Washington producers unless stated otherwise. Market share results present Washington's share of the sum of sales value for Washington state and imported raspberries for processing, so the sales value of raspberries for processing of other states is not included.

The data for Washington and imported raspberries for processing and processed raspberries are not directly comparable. The Washington data are aggregated to broad categories, while the import data correspond to 10-digit statistical reporting numbers in the Harmonized Tariff Schedule of the United States (HTS). These statistical reporting numbers needed to be allocated into IQF and non-IQF raspberries, but many of the HTS numbers are not sufficiently broken out by product to precisely sort into these categories. Commission staff used product and country information to approximate what share of the data for each 10-digit statistical reporting number should be allocated to IQF and non-IQF, with a particular focus placed on the products with the most overall import value. These approximations also affect the estimated elasticities of substitution between Washington and imported raspberries for processing, since the methodology uses trade costs to estimate the elasticities. The HTS number sorting uses the same percentage allocations for the trade values and trade costs, potentially biasing the elasticity estimates. More details on how the data were prepared for this analysis are found in appendix E.

In addition, the import data include fresh raspberries intended for processing along with processed raspberries, while Washington data include only IQF raspberries, B-grade raspberries, and raspberry juice (these are slightly more processed products than the fresh berries intended for processing).

The models use imports as an exogenous input rather than a model output. Due to how import quantities are constructed in the IQF and non-IQF simulation scenarios, this assumption has limited impacts on the results for both domestic markets, and it is therefore a reasonable assumption in both models. In addition, the assumption that imports are not sensitive to prices in the United States seems especially reasonable for the non-IQF market. Mexico is the largest source of these imports and is mainly responsible for the increase in these imports in recent years. As described in chapter 5, the changes in the supply of non-IQF raspberries from Mexico, especially fresh raspberries for processing, were largely driven by factors other than the price of raspberries for processing in the United States. This is also consistent with public hearing testimony and industry interviews that suggested that the increase in fresh raspberries for processing from Mexico is a side effect of changes in the market for raspberries for fresh consumption.

The quantitative analysis is carried out using a series of static single-year simulations, which leads to some limitations in the analysis that come from ignoring dynamic features in marginal cost functions. In the IQF model, the capacity constraints (stemming from specialized freezing equipment) are calibrated based on the actual production in each year, and do not account for the fact that additional investment would likely have occurred if prices were higher. In that case, production would likely change by more and prices would change by less compared to the static model results.

In the non-IQF model, domestic supply is allowed to increase without a set constraint. In reality, available acreage (and therefore maximum quantity) depends partially on acreage in previous years. In particular, this limits how much production would actually be able to increase from one year to the next. The large increases in simulated Washington production in the surge years would likely have been more modest, although prices would have risen more. The simulated increase in production in the most recent five years were not as sharp, so this limitation is unlikely to have a large impact on the non-IQF results for the years of interest.

Robustness Check with Distribution of Substitution Elasticities

The models were recalibrated using a range of alternative elasticities of substitution between domestic and imported products to assess the sensitivity of the model results to those parameters (table F.3). The distribution of results generated by the range of elasticities is used to display confidence intervals for some variables of interest, such as the price and production figures in the main text. For each model, a normal distribution of alternative elasticities was produced using the point estimates and standard errors from the econometric estimation of the elasticity parameter. The distribution was approximated by 101 points, with alternative models being calibrated and simulated at each point.

Table F.3 Means and standard deviations for elasticity of substitution distributions

Product	Mean (point estimate)	Standard deviation (standard error)
IQF	4.7	0.5
Non-IQF	8.1	0.9

Source: Econometric estimations by USITC.

The model simulations are not particularly sensitive to the elasticities within the distributions checked. Tables F.4 and F.5 display the 5th, 50th, and 95th percentiles for several model result variables. The 50th percentile results are the ones presented in chapter 9. Of all the simulations performed, 90 percent have model results that fall between the 5th and 95th percentile results presented here.

Table F.4 Summary of elasticity of substitution robustness check of model results for Washington gross sales 2016–20

In millions of U.S. dollars

Product	Actual value of Washington gross sales	5th percentile estimate: simulation value of Washington gross sales	50th percentile estimate: simulation value of Washington gross sales	95th percentile estimate: simulation value of Washington gross sales
IQF	225.1	291.6	295.2	297.7
Non-IQF	205.5	368.9	373.3	376.4
Total	430.6	660.5	668.4	674.2

Source: Econometric estimations by USITC.

Note: This table displays the actual and simulation (counterfactual) gross sales values at the 5th, 50th, and 95th percentiles.

Table F.5 Summary of model results using elasticity of substitution robustness check for counterfactual Washington prices and production above actual values 2016–20

In percentage over actual. Values are rounded.

Product	5th percentile: price	50th percentile: price	95th percentile: price	5th percentile: production	50th percentile: production	95th percentile: production
IQF	28.1	29.4	30.4	1.1	1.3	1.4
Non-IQF	33.9	34.7	35.3	33.9	34.7	35.3
Total	30.9	32.0	32.7	16.6	17.1	17.6

Source: Econometric estimations by USITC.

Note: This table displays simulation results of how much higher prices and production would have been in the counterfactual scenario described in this appendix.

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Appendix G

Symmetric Revealed Comparative Advantage Details

Symmetric Revealed Comparative Advantage Details

Quantifying the differences between given countries' comparative advantage in producing a good is challenging for several reasons. Among them are problems stemming from data aggregation, along with the fact that factors unrelated to comparative advantage may be influencing trade flows. It is also difficult to define comparative advantage in terms of product prices in the absence of trade, since a lack of trade renders product prices unavailable. Two tools that are used to quantify differences in comparative advantages are the revealed comparative advantage (RCA) index and the symmetric revealed comparative advantage (SRCA) index (also called the revealed symmetric comparative advantage in some literature).

The RCA was developed in 1965 by Balassa using observed export statistics to reveal the underlying pattern of comparative advantage.⁸³³ For example, the RCA of a country's processed raspberry industry is expressed as a function of the country's exports of processed raspberries divided by its total exports of processed fruits, divided by world exports of processed raspberries divided by total world exports of processed fruits (equation G.1). In the equation, X_{ir} is the value of exports of processed fruit i from country r , X_r is the value of exports of all goods from country r , X_i is the value of global exports of processed fruit i , and X is the value of global exports of all goods.

