INNOVATION IN
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BC At The Table: SALMON

Teacher Discussion Guide

About BC At The Table

BC At The Table is intended to show how food is produced, processed, distributed and accessed in BC and inspire students to buy BC foods and support local farmers. It consists of four video segments that can be watched separately in shorter classroom sessions or together in one longer session. The videos highlight the main steps in the food system that four foods go through to make it to our plates:

- Produce (with a focus on greenhouse tomatoes and vegetables)
- Grains (with a focus on wheat)
- Dairy (with a focus on milk and cheese)
- Salmon (both wild and farmed)

The foods featured were selected because of the major role they play in BC's economy. They are also foundational foods for a healthy diet, as presented in Canada's Food Guide (2019).

The videos address some of the issues related to each food and provide a glimpse of the career opportunities in the agrifood industry. In 2020, we added short video updates, available at bcdairy.ca/bcatthetable.

A teacher discussion guide is provided for each commodity to facilitate a general discussion about the food after watching the video. While watching the videos, students can use the food system worksheet provided at the end of this discussion guide to list the steps involved in the production, processing, distribution, access to and consumption of the food introduced in the video. The discussion guide also includes background information, key resources to support student inquiry, and general food system questions and activities for further student learning.

These videos can be used as a starting point for further inquiry-based learning on related issues of interest to students. Teachers wanting to use inquiry processes in the classroom may want to consult the website "Points of Inquiry BC".

BC At The Table links to many curriculum areas:

- Applied Design, Skills & Technologies 7,8, 9
- Culinary Arts 10, 11, 12
- Food Studies 10, 11, 12
- Career Education 7, 8, 9; Career Life Connections 10-12
- Physical & Health Education 7, 8, 9, 10
- Science 7, 8, 9; Environmental Science 11, 12
- Social Studies 7, 8, 9; Human Geography 11

Learn more about cross-curricular connections here.

Did you know?

- Seafoods account for 10 of BC's top 30 agriculture, food and seafood commodities (Fast Stats, 2018). Besides farmed and wild salmon, these top seafoods include crabs, clams, halibut, prawn & shrimp, wild sablefish, hake, rockfish and herring.
- Farmed salmon is BC's largest food commodity in terms of sales. In 2018, 85,700 tonnes of farmed salmon were harvested in BC, worth $772.5 million (Fast Stats, 2018).
- Over the last decade, BC has become the 4th largest producer of farmed salmon in the world (Seafood Sector Snapshot, 2018).
- Captured (wild) salmon products totalled $111.7 million in landed value in 2018 (Fast Stats, 2018).
- Fishing for salmon in BC includes 5 major species: Sockeye, Chum, Coho, Chinook and Pink.
- Wild salmon landings vary year by year. For instance, 17,800 tons of wild salmon were caught in 2018, which was a 30% decrease compared to the average harvest of 2014-2017, but a 30% increase from the 2017 harvest. (Fast Stats, 2018).
- In 2018, BC's primary seafood industry (commercial harvest & aquaculture) generated $1.29 billion in landed value (Seafood Sector Snapshot 2018), and together with seafood processing, the industry employed nearly 10,000 people. (Stats Canada)

For regularly updated agrifood industry statistics, explore:
www2.gov.bc.ca/gov/content/industry/agriculture-seafood/statistics/industry-and-sector-profiles