Equation G.1: Revealed comparative advantage

$$RCA_{ir} = \frac{\frac{X_{ir}}{X_r}}{\frac{X_i}{X}}$$

In 1995, Laursen and Engedal expanded upon the RCA index and developed the SRCA index, which generates scores ranging between -1 and $+1$ and is symmetric around zero.⁸³⁴ Countries with SRCA scores close to $+1$ have a higher revealed comparative advantage, and countries with scores close to -1 have a lower one. The SRCA index is a function of the RCA for a country and product pair where RCA_{ir} is the revealed comparative advantage for processed fruit i from country r (equation G.2).

Equation G.2: Symmetric revealed comparative advantage

$$SRCA_{ir} = \frac{RCA_{ir} - 1}{RCA_{ir} + 1}$$

The SRCA has been used extensively to quantify comparative advantage. Commission publications in 2005 and 2006 used these measures to compare the competitiveness of the industries of a number of different countries in the global marketplace.⁸³⁵ More recently, in 2015, Laursen compared the RCA to

⁸³³ Balassa, "Trade Liberalisation and 'Revealed' Comparative Advantage," 1965, 99–123.

⁸³⁴ Laursen and Engedal, "The Role of the Technology Factor in Economic Growth," 1995.

⁸³⁵ USITC, *Conditions of Competition for Certain Oranges and Lemons*, July 2006; USITC, *Export Opportunities and Barriers in African Growth and Opportunity Act-Eligible Countries*, October 2005.

the SRCA and made the case for using the SRCA.⁸³⁶ He then compared these to other measures of comparative advantage, including the Michaely index, the contribution to trade balance (CTB) index, the chi square measure, and Bowen's net trade index (NTI). Laursen concluded that among those that he evaluated, the SRCA was the best measure of comparative advantage.⁸³⁷ In their 2020 paper titled "Implied Comparative Advantage (ICA)," Hausmann, Stock, and Yildirim constructed an index based on Balassa's RCP, but replaced the global export shares with population shares.⁸³⁸ The authors demonstrated that their index was a highly significant predictor of international export flows. The authors also completed their analysis using Balassa's 1965 construction and determined that the results were qualitatively the same.

This report presents two versions of the SRCA, one focusing on competitiveness in the global market, and one on competitiveness in the U.S. market. The global market competitiveness calculations are represented in equations G.1 and G.2 above. For these calculations, X_{ir} is the value of exports of processed raspberries (Harmonized System (HS) 0811.20) from country r , X_r is the value of exports of all goods from country r , X_i is the value of global exports of processed raspberries, and X is the value of global exports of all goods. Processed raspberry export data must be harmonized for all countries so the 6-digit HS level of trade is used. As such, they include trade of all products classified under HS 0811.20 (raspberries, blackberries, mulberries, loganberries, black, white or red currants and gooseberries, uncooked or cooked by steaming or boiling in water, frozen, whether or not containing added sugar or other sweetening matter).

To analyze U.S. market competitiveness, U.S. imports of processed raspberries were used in place of export data for processed raspberries. U.S. import data at the 10-digit statistical breakout level of the Harmonized Tariff Schedule of the United States (HTS) makes it possible to construct an index that considers only processed raspberries (e.g., excludes blackberries, mulberries, loganberries, currants or gooseberries) and that includes a wider range of processed raspberry products (e.g., fresh raspberries for processing, raspberry puree, raspberries in frozen fruit mixes, and raspberry juice and concentrate).⁸³⁹ While the same method of calculating the RCA was used, U.S. import data were used to calculate the variables (equation G.3). In this equation, I_{ir} is the value of U.S. imports of processed raspberries (calculated using a share of imports under HTS statistical reporting numbers 0810.20.1020 and 0810.20.9020, all imports under 0810.20.1024, 0810.20.9024, 0811.20.2025, shares of 0811.90.8080 and 0811.90.8085, and all imports under 2007.99.6510, 2008.99.2120, 2009.89.6055, and

⁸³⁶ The SRCA is symmetric around its neutral value and performed better in terms of the Jarque-Bera test for normality of the regression of error terms. The findings implied that unadjusted RCA values may yield inaccurate results because of asymmetry of the RCA around its neutral value. Laursen, "Revealed Comparative Advantage and the Alternatives," February 5, 2015, 99–115.

⁸³⁷ Laursen discarded the NTI for theoretical reasons and did not evaluate the CTB, which was nearly identical to the Michaely index. While the three measures evaluated each have pros and cons and were strongly correlated, he found that the SRCA better reflects specialization through focusing on a narrower area of a country's economic activity. The Michaely Index deduces foreign demand for a good from a certain sector, reducing the economic activity in that sector. The Chi Square indicator fluctuates more over time and measures specialization level whether or not a country is specialized or under-specialized in a certain sector. Laursen, "Revealed Comparative Advantage and the Alternatives," February 5, 2015, 99–115.

⁸³⁸ Hausmann, Stock, and Yildirim, "Implied Comparative Advantage," 2020.

⁸³⁹ Calculations include a share of imports under HTS statistical reporting numbers 0810.20.1020 and 0810.20.9020, all imports under 0810.20.1024, 0810.20.9024, 0811.20.2025, shares of 0811.90.8080 and 0811.90.8085, and all imports under 2007.99.6510, 2008.99.2120, 2009.89.6055, and 2009.89.7055.

2009.89.7055) from country r , I_r is the value of U.S. imports of all goods from country r , I_i is the value of total U.S. imports of processed raspberries, and I is the value of U.S. imports of all goods.

Equation G.3: U.S. market competitiveness RCA

$$RCA_{ir} = \frac{\frac{I_{ir}}{I_r}}{\frac{I_i}{I}}$$

For both the U.S. market and the global market SRCAs, the denominator used in the country and global trade ratios (X_r and X , I_r , and I) was all goods. For robustness, this was compared to calculations using a narrower product group for the denominator (HS 0811). Results for both categories were similar.