Questions for discussion

1. Trace the journey of wild salmon from ocean to plate.
   How does it compare to the journey of farmed salmon?
2. What are some of the challenges faced by commercial fishermen? *(uncertainty related to openings, fish stocks, getting a fair price)*
3. What are some of the challenges faced by salmon farms? *(public perception, keeping fish healthy, cost of feed, reliance on technology)*
4. Fish is considered to be an ecologically and culturally important, nutritious food. Do you think that wild fish can meet the demand for fish in Canada and abroad?
5. What are aquaculture's social and economic contributions to local communities, to BC and to Canada? *(local—employment and food for remote, coastal and First Nations communities; BC—millions in income, contribute to taxes; Canada—export sales, supply of product to other provinces, important connection to cultural and societal wellbeing)*.
6. Shaun and Sonia Strobel talk about Community Supported Fishery (CSF), a take-off on the idea of Community Supported Agriculture (CSA), in which a person buys a share for the food that will be produced in a season. When Shaun says, "It makes it a lot more sustainable, year in, year out," what do you think he means?
7. Reflect on the quote from one of Shaun's CSF customers: "You're putting food on their table while they're putting food on yours."
8. What are some of the practices used to ensure a safe fish supply? *(storing on ice or freezing, monitoring fish health on salmon farms, veterinary oversight on fish farms, workers in processing wearing gloves and hairnets, comprehensive and detailed regulatory requirements for seafood processors (The Safe Food for Canadians Act and Regulations)*
9. The video portrayed a fish farm that was unique in several ways. What made it different?
10. What types of jobs are created by the salmon industry? What kinds of skills and training are needed in various fishery jobs?
11. What are the ecological problems associated with farmed salmon? How can these be addressed? Can aquaculture be sustainable? (*see page 8*)
12. What are the benefits of operating a land-based salmon farm? What are the challenges (both operational and environmental)? (*see page 8*)
13. How can we, as consumers, make ocean-friendly decisions? *(educate ourselves and look for a third-party certification that indicates sustainability and/or best practices that are used to produce the fish we purchase).*

Wild Salmon Food System—Examples of inputs and outputs

Food System Component	Inputs	Outputs
Production Fishermen have to wait for the Department of Fisheries to open the fisheries before they can start catching wild salmon.	• fishing license • labour • fuel • equipment (nets, boat) • ice	• fish • greenhouse gases
Processing Fish is transported back to the shore for minimal processing (cleaning).	• energy • labour (to gut, wash, clean, grade, and pack fish with wet ice) • gas • water • ice	• fresh whole fish or fish fillets • fish waste (guts, bones, heads) • greenhouse gases
Distribution Within 24-36 hours, salmon is delivered to customers (such as wholesalers, retailers, restaurants and Community Supported Fishery customers).	• refrigerated trucks • refrigerators or freezers • labour (driver, receivers) • fuel	• packaged whole fish or fish fillets • greenhouse gases • waste • businesses (distributors, wholesalers)
Access Fish can be bought directly from the local fishmonger, the grocery store, public markets, or the restaurant and other food service distributors.	• fuel (from mode of transportation used to go buy the fish) • electricity	• fish • businesses (such as restaurants and grocery stores) • greenhouse gases • food waste
Consumption Consumers may cook, can or smoke salmon. Or they can eat it at a restaurant.	• home preparation • purchase from stores or restaurants • electricity or gas • water • labour	• food from the Protein Foods category • food waste/ garbage

Teacher Backgrounder

WILD SALMON

Commercial fisheries

Operations that catch wild salmon are often referred to as capture or commercial fisheries. In 2018, wild salmon represented a notable share of the harvest (6 percent, 17,800 tonnes), landed value (9 percent, $111.7 million) and wholesale value (13 percent, $235.8 million) of all BC seafood species.

There are three commercial methods of fishing for salmon:

- Gillnetting: 25% of wild salmon (mainly sockeye and chum) are caught using this method. This is the method portrayed in the video.
- Seining: 50% of wild salmon (mainly sockeye, pink and chum) are caught using this method.
- Trolling: 25% of wild salmon (mainly chinook and coho) are caught using this method. Many trollers have a capacity for freezing at sea (FAS), which provides high quality fish during times when fresh salmon (other than farmed) is not available.

Types of salmon caught off the BC coast

- Chinook: rich in flavour with a flesh that ranges from white to deep red in colour
- Chum: mild and delicate taste
- Coho: delicate texture, but similar flavour to chinook
- Sockeye: strong and flavourful with a deep red flesh
- Pink: light in colour and flavour, lower in fat than other salmon species

The taste and colour of salmon meat will vary depending on the species in question (due to prey preferences), where and when it was caught, and the time of year.

Challenges of catching wild salmon

Commercial fisheries are dependent on openings regulated by the Department of Fisheries and Oceans (DFO). DFO is responsible for the management of fish and fish habitat, as well as fisheries derived from them. It carries out an extensive stock assessment to determine how many fish can be caught in any one given year without impacting the propagation of fish in subsequent years (often referred to as a catch allocation). Once a catch allocation has been estimated, the fishery is opened for a limited time or until the catch allocation is reached. Subsequent monitoring ensures that all fish caught are accounted for as best as possible, which is then factored into the allocation for subsequent years when combined with on-going stock assessment information and research. When wild stocks are low, openings are limited to maintain the ecological sustainability of the fishery. This may limit the amount of wild fish available in the marketplace.