The data used for the U.S. market RCA indexes were adjusted before making the calculations.⁸⁴⁰ Data for U.S. imports for consumption are official statistics from the Census Bureau of the U.S. Department of Commerce, accessed using USITC's DataWeb trade data querying tool. We adjusted these import data because DataWeb data did not reflect the most recent revisions issued by the Census Bureau at the time of these calculations.⁸⁴¹ For the 10-digit statistical reporting numbers with revisions, the revised data were used. For 10-digit statistical reporting numbers that did not have revisions, original DataWeb data were used. Additionally, the 2018 value of imports of fresh raspberries for processing (HTS 0810.20.9024, fresh raspberries in containers of 5 kg or greater) from Mexico was also adjusted. Since this statistical breakout came into effect in July 2018, imports for full year 2018 may be underestimated. Full-year 2018 imports were therefore estimated based on ratios of imports in 2019 and 2020. Total U.S. imports of this statistical breakout were adjusted accordingly. This was also done for frozen berry mixes (HTS 0811.90.8085), for which the statistical breakout came into effect in July 2019. Values of frozen berry mixes in 2018 and 2019 were estimated based on the share of frozen berry mixes in all frozen fruit and nut mixes (HTS 0811.90.8080). The value of frozen berry mixes was adjusted to reflect only the value of mixed raspberries based on estimates of the share of raspberries in the mixed bags (7/24).⁸⁴²

Export data for countries other than the United States used for RCA calculations are from IHS Markit's Global Trade Atlas database.⁸⁴³ Again, U.S. domestic export and import data are official statistics from the U.S. Census Bureau accessed using DataWeb.⁸⁴⁴ All RCA calculations used two-year data averages (2018–19) to reduce the effect of potential annual trade fluctuations and include the time period when the U.S. statistical breakouts for fresh raspberries in containers of 5 kg or greater and frozen berry mixes were in effect.

⁸⁴⁰ This refers to data used for variables I_{ir} and I_i in equation G.3.

⁸⁴¹ USITC received the revisions directly from the U.S. Census Bureau. These revisions will be reflected in DataWeb by July 2021.

⁸⁴² Blended bags have roughly even percentages of each berry, with packs generally having three or four types of berries. The 7/24 ratio assumes half of the bags have three fruits and half have four and assumes that all berries in a bag account for an even share of the value of that bag. Industry representatives, interview by USITC staff, June 1, 2020.

⁸⁴³ This refers to country (other than the United States) and global export data used in global market and U.S. market RCA calculations (variables X_{ir} , X_r , X_i , and X in equation G.1).

⁸⁴⁴ This refers to U.S. export data used in RCA calculations for the global market and the U.S. market (variables X_{ir} and X_r in equation G.1 and variable I_r in equation G.3).

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Appendix H

Data Tables for Figures

Table H.1 U.S. imports of frozen raspberries; Washington production and field prices for raspberries for processing, 2015–20

Imports and production are in pounds (lb.); average U.S. field price is in dollars per pound (\$/lb.). This table corresponds with [figures ES.1](#) and [8.1](#).

Item	2015	2016	2017	2018	2019	2020
U.S. imports of frozen raspberries (lb.)	55,685,994	47,767,334	41,280,980	50,410,208	42,879,868	52,325,562
U.S. production of raspberries for processing (lb.)	51,901,718	75,576,586	69,279,646	74,933,629	66,170,756	64,190,466
Average U.S. field price (\$/lb.)	1.33	0.89	0.68	0.49	0.65	0.95

Source: USITC DataWeb/Census, imports for consumption, 0811.20.2025 (for frozen raspberry imports), accessed February 4; WRRRC, email message to USITC staff, December 18, 2020 (for Washington production and average field price).

Note: The prices provided by WRRRC are estimated average prices and do not represent actual prices paid by their customers.

Table H.2 Global raspberry production by country, average 2015–19

In metric tons (mt). This table corresponds to [figures ES.2](#) and [1.3](#).

Area	Average production 2015–19 (mt)
Australia	716
Austria	781
Azerbaijan	12,495
Belgium	2,351
Bosnia and Herzegovina	21,135
Bulgaria	7,460
Canada	10,553
Chile	18,446
China	30,354
Croatia	212
Czechia	65
Denmark	136
Estonia	173
Finland	1,130
France	4,654
Germany	6,392
Greece	5
Hungary	1,292
Ireland	320
Italy	2,206
Kyrgyzstan	2,644
Latvia	155
Lithuania	1,906
Luxembourg	1
Malta	0
Mexico	111,454
Moldova	2,445
Montenegro	500
Morocco	328
Netherlands	5,222
New Zealand	63
North Macedonia	188
Norway	2,757

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Area	Average production 2015–19 (mt)
Poland	100,942
Portugal	15,837
Romania	108
Russian Federation	152,500
Serbia	113,429
Slovakia	18
Slovenia	96
Spain	37,187
Sweden	524
Switzerland	3,447
United Kingdom	16,226
Ukraine	33,426
United States of America	108,214
Zimbabwe	97

Source: FAO, FAOSTAT database, Crops: Raspberries, accessed January 19, 2021. Li, 12th World Conference, IRO, accessed March 23, 2021.

Note: FAO data for Chile may be incomplete; alternative, higher estimates for Chilean production are presented in chapter 7. Production data for China are not available from FAO and are provided by industry.

Table H.3 Global raspberry production, by country, 2015–19

In thousands of metric tons (mt). This table corresponds to [figure 1.4](#).

Country	2015 (mt)	2016 (mt)	2017 (mt)	2018 (mt)	2019 (mt)
Russia	137,800	151,700	133,200	165,800	174,000
Mexico	65,388	112,661	120,184	130,187	128,848
Serbia	97,165	113,172	109,742	127,010	120,058
United States	119,295	117,177	102,840	99,250	102,510
Poland	79,895	129,063	104,482	115,610	75,660
All other	175,391	199,656	227,776	212,565	221,417
Total	674,934	823,429	798,224	850,422	822,493

Source: UNFAO, FAOSTAT database, Crops: Raspberries, accessed January 18, 2021

Note: Includes raspberries for the fresh market and processing market. 2019 is the latest year for which data were available. FAO data for Chile may be incomplete; alternative, higher estimates for Chilean production from Chilealimentos are presented in chapter 7 ("Chile").

Table H.4 Frozen raspberries: Share of global imports by volume, 2019

In metric tons (mt) and percentages. This table corresponds to [figure 1.5](#).

Country	Share of quantity (percent)
Germany	21
France	8
United States	7
Belgium	7
Russia	6
Austria	6
Poland	5
United Kingdom	5
Netherlands	5
Canada	4
All other	26
Total	100

Source: IHS Markit, Global Trade Atlas database, HS subheading 0811.20, accessed July 7, 2020.