Understanding salmon migration and the challenges they face while at sea is a major key in our ability to predict stock abundance. A large-scale, multi-national survey in 2019-2021 has been collecting data to help scientists understand some of the major challenges salmon face, such as oceanographic anomalies caused by climate change. It also seeks to establish greater international research capacity for understanding the consequences of future environmental conditions and is being used to study the impacts of extreme climate events and ocean conditions.

For more information on the Gulf of Alaska Salmon Surveys, see: yearofthesalmon.org/gulf-of-alaska-expedition2020/

First Nations fish harvesting

Since well before the development of commercial fisheries in BC, many Indigenous peoples have harvested salmon for food, trade and ceremonial purposes. Salmon feature prominently in their stories and are treated with great respect. In more recent history, access to salmon was restricted by colonial government agents that favoured European settlers when granting commercial fishing licenses. However, Indigenous peoples in BC never gave up their traditional fishing rights, and through the courts have achieved recognition for this right—a right that takes priority over all other uses of the fishery except conservation. While the locations and protocols for traditional food fishery harvesting continue to be determined by Indigenous governance systems passed down through families and communities, the timing of harvesting is now determined by the DFO. Indigenous people also play a large role in BC's commercial salmon fishery.

To learn about salmon in Indigenous food systems:

Indigenous Foundations, UBC
indigenousfoundations.arts.ubc.ca/aboriginal_fisheries_in_british_columbia

Wild Salmon Caravan, Working Group on Indigenous Food Sovereignty
wildsalmoncaravan.ca

Salmon Life Cycle

Salmon are a keystone species in marine and freshwater ecosystems. Fishing generally takes place away from freshwater spawning grounds, and intercepts the fish on their return to spawn after spending 1 to several years feeding in the Pacific Ocean and reaching 2-7 years of age, depending on the species. Learn more about the salmon life cycle here: bcsalmon.ca/biology-lifecycle

Additional educational resources can be found here: psf.ca/learn

Farmed Salmon Food System—Examples of inputs and outputs

Food System Component	Inputs	Outputs
Production Salmon farms have to get a site license in order to run their operation.	• Land-based hatchery: feed, utilities, labour, technology, freshwater, equipment, time • Grow-out phase: saltwater, cages, nets, labour, feed, technology • Harvesting: harvest vessels, labour	• Land-based hatchery: eggs, fry, parr and smolt • Grow-out phase: fish of marketable size, fish manure, pollution • Harvesting: fish • fish organic waste • greenhouse gases
Processing Fish is transported to processing plants after it is harvested.	• energy • labour (to gut, wash, clean, grade, pack fish with wet ice) • package material • gas • ice	• fresh or frozen fish (whole, deboned, filleted) • fish waste (guts, bones, heads) • greenhouse gases
Distribution Within 36-48 hours, packaged salmon is shipped to various locations, within Canada and internationally to the US and other places. It is delivered to wholesalers, retailers, restaurants.	• refrigerated trucks • refrigerators or freezers • labour (driver, receivers) • fuel	• greenhouse gases • waste • businesses (markets, wholesalers, restaurants)
Access Fish can be bought at the grocery store, in public markets, or by restaurant and other business owners.	• Fuel (from mode of transportation used to go buy fish) • electricity • labour	• fish • businesses (such as restaurants and grocery stores) • greenhouse gases • food waste
Consumption Consumers can cook, can or smoke salmon or eat it at a restaurant.	• home preparation • purchase from store or restaurant • electricity or gas • labour	• food from the Protein Foods category • food waste/ garbage

Teacher Backgrounder

FARMED SALMON

While the video features Creative Salmon, a farm that raises chinook salmon, it is important to note that Atlantic salmon forms the bulk (97%) of the salmon farmed in BC (2018 BC Seafood Year in Review). Both species are well adapted to farming on the BC coast. Both provide the same level of nutrition. The farmer decides which species to grow based on the business model used and personal preferences.