Note: HS subheading 0811.20 covers raspberries, blackberries, mulberries, loganberries, currants, and gooseberries. However, available information indicates that the bulk of exports and imports of this product group are raspberries.

Table H.5 Frozen raspberries: Share of global exports by volume, 2019In percentages. This table corresponds to [figure 1.6](#).

Country	Share of quantity (percent)
Serbia	30
Poland	23
Chile	8
Bosnia and Herzegovina	4
Germany	4
Austria	4
All other	27
Total	100

Source: IHS Markit, Global Trade Atlas database, HS subheading 0811.20, accessed September 3, 2020.

Note: HS subheading 0811.20 covers raspberries, blackberries, mulberries, loganberries, currants, and gooseberries. However, available information indicates that the bulk of exports and imports of this product group are raspberries. Due to rounding, figures may not add up to 100 percent.

Table H.6 Fresh raspberries: Share of global imports by volume, 2019In percentages. This table corresponds to [figure 1.7](#).

Country	Share of quantity (percent)
United States	39
Germany	10
Canada	10
United Kingdom	9
Spain	7
France	7
Netherlands	5
All other	13
Total	100

Source: IHS Markit, Global Trade Atlas database, HS subheading 0810.20, accessed September 3, 2020.

Note: HS subheading 0810.20 covers raspberries, blackberries, mulberries, and loganberries. However, available information indicates that the bulk of exports and imports of this product group are raspberries.

Table H.7 Fresh raspberries: Share of global exports by volume, 2019In percentages. This table corresponds to [figure 1.8](#).

Country	Share of quantity (percent)
Mexico	28
Spain	22
United States	14
Morocco	9
Portugal	8
Netherlands	6
All other	13
Total	100

Source: IHS Markit, Global Trade Atlas database, HS subheading 0810.20, accessed September 3, 2020.

Note: HS subheading 0810.20 covers raspberries, blackberries, mulberries, and loganberries. However, available information indicates that the bulk of exports and imports of this product group are raspberries. Due to rounding, figures may not add up to 100 percent.

Table H.8 Raspberry production in California, Oregon, and Washington, by county and hectares** = rounds to zero. This table corresponds to [figure 3.1](#).

State	County	Hectares
California	Butte	2
California	Contra Costa	**
California	El Dorado	5

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State	County	Hectares
California	Fresno	69
California	Kings	25
California	Mendocino	6
California	Monterey	239
California	Nevada	7
California	Orange	2
California	Placer	5
California	Plumas	**
California	Riverside	5
California	San Bernardino	1
California	San Diego	3
California	San Luis Obispo	68
California	San Mateo	2
California	Santa Barbara	258
California	Santa Clara	2
California	Santa Cruz	810
California	Shasta	2
California	Solano	1
California	Sonoma	11
California	Stanislaus	25
California	Tulare	35
California	Ventura	1,060
California	Yolo	1
California	Yuba	1
Oregon	Benton	15
Oregon	Clackamas	304
Oregon	Hood River	2
Oregon	Josephine	4
Oregon	Klamath	**
Oregon	Lane	15
Oregon	Linn	29
Oregon	Marion	121
Oregon	Morrow	**
Oregon	Multnomah	175
Oregon	Wasco	2
Oregon	Washington	353
Washington	Chelan	1
Washington	Clallam	3
Washington	Clark	84
Washington	Ferry	1
Washington	Island	8
Washington	King	21
Washington	Kitsap	3
Washington	Lewis	1
Washington	Okanogan	1
Washington	Pacific	**
Washington	Pierce	47
Washington	San Juan	1
Washington	Skagit	111
Washington	Snohomish	13
Washington	Spokane	15

State	County	Hectares
Washington	Stevens	3
Washington	Thurston	15
Washington	Walla Walla	3
Washington	Whatcom	3,469
Washington	Yakima	8

Source: USDA, NASS, Quick Stats, Raspberries, Acres grown, accessed March 3, 2021.

Table H.9 Relative values of U.S. imports of fresh for processing and processed red raspberries by product type, 2020

In percentages. This table corresponds to [figure 3.7](#).

Product	IQF or non-IQF	Share (percent)
Cooked or Other Preparations	IQF	0.0
Fresh	IQF	0.0
Frozen Mixed Fruit	IQF	7.7
Juice	IQF	0.0
Single Product Frozen	IQF	34.1
Total IQF	IQF	41.8
Cooked or Other Preparations	Non-IQF	5.5
Fresh	Non-IQF	34.1
Frozen Mixed Fruit	Non-IQF	0.0
Juice	Non-IQF	2.6
Single Product Frozen	Non-IQF	16.0
Total non-IQF	Non-IQF	58.2

Source: USITC DataWeb/Census, HTS 0810.20.1024, 0810.20.9024, 0811.20.2025, 0811.90.8085, 2008.99.2120, 2007.99.6510, and 2009.89.7055, accessed March 19, 2021. Only values of products within the scope of this investigation value is included, described in appendix E.

Note: The total imports for consumption value of products within the scope of this investigation shown in this chart is \$137.6 million. Frozen mixed fruit HTS statistical reporting numbers contain IQF raspberries in addition to out-of-scope products. HTS 0811.90.8085 indicates mixes that specifically contain raspberries. Juice (including concentrate) products are classified under HTS 2009.89.7055 in 2020.

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Table H.10 U.S. imports of frozen raspberries, by source country, July 2018–December 2020

In metric tons (mt). This table corresponds to [figure 3.8](#).

Year	Month	Mexico	Serbia	Canada	Chile	All Other	Total
2018	July	230	319	863	797	23	2,233
2018	August	123	398	184	702	10	1,416
2018	September	113	310	103	462	4	992
2018	October	350	621	246	441	14	1,672
2018	November	431	485	140	549	2	1,606
2018	December	361	646	55	273	0	1,334
2019	January	267	445	55	272	11	1,050
2019	February	289	343	58	371	0	1,061
2019	March	452	362	38	879	0	1,730
2019	April	474	301	157	1,695	3	2,629
2019	May	438	152	259	1,222	0	2,071
2019	June	404	234	196	906	7	1,746
2019	July	437	176	333	1,237	3	2,185
2019	August	133	198	399	846	4	1,580
2019	September	175	378	722	590	0	1,865
2019	October	226	332	359	311	1	1,230
2019	November	491	300	142	197	6	1,136
2019	December	409	341	214	200	3	1,166
2020	January	461	384	240	180	0	1,266
2020	February	634	280	161	189	9	1,272
2020	March	623	310	419	1,153	13	2,518
2020	April	663	356	492	1,577	10	3,098
2020	May	827	229	304	1,169	20	2,549
2020	June	772	238	56	826	0	1,893
2020	July	404	210	545	613	0	1,772
2020	August	342	275	333	232	67	1,250
2020	September	327	599	895	288	37	2,145
2020	October	468	626	106	392	21	1,613
2020	November	612	1,231	196	181	35	2,255
2020	December	794	1,125	73	108	4	2,104

Source: USITC DataWeb/Census, HTS 0811.20.2025, accessed February 11, 2021.