Salmon farms are located in many areas: the Sunshine Coast, the west coast of Vancouver Island (e.g. Clayoquot, Nootka, Kyuquot and Quatsino Sounds), the Discovery Islands, the Broughton Archipelago and the central coast around Klemtu. A map of active fish farms can be found here: www.dfo-mpo.gc.ca/aquaculture/bc-cb/maps-cartes-eng.html

The farm sites used by Creative Salmon are in the Tofino Inlet (Clayoquot Sound), which is shared with other farmers that grow Atlantic salmon. All farms follow well-established best practices (such as fallowing, single year class sites, careful site selection, monitored feeding to minimize waste, harvesting and husbandry practices that reduce stress) regardless of the type of salmon they raise.

Fish farm site licenses are issued and managed by DFO, and may not be renewed if environmental conditions deteriorate, or there is evidence of harm to wild fish populations. DFO also requires fish health and environmental impact monitoring for each farm, and requires strict and ongoing inspections of farmed fish to monitor sea lice levels and the implementation of additional management. DFO veterinarians, biologists, and fish health technicians conduct approximately 400 compliance site visits each year, including an average of 120 fish health and 30 sea lice audits. All reports and DFO audit results are publicly available.

Technology and Salmon Farming

All farmed salmon start their lives in land-based freshwater hatcheries before they are typically transferred to open net pens in the ocean foreshore to grow to full size. Recent advances in fish farming technology include alternative containment methods for raising farmed salmon. All new methods are based on the precautionary approach for environmental protection, use similar feeding and monitoring systems and produce similar amounts of waste; however, the way the waste is managed differs depending on the technology used. For example, open net pens allow fish wastes to disperse in the water column where they are broken down by ecosystem services; whereas wastes are collected from land-based systems and composted and can be used as fertilizer (i.e. nutrients) for land based agriculture crops.

These technologies include land-based recirculating aquaculture systems (RAS), hybrids involving land and marine based systems, floating semi-closed or closed-containment systems (CCS), and offshore open production systems. There has been recent growing interest in these newer technologies driven by demand for salmon in domestic and international markets, and increased consumer desire for environmentally sustainable products. Many companies around the world are working to develop these systems; some examples include:

1. There are several commercial land-based RAS salmon farms operating in BC that grow Atlantic salmon, coho salmon and steelhead salmon (a type of rainbow trout). Their focus is on the socioeconomic and environmental

benefits of raising Atlantic salmon fully on land. The Atlantic salmon and steelhead farms are considered relatively small-scale but have proven to be important case studies in raising salmon on land to a commercially harvestable size in BC. The farm growing coho is an aquaponic system that integrates fish and plant culture on the same farm where the fish waste is used, to provide nutrients for the plants.

2. Another exciting development in BC is the semi-closed containment system (SCCS) pilot project currently under construction on the west coast of Vancouver Island. This is new technology to BC and is designed to exchange water only at depths to reduce algae/sea lice (and other infections agents) and overall farmed-to-wild salmon interactions. If viable, this project could prove to be a key technology used in the future of salmon farming in BC.

3. Government has funded industry and academia to jointly research optimization of hybrid salmon rearing technologies. These projects aim to develop a system that successfully minimizes the time fish are in open net-pens and therefore reduces interactions with the environment. This is achieved by growing smolts to a much larger size on land (called "post smolts") before transferring them to open net-pens. Not only are larger post smolts more disease resistant, the shorter time in open net-pens minimizes exposure to them.

Despite being a promising practice for sustainable aquaculture, inland (RAS) semi-closed containment systems, and hybrid systems, come with higher start-up, energy, waste management and maintenance costs. These can, however, be offset through better fish health and survival, and reduced need for pesticides and antibiotics. All three systems provide the added benefit of allowing farmers to better control the impact of their operations on the local aquatic habitat. It will take time before alternative operations are widely adopted as viable business models to provide salmon on a commercial scale. A report titled "State of Salmon Aquaculture Technologies", on alternative technologies noted that there are barriers to transitioning from open net-pens, and provided directions to support and encourage innovation in BC salmon farming.

The State of Salmon Aquaculture Technologies, 2019 can be found here: dfo-mpo.gc.ca/aquaculture/publications/ssat-ets-eng.html

Challenges of farming salmon

- Site selection and productivity: site selection must take into account many factors such as bathymetry, tidal action and protection from storms. Similarly, some sites are less productive than others.
- Keeping fish healthy, including managing water conditions and fish diseases (sea lice, viruses, low oxygen)
- Predators such as herons, cormorants, seals, sea lions.
- Fish can escape the nets.
- Environmental conditions and climate change (increased sea surface temperature and carbon dioxide can lead to large algae blooms that harm fish; increased intensity and frequency of storms at sea can cause damage to the nets)
- Analysing and minimizing any impact of farms on wild salmon populations (through development of new technology and funding research)
- Competitors in the international market (such as Norway and Chile)

Maintaining fish health and protecting the surrounding marine environment are key components to aquaculture businesses; they are so important that each year, salmon farmers spend millions of dollars to staff fish veterinarians and employ a suite of measures to manage fish health concerns such as sea

lice. Treatments for sea lice involve feed-based solutions or controlled environment systems such as well boats or barges that use fresh water, hydrogen peroxide, or a newer technology known as a "Hydrolicer". Hydrolicers are specialized barges in which fish are transported from the pens into a tank where pressurized water dislodges the sea lice from the salmon.

Hot issues

Why farm salmon if we have a sustainable and productive fish supply?

Capture fisheries are very seasonal and have limited supplies that fluctuate with a high degree of uncertainty from year to year. As a result, there is a limited amount of fresh fish for the consumer. When fishing is good, the balance of the catch is frozen to meet demand throughout the year. Even so, the demand is so high that capture fisheries cannot meet it. In comparison, farmed salmon provides a continuous supply of fresh fish year round, and in volumes that are able to sustainably meet the demand for fresh fish. In this way, both sectors complement one another by meeting the demand for a variety of salmon products year round, both fresh and frozen. Both products supply local and international markets, which are important for British Columbians who wish to buy local products, but also for BC's economy through export sales.

Are fish stocks declining?

Yes and no – this is a complex issue. Many stocks are below historic levels (chinook, coho & sockeye), while others remain relatively stable and at historic levels (pink), despite fluctuations from year to year. The reasons for this are uncertain, but include natural variations, climate and habitat change, natural disasters (such as the Big Bar landslide), and fishing pressures. These fluctuations are often coast-wide but can occur within specific stocks and regions. This is why commercial fishing for some stocks in some regions is not allowed at all, as has happened for sockeye in the Fraser River. While climate change and protecting salmon habitat remain global and regional issues, fishing practices have improved in recent years to ensure conservation is the first priority and impacts on weak stocks are minimized. Government, aquaculture companies and NGOs work together to fund research in order to better understand and protect wild salmon stocks in BC.

The value and volume of wild salmon continues to go up and down significantly from year to year, as shown in Figures 1 & 2. The total value is mostly driven by the abundance of pink, sockeye and chum stocks. In comparison, farmed salmon production is more predictable, but can be impacted by environmental conditions and fish diseases. The total value of farmed salmon is influenced by the exchange rate from $Cdn to other currencies, due to the larger export market for farmed salmon products.

Figure 1. Salmon Harvest in BC, 2010-2018

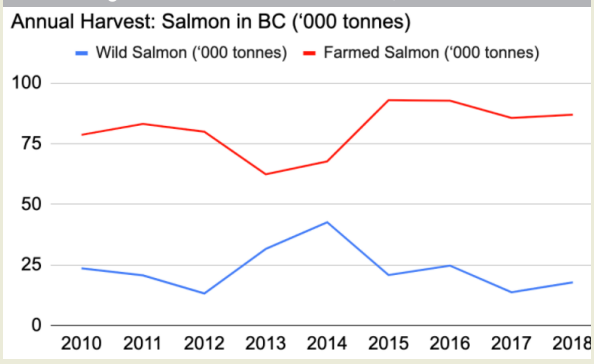
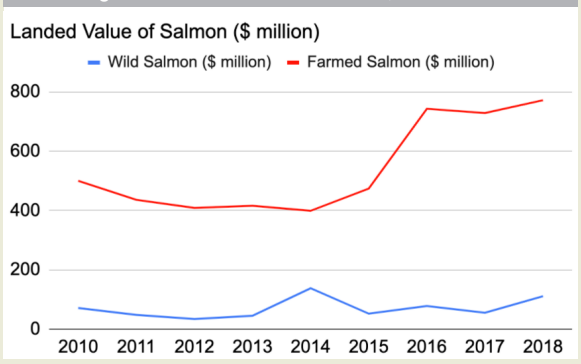


Figure 2. Value of Salmon in BC, 2010-2018



What is the role of First Nations communities in BC's aquaculture industry?