Table H.11 U.S. imports of fresh raspberries from Mexico, July 2018–December 2020In metric tons (mt). Table corresponds to [figure 3.9](#).

Year	Month	For fresh market (mt)	For processing (mt)
2018	July	1,162	695
2018	August	1,033	385
2018	September	1,834	151
2018	October	6,234	315
2018	November	9,136	431
2018	December	7,071	420
2019	January	7,770	389
2019	February	7,966	381
2019	March	9,326	535
2019	April	9,127	564
2019	May	8,693	543
2019	June	4,079	248
2019	July	4,726	453
2019	August	1,806	423
2019	September	2,426	256
2019	October	8,167	993
2019	November	10,573	1,055
2019	December	10,011	903
2020	January	9,272	759
2020	February	8,478	547
2020	March	11,258	691
2020	April	10,746	873
2020	May	8,214	1,104
2020	June	2,903	516
2020	July	1,710	294
2020	August	2,095	401
2020	September	3,641	1,127
2020	October	8,829	1,836
2020	November	15,835	1,179
2020	December	13,561	1,357

Source: USITC DataWeb/Census, imports for consumption, CIF (cost, insurance, freight) values, “For fresh market” contains HTS 0810.20.1022 and 0810.20.9022 and “For processing” contains HTS 0810.20.1024 and 0810.20.9024, accessed February 4, 2021.

Table H.12 Monthly U.S. imports and U.S stocks of frozen raspberry products, 2015–20In metric tons (mt). This table corresponds to [figure 3.10](#).

Year	Month	Import quantity (mt)	U.S. stocks (mt)
2015	January	1,495	22,964
2015	February	1,565	20,367
2015	March	2,445	18,379
2015	April	2,902	15,982
2015	May	1,953	13,826
2015	June	1,853	17,246
2015	July	2,275	33,722
2015	August	2,232	31,168
2015	September	2,418	30,676
2015	October	1,964	27,839
2015	November	1,961	26,854
2015	December	2,198	25,272
2016	January	1,483	21,969

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Year	Month	Import quantity (mt)	U.S. stocks (mt)
2016	February	1,658	20,307
2016	March	2,473	18,145
2016	April	3,039	17,406
2016	May	2,668	16,375
2016	June	2,106	28,569
2016	July	1,575	44,263
2016	August	1,327	40,685
2016	September	1,656	37,365
2016	October	1,210	35,207
2016	November	1,565	33,455
2016	December	906	29,816
2017	January	1,261	26,314
2017	February	908	23,434
2017	March	1,594	20,825
2017	April	1,707	18,705
2017	May	1,733	16,831
2017	June	1,857	14,506
2017	July	1,899	36,808
2017	August	1,273	41,067
2017	September	1,368	39,121
2017	October	1,486	35,967
2017	November	1,650	35,421
2017	December	1,989	33,757
2018	January	1,665	30,031
2018	February	1,690	28,539
2018	March	1,606	25,354
2018	April	3,160	24,530
2018	May	3,457	22,219
2018	June	2,035	21,024
2018	July	2,233	50,566
2018	August	1,416	49,202
2018	September	992	45,957
2018	October	1,672	42,567
2018	November	1,606	39,137
2018	December	1,334	37,742
2019	January	1,050	31,874
2019	February	1,061	26,317
2019	March	1,730	22,204
2019	April	2,629	20,433
2019	May	2,071	19,213
2019	June	1,746	17,231
2019	July	2,185	38,519
2019	August	1,580	39,404
2019	September	1,865	37,369
2019	October	1,230	33,645
2019	November	1,136	29,731
2019	December	1,166	27,680
2020	January	1,266	24,248
2020	February	1,272	18,600
2020	March	2,518	16,098
2020	April	3,098	14,591

Year	Month	Import quantity (mt)	U.S. stocks (mt)
2020	May	2,549	13,143
2020	June	1,893	11,181
2020	July	1,772	34,361
2020	August	1,250	37,714
2020	September	2,145	33,246
2020	October	1,613	28,230
2020	November	2,255	26,520
2020	December	2,104	24,132

Source: USITC DataWeb/Census, HTS 0811.20.2025, accessed February 11, 2021; USDA, NASS, Quick Stats, U.S. stocks of frozen barrels, pails, and IQF, accessed March 3, 2021.

Table H.13 Raspberry production in Canada, by province, 2019

In metric tons (mt). This table corresponds to [figure 4.1](#).

Canadian province	Production (mt)
Newfoundland and Labrador	10
Prince Edward Island	8
Nova Scotia	64
New Brunswick	52
Quebec	1,192
Ontario	764
Manitoba	15
Saskatchewan	20
Alberta	69
British Columbia	6,952

Source: Government of Canada, written submission to the USITC, December 4, 2020, table 1, 3.

Note: In 2019, 83 percent of raspberries produced in British Columbia (5,615 mt) and 5 percent of raspberries produced in Quebec (61 mt) were sold to processors. Raspberries from other provinces are sold to the fresh market. Thus, British Columbia accounts for 99 percent of Canadian production of raspberries for processing (5,676 mt).

Table H.14 Raspberry production in Mexico, by state, 2019

In metric tons (mt). This table corresponds to [figure 5.1](#).

State	Production (mt)
Jalisco	89,497
Michoacán	25,988
Baja California	11,739
Guanajuato	962
Puebla	558
México State	71
Colima	22
Mexico City	10

Source: Government of Mexico, SIAP, *Anuario estadístico de la producción agrícola* (Agricultural production statistical yearbook), accessed December 4, 2020.

Table H.15 Raspberry production in Serbia, by region, 2019

In metric tons (mt). This table corresponds to [figure 6.1](#).