Many First Nations communities in BC benefit from aquaculture, which generated the equivalent of 4,550 full-time jobs in the Comox-Strathcona area and just over $150 million in labour income in 2012. Indigenous communities already contribute at least 10% of Canada's aquaculture economic activity and this participation is expected to increase.

By 2022, all fish farm operators in BC will need to develop protocol agreements with the First Nation(s) in whose traditional territory they wish to operate before they can receive their provincial license. As of 2020, 80% of farmed salmon are raised under 20 existing protocol agreements, which bring economic benefits to those communities.

Cermaq and Kitasoo/Xai'xais recently renewed their agreement to operate a salmon farm and processing plant in Klemtu, employing 45 members of the band and generating $1.5 million in income annually. Kitasoo Seafoods has two separately registered processing plants in Klemtu. The first processes farmed salmon from the six farm sites in Kitasoo/Xai'xais territory and provides full time employment for 6-9 months of the year. The second plant processes wild seafoods, currently sea cucumber and herring roe on kelp.They plan to add a smoked salmon production facility, to further grow local employment and income. This project is one example of how aquaculture can have significant impacts on rural, coastal First Nations communities.

Benefits of eating fish

Salmon is a great source of protein, omega-3 fatty acids and vitamin D, and a healthy protein food. Analysis of salmon in the grocery store by Colombo and Mazal (2020) found that each species of salmon has somewhat different nutrition; Pink salmon contained more moisture, whereas wild Sockeye and Chinook had the highest level of omega-3 fatty acids.

At this time, Canada's food guide (2019) does not recommend specific amounts of foods for different ages.

Salmon and other wild fish are important traditional foods for Indigenous peoples on the West Coast. Learn more from the First Nations Health Authority: fnha.ca/Documents/Traditional_Food_Fact_Sheets.pdf

Cooking with salmon

BC Salmon Marketing Council: bcsalmon.ca/recipe
We Heart Local BC: Go to: weheartlocalbc.ca/explore-recipes and search for salmon
Health Canada: Fish and fresh herb veggie packets

Links

BC Salmon Farmers Association: bcsalmonfarmers.ca

BC Salmon Marketing Council (Wild BC Salmon): bcsalmon.ca

Fisheries and Oceans Canada- Pacific region: pac.dfo-mpo.gc.ca/index-eng.html

2019 Report - State of Salmon Aquaculture Technologies:
dfo-mpo.gc.ca/aquaculture/publications/ssat-ets-eng.html

DFO - Public Reporting on Aquaculture:
pac.dfo-mpo.gc.ca/aquaculture/reporting-rapports/index-eng.html
DFO - Indigenous Partnerships and Programs:
pac.dfo-mpo.gc.ca/abor-autoc/index-eng.html
BC Ministry of Agriculture- Fisheries and Aquaculture:
www2.gov.bc.ca/gov/content/industry/agriculture-seafood/fisheries-and-aquaculture

Stefanie M.Colombo & Xenna Mazal. 2020. Investigation of the nutritional composition of different types of salmon available to Canadian consumers. Journal of Agriculture and Food Research. doi.org/10.1016/j.jafr.2020.100056