Region	Production (mt)
Beogradski region	2,828
Region Vojvodine	6,849
Region Šumadije	102,653
Region Južne i Istočne	7,728

Source: Compiled by the USITC based on the Government of Serbia, Statistical Office, Crop Production from 2005 (Raspberries, 2020)

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Table H.16 Raspberry harvested area in Chile, by region, 2019

In hectares (ha). n.a. = not available. This table corresponds to [figure 7.1](#).

Region	Area (ha)
Arica and Parinacota	n.a.
Tarapaca	n.a.
Atacama	n.a.
Coquimbo	2
Valparaiso	1
Santiago Metropolitan Region	7
O'Higgins	52
Maule	770
Biobio	59
Ñuble	1,420
Araucania	232
Los Ríos	108
Los Lagos	31
Aysen	n.a.

Source: CIREN, Catastro frutícola, Maule (Fruit-growing land registry, Maule region), July 2019, 3, 7.

Note: The map excludes farms that are 0.5 hectares or smaller, which are a significant source of raspberries in Chile. Data for some of the regions counting less than 100 hectares for raspberries total were collected in 2017 or 2018.

Table H.17 U.S. imports of frozen raspberries and fresh raspberries for processing; Washington production and field prices of raspberries for processing, 2015–20

Imports and production are in pounds (lb.) and prices are in dollars per pound (\$/lb.). Table corresponds to [figure 8.2](#).

Item	2015	2016	2017	2018	2019	2020
Frozen raspberry U.S. imports (lb.)	55,685,994	47,767,334	41,280,980	50,410,208	42,879,868	52,325,562
Fresh for processing U.S. Production (lb.)	51,901,718	75,576,586	69,279,646	74,933,629	66,170,756	64,190,466
Fresh for processing U.S. imports (lb.)	14,116,815	12,570,125	17,890,428	15,231,406	14,860,082	23,451,024
U.S. average field price (\$/lb.)	1.33	0.89	0.68	0.49	0.65	0.95

Source: USITC DataWeb/Census, imports for consumption, shares of HTS 0810.20.1020 and 0810.20.9020, 0810.20.1024, and 0810.20.9024 (for fresh for processing raspberry imports), 0811.20.2025 (for frozen raspberry imports), accessed February 4; WRRRC, email message to USITC staff, December 18, 2020 (for Washington production and average field price); USITC estimates (for fresh for processing imports from 2015–18).

Note: The prices provided by WRRRC are estimated average prices and do not represent actual prices paid by their customers.

Table H.18 U.S. imports of frozen raspberries from Mexico and Canada, Washington production of straight pack raspberries, and Washington selling prices for straight pack frozen raspberries, 2011–20
Imports and production are in pounds (lb.) and prices in dollars per pound (\$/lb.). This table corresponds to [figure 8.3](#).

Year	U.S. import volume (lb.)	U.S. production (lb.)	Prices (\$/lb.)
2011	11,099,909	27,636,883	1.03
2012	9,878,184	24,456,908	0.95
2013	11,847,143	24,676,416	1.33
2014	11,385,648	27,051,809	1.68
2015	16,717,071	20,760,687	1.73
2016	13,676,281	30,230,634	1.33
2017	10,028,342	27,711,858	1.06
2018	13,150,168	29,973,452	0.88
2019	15,711,105	26,468,302	0.95
2020	23,697,846	25,676,186	1.15

Source: USITC DataWeb/Census, imports for consumption, HTS 0811.20.2025, accessed February 4, 2021 (for U.S. import volume); WRRRC, email message to USITC staff, December 18, 2020 (for Washington production and straight pack sales price).

Table H.19 Volume of U.S. processed raspberry imports from Canada and Mexico, and Washington straight pack selling prices, 2015–20
Imports are in pounds (lb.) and prices are in dollars per pound (\$/lb.). Table corresponds to [figure 8.4](#).

Item	2015	2016	2017	2018	2019	2020
Canada (lb.)	4,585,372	3,975,232	3,503,157	5,237,152	6,465,377	8,425,833
Mexico (lb.)	12,131,700	9,701,049	6,525,186	7,913,016	9,245,729	15,272,013
U.S. (\$/lb.)	1.73	1.33	1.06	0.88	0.95	1.15

Source: USITC DataWeb/Census, imports for consumption, HTS 0811.20.2025 (for U.S. imports from Canada and Mexico), accessed February 4, 2021; WRRRC, email message to USITC staff, December 18, 2020. (for Washington straight pack sales price).

Table H.20 Washington sales price of straight pack raspberries and AUVs for frozen raspberry imports from Canada and Mexico, 2015–20
In dollars per pound (\$/lb.). Table corresponds to [figure 8.5](#).

Item	2015	2016	2017	2018	2019	2020
Canada (\$/lb.)	1.67	1.32	1.27	1.14	0.87	0.97
Mexico (\$/lb.)	0.83	0.84	0.76	0.79	0.85	0.82
US (\$/lb.)	1.73	1.33	1.06	0.88	0.95	1.15

Source: USITC DataWeb/Census, imports for consumption, CIF (cost, insurance, freight) values, HTS 0811.20.2025, accessed February 4, 2021 (for average unit values for Canada and Mexico); WRRRC, email message to USITC staff, December 18, 2020 (for Washington sales price).

Table H.21 U.S. imports of frozen raspberries from Chile and Serbia, Washington production of IQF raspberries, and U.S. selling prices for IQF raspberries, 2011–20
Imports and production are in pounds (lb.) and prices in dollars per pound (\$/lb.). This table corresponds to [figure 8.6](#).

Years	U.S. import volume (lb.)	U.S. production (lb.)	Prices (\$/lb.)
2011	26,710,475	27,636,883	1.65
2012	31,026,706	24,456,908	1.80
2013	28,208,942	24,676,416	2.20
2014	37,367,831	27,051,809	2.25
2015	36,784,396	20,760,687	2.12
2016	33,563,995	30,230,634	1.65
2017	30,266,313	27,711,858	1.50
2018	36,916,979	29,973,452	1.30
2019	27,086,616	26,468,302	1.59
2020	28,154,532	25,676,186	2.05

Source: USITC DataWeb/Census, imports for consumption, HTS 0811.20.2025, accessed February 4, 2021 (for U.S. import volume from Chile and Serbia); WRRRC, email message to USITC staff, December 18, 2020 (for Washington production and IQF sales price).

Table H.22 U.S. imports of frozen raspberries from Chile and Serbia and Washington selling prices for IQF raspberries, 2015–20Imports and production are in pounds (lb.) and prices in dollars per pound (\$/lb.). This table corresponds to [figure 8.7](#).

Item	2015	2016	2017	2018	2019	2020
Chile (lb.)	27,436,441	24,269,733	19,185,357	23,580,926	19,234,139	15,230,794
Serbia (lb.)	9,347,955	9,294,261	11,080,956	13,336,053	7,852,477	12,923,738
U.S. (\$/lb.)	2.12	1.65	1.50	1.30	1.59	2.05

Source: USITC DataWeb/Census, imports for consumption, HTS 0811.20.2025, accessed February 4, 2021 (for U.S. import volume from Chile and Serbia); WRRRC, email message to USITC staff, December 18, 2020 (for Washington IQF sales price).

Table H.23 Import AUVs of frozen raspberries from Chile and Serbia and Washington selling prices for IQF raspberries, 2015–20In dollars per pound (\$/lb.). Table corresponds to [figure 8.8](#).

Item	2015	2016	2017	2018	2019	2020
Chile (\$/lb.)	2.05	2.02	1.48	1.47	1.46	1.74
Serbia (\$/lb.)	1.64	1.72	1.38	1.21	1.24	1.63
U.S. (\$/lb.)	2.12	1.65	1.50	1.30	1.59	2.05

Source: USITC DataWeb/Census, imports for consumption, CIF (cost, insurance, freight) values, HTS 0811.20.2025, accessed February 4, 2021 (for import AUVs of frozen raspberries from Chile and Serbia); WRRRC, email message to USITC staff, December 18, 2020 (for Washington IQF sales price).

Table H.24 U.S. imports for consumption and Washington State gross sales of IQF raspberries, by country, 2010–20In millions of U.S. dollars. This table corresponds to [figure 9.1](#).

Year	United States	Chile	Serbia	Mexico	Canada	Guatemala	All others
2010	42.1	35.0	0.6	0.4	3.7	0.1	2.1
2011	45.6	30.1	0.8	0.6	3.5	0.1	1.6
2012	44.0	27.0	4.2	0.7	2.6	0.1	1.8
2013	54.3	35.6	4.1	1.4	3.3	0.4	2.9
2014	60.9	49.0	10.2	2.6	3.3	0.3	6.7
2015	44.0	45.4	11.5	5.3	3.2	0.3	5.3
2016	49.9	39.7	12.1	4.3	2.2	0.4	4.0
2017	41.6	23.4	11.5	2.7	2.0	0.5	3.6
2018	39.0	28.2	12.1	3.4	2.7	0.5	4.9
2019	42.1	23.8	7.3	4.6	3.0	0.4	2.1
2020	52.6	25.5	15.8	7.7	7.4	0.4	0.8

Source: USITC DataWeb/Census, accessed March 19, 2021, and domestic sales estimates from the Washington Red Raspberry Commission, received March 18, 2021. The statistical reporting numbers used are described in appendix E.

Table H.25 U.S. imports for consumption and Washington State sales of non-IQF raspberries, by country, 2010–20In millions of U.S. dollars. This table corresponds with [figure 9.2](#).

Year	United States	Mexico	Canada	Chile	Serbia	Germany	All others
2010	35.4	5.4	6.9	8.8	0.2	0.0	0.8
2011	38.8	6.0	6.4	7.7	0.3	0.0	1.3
2012	31.4	7.9	8.0	9.7	1.4	0.2	3.1
2013	45.8	11.3	9.6	10.3	1.4	0.0	4.2
2014	64.4	16.7	11.8	13.4	4.2	0.0	7.3
2015	51.0	25.3	14.8	17.8	4.4	0.2	10.8
2016	55.5	25.0	12.6	16.2	4.9	0.2	9.8
2017	40.2	28.4	10.7	10.4	4.3	0.1	7.9
2018	35.4	29.6	9.9	11.0	4.2	0.2	7.4
2019	34.0	37.5	10.5	8.1	3.1	0.2	4.4
2020	40.4	53.3	11.6	6.8	5.6	0.8	2.0

Source: USITC DataWeb/Census, accessed March 19, 2021, and domestic sales estimates from the Washington Red Raspberry Commission, received March 18, 2021. The statistical reporting numbers used are described in appendix E.

Table H.26 Simulation of Washington IQF production and prices, 2010–20In percent over actual. This table corresponds to [figure 9.3](#).

Measure	Year	Minimum	1st quartile	Median	3rd quartile	Maximum
Production	2010	0.0	0.0	0.0	0.0	0.0
Production	2011	0.0	0.0	0.0	0.0	0.0
Production	2012	0.0	0.0	0.0	0.0	0.0
Production	2013	0.0	0.0	0.0	0.0	0.0
Production	2014	1.1	1.3	1.4	1.4	1.6
Production	2015	1.7	1.9	1.9	2.0	2.1
Production	2016	1.2	1.4	1.5	1.5	1.7
Production	2017	0.0	1.1	1.1	1.2	1.3
Production	2018	1.3	1.5	1.6	1.6	1.8
Production	2019	0.0	0.0	0.0	1.0	1.2
Production	2020	0.0	1.2	1.2	1.3	1.4
Price	2010	0.0	0.0	0.0	0.0	0.0
Price	2011	0.0	0.0	0.0	0.0	0.0
Price	2012	0.0	0.0	0.0	0.0	0.0
Price	2013	13.0	13.8	14.1	14.3	14.7
Price	2014	27.9	29.6	30.1	30.6	31.5
Price	2015	32.8	35.0	35.7	36.3	37.5
Price	2016	28.8	30.7	31.2	31.7	32.7
Price	2017	26.1	27.7	28.2	28.6	29.4
Price	2018	29.7	31.6	32.2	32.7	33.7
Price	2019	25.0	26.5	26.9	27.3	28.1
Price	2020	26.6	28.3	28.8	29.2	30.1

Source: USITC calculations from model simulations. USITC DataWeb/Census, accessed March 19, 2021.

Note: Simulation production and prices are displayed as percentages over the actual production and prices for each year. See appendix F for details on how the confidence intervals were generated.

Table H.27 Simulation of Washington non-IQF production and prices, 2010–20In percent over actual. This table corresponds to [figure 9.4](#).