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General questions

1. What is the average age of farmers in BC? What percent of the population in BC are farmers? (*use Resource B and C, below*)
2. What is the cost of eating in BC? *According to Food Costing in BC 2017 (Resource D), the provincial average cost of a nutritious food basket for a family of four was $1,019 per month.*
3. What measures need to be taken to improve food security? (*Resources D and E) To increase community food security: municipal planning, community gardens, food distribution hubs, agricultural land reserve, supporting farmers. To decrease household food insecurity: income-based solutions to ensure all households have consistent and sufficient income to be able to pay for basic needs, including food*.
4. What is being done in Canada to reduce hunger? Are food banks or programs like Quest Food Exchange the solution? What else can be done to address the issue at its root? (*Resources E and G*)
5. Have you heard of the term “food justice”? What does it mean? How can it be achieved? *Food Justice: seeks to ensure that the benefits and risks of where, what and how food is grown, produced, transported, distributed, accessed and eaten are shared fairly. (Resources E and F)*
6. There is an increase in the local food movement. What does local mean to you? *Definitions vary based on distance (100 km diet) and jurisdiction (Buy BC, 100% Canadian)*.
7. People from BC may travel across the border to shop in the US for some of their groceries. What is the effect on BC’s economy and jobs if you were to mostly shop in the US?
8. How can you determine if a website, article or video is a credible source of information about food and the local food system? *Consider authorship, accuracy, currency, scope (location; relevance), and purpose (educational; entertainment). (Resource H and I)*

Additional Resources

A. Grow BC bcaitc.ca/grow-bc-commodities

B. Statistics Canada. Table 32-10-0442-01 Farm operators classified by number of operators per farm and age

C. BC Ministry of Agriculture. Fast Stats 2018
www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/agriculture-and-seafood/statistics/industry-and-sector-profiles/fast-stats/fast_stats_2018.pdf

D. Food Costing in BC 2017, Oct 2018
bccdc.ca/pop-public-health/Documents/food-costing-BC-2017.pdf

E. Food Secure Canada foodsecurecanada.org

F. Food Share (Toronto) foodshare.net/about/food-justice

G. Feed Opportunity feedopportunity.com/en

H. HealthLink BC healthlinkbc.ca/healthy-eating/reliable-information

I. University of British Columbia guides.library.ubc.ca/EvaluatingSources/Guidelines

Extension Activities and Questions for Further Inquiry

- We often think about the impact that food production exerts on the environment. But as consumers, we can also play a role by minimizing the food waste we generate. United Nations reports show that one quarter to one third of all food was lost or wasted. In North America, this occurs mostly at two stages of the food system: harvest (15% lost) and consumption (30% wasted).
  - How much food waste is generated in your school? Your home?
  - What can you do to reduce the waste? Explore Love Food Hate Waste, and the Food Matters Action Kit for ideas and choose one or two activities to try individually at home, as a class, or as a school.
  - What are the consequences of food waste in general? Are there additional consequences when food waste ends up in the landfill? (*wastes the resources used to produce the food; cost of food increases; hungry people can't access food that could be eaten/donated/redistributed; methane; uses up space in landfills)*
  - What's involved in recovering and redistributing food that might end up as waste? What laws govern the donation of food?
  - How are food scraps handled in the waste stream in your community?
- In some countries there is a culture of gleaning. People are legally allowed to gather the food that remains in the field after it has been commercially harvested. Learn more about historical and modern day gleaners. Explore how gleaners have been represented in the arts.
- Ask students to find out what foods are produced in their area. Use the interactive **Grow BC** website or We ♥ Local site (www.weheartlocalbc.ca).
- Have students interview a farmer, or plan a balanced lunch (one that includes all food categories) using BC foods.
- Explore the taste of BC foods. For example, BC produces many varieties of pears, apples and potatoes. How many have you tried?
- How often do you use BC foods? Think about your meals, snacks and recipes. What are the pros and cons of choosing more local foods? What about choosing only or mostly local foods?
- Survey the foods served at your cafeteria and ask about where they come from. How many are BC foods? How many are imported?
- Choose one food trend and research how this trend can influence the supply and demand of a related agricultural product. Examples of current food trends include deciding to go on a gluten-free diet, eating only organic foods, or adopting a vegetarian or a 100-mile diet.
- Choose one of the foods highlighted in BC At The Table and identify the range of consumer products made from it. Select one specific product and prepare a presentation on how it is made. Make sure to include the food system components involved in the process.
- How can climate change affect different crops produced in BC? Explore a specific crop or specific impact.
- What are genetically modified organisms (GMOs)? What are genetically engineered (GE) foods? What are the advantages and disadvantages of using GE seeds?

Food System Student Worksheet—Inputs and Outputs

Food System Component	Inputs	Outputs
Production		
Processing		
Distribution		
Access		
Consumption		
Notes:		