Measure	Year	Minimum	1st quartile	Median	3rd quartile	Maximum
Production	2010	0.0	0.0	0.0	0.0	0.0
Production	2011	0.0	0.0	0.0	0.0	0.0
Production	2012	6.9	7.2	7.2	7.3	7.5
Production	2013	12.1	12.5	12.6	12.7	12.9
Production	2014	16.6	17.1	17.2	17.3	17.6
Production	2015	30.7	31.6	31.8	32.1	32.5
Production	2016	27.5	28.3	28.5	28.7	29.1
Production	2017	32.2	33.1	33.4	33.7	34.2
Production	2018	35.3	36.4	36.7	37.0	37.5
Production	2019	36.8	38.0	38.3	38.6	39.2
Production	2020	38.1	39.3	39.7	40.0	40.7
Price	2010	0.0	0.0	0.0	0.0	0.0
Price	2011	0.0	0.0	0.0	0.0	0.0
Price	2012	6.9	7.2	7.2	7.3	7.5
Price	2013	12.1	12.5	12.6	12.7	12.9
Price	2014	16.6	17.1	17.2	17.3	17.6
Price	2015	30.7	31.6	31.8	32.1	32.5
Price	2016	27.5	28.3	28.5	28.7	29.1
Price	2017	32.2	33.1	33.4	33.7	34.2
Price	2018	35.3	36.4	36.7	37.0	37.5
Price	2019	36.8	38.0	38.3	38.6	39.2
Price	2020	38.1	39.3	39.7	40.0	40.7

Source: USITC calculations from model simulations. USITC DataWeb/Census, accessed March 19, 2021.

Note: Simulation production and prices are displayed as percentages over the actual production and prices for each year. See appendix F for details on how the confidence intervals were generated.

Table H.28 Fresh raspberries: Share of value of imports for consumption classified as IQF, non-IQF, or out-of-scope by statistical reporting number, total value 2010–20In percentage. This table corresponds to [figure E.1](#).

HTS statistical reporting number	IQF	Non-IQF	Out-of-scope
0810.20.1020	0.0	3.8	96.2
0810.20.9020	0.0	9.4	90.6
0810.20.1024	0.0	100.0	0.0
0810.20.9024	0.0	100.0	0.0
0810.20.1022	0.0	0.0	100.0
0810.20.9022	0.0	0.0	100.0

Source: USITC DataWeb/Census, accessed March 19, 2021 and calculations by USITC.

Table H.29 Frozen mixed fruit: Share of value of imports for consumption classified as IQF, non-IQF, or out-of-scope by statistical reporting number, total value 2010–20In percentage. This table corresponds to [figure E.2](#).

HTS statistical reporting number	IQF	Non-IQF	Out-of-scope
0811.90.8080	6.4	0.0	93.6
0811.90.8085	29.2	0.0	70.8
0811.90.8095	0.0	0.0	100.0

Source: USITC DataWeb/Census, accessed March 19, 2021 and calculations by USITC.

Table H.30 Single-product frozen: Share of value of imports for consumption classified as IQF, non-IQF, or out-of-scope by statistical reporting number, total value 2010–20In percentage. This table corresponds to [figure E.3](#).

HTS statistical reporting number	IQF	Non-IQF	Out-of-scope
0811.20.2025	71.8	28.2	0.0
0811.20.2035	0.0	0.0	100.0

Source: USITC DataWeb/Census, accessed March 19, 2021 and calculations by USITC.

Table H.31 Cooked raspberries, raspberry juices, and other preparations: Share of value of imports for consumption classified as IQF, non-IQF, or out-of-scope by statistical reporting number, total value 2010–20In percentage. This table corresponds to [figure E.4](#).

HTS statistical reporting number	IQF	Non-IQF	Out-of-scope
2008.99.2120	0.0	100.0	0.0
2007.99.6510	0.0	100.0	0.0
2009.89.6055	0.0	100.0	0.0
2009.89.7055	0.0	100.0	0.0

Source: USITC DataWeb/Census, accessed March 19, 2021 and calculations by USITC.

Table H.32 Related products: Share of value of imports for consumption classified as IQF, non-IQF, or out-of-scope by statistical reporting number, total value 2010–20In percentages. This table corresponds to [figure E.5](#).

HTS statistical reporting number	IQF	Non-IQF	Out-of-scope
2007.99.0500	0.0	0.0	100.0
2007.99.6520	0.0	0.0	100.0
2009.89.7065	0.0	0.0	100.0

Source: USITC DataWeb/Census, accessed March 19, 2021 and calculations by USITC.

Table H.33 Actual and counterfactual percentage changes and levels for gross sales of imported IQF raspberries, 2010–20In percent change over previous year and million U.S. dollars; – (em dash) = not applicable. This table corresponds to [figure F.1](#).

Year	Actual import value (million \$)	Counterfactual import value (million \$)	Actual percent change over previous year (%)	Counterfactual percent change over previous year (%)
2010	42.0	42.0	–	–
2011	36.7	36.7	-12.6	-12.6
2012	36.5	36.5	-0.4	-0.4
2013	47.6	31.8	30.3	-12.9
2014	72.0	34.4	51.4	8.2
2015	71.0	33.9	-1.4	-1.4
2016	62.8	30.0	-11.6	-11.6
2017	43.8	20.9	-30.2	-30.2
2018	51.7	24.7	18.1	18.1
2019	41.1	19.7	-20.5	-20.5
2020	57.6	27.5	40.0	40.0

Source: USITC DataWeb/Census, accessed March 19, 2021 and calculations by USITC.

Raspberries for Processing

Table H.34 Actual and counterfactual percentage changes and levels for gross sales of imported IQF raspberries, 2010–20

In percent change over previous year and million U.S. dollars; – (em dash) = not applicable. This table corresponds to [figure F.2](#).

Year	Actual import value (million \$)	Counterfactual import value (million \$)	Actual percent change over previous year (%)	Counterfactual percent change over previous year (%)
2010	22.1	22.1	–	–
2011	21.7	21.7	-2.0	-2.0
2012	30.3	22.9	39.8	5.7
2013	36.8	20.0	21.2	-13.0
2014	53.5	22.2	45.4	11.3
2015	73.3	22.9	37.1	2.9
2016	68.7	21.4	-6.3	-6.3
2017	61.8	19.3	-9.9	-9.9
2018	62.3	19.4	0.7	0.7
2019	63.9	19.9	2.6	2.6
2020	80.1	25.0	25.4	25.4

Source: USITC DataWeb/Census, accessed March 19, 2021 and calculations by USITC